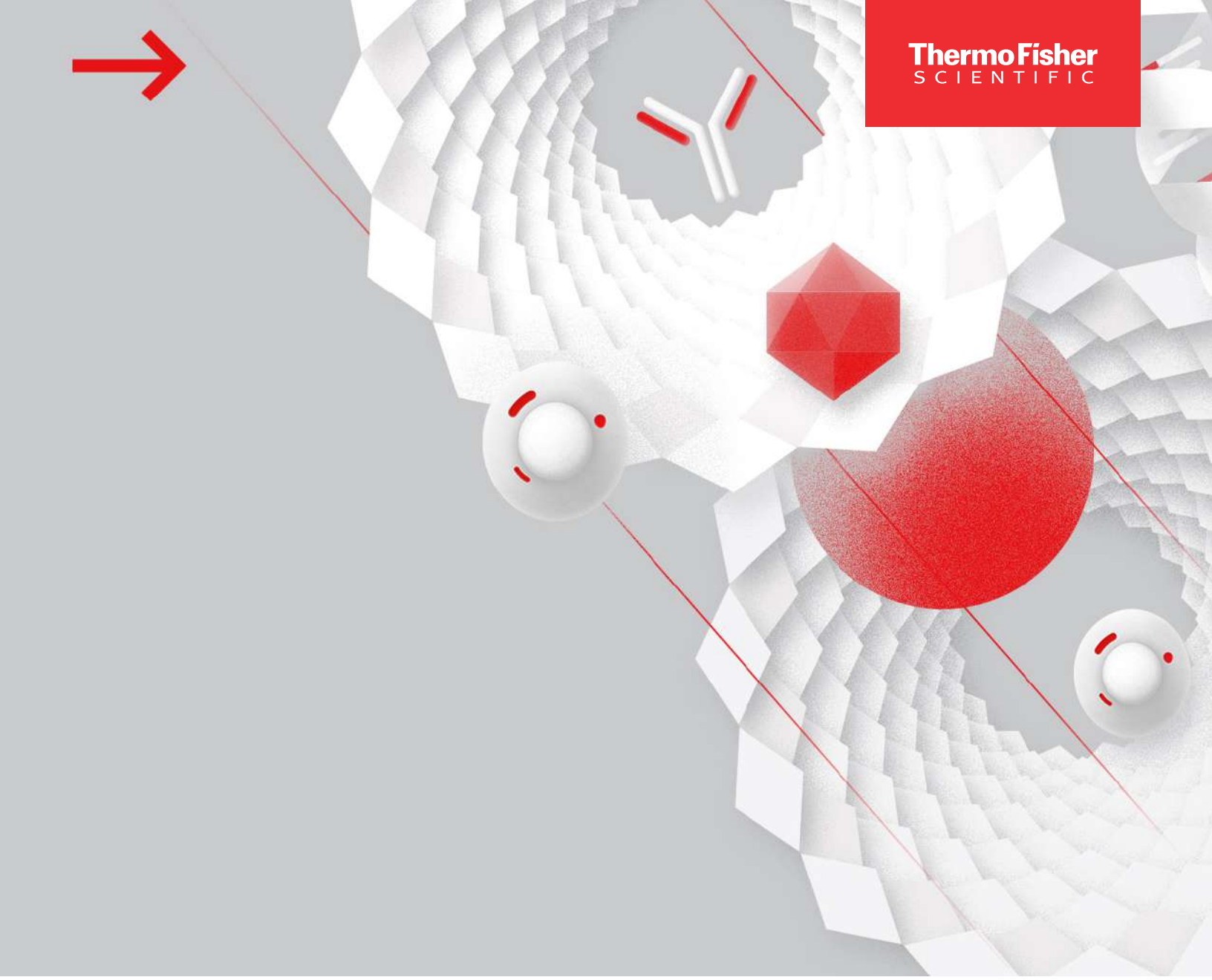


Bioprocessing solutions

Helping accelerate biotherapeutic commercialization from drug development through commercial production

thermo scientific

Contents

CaptureSelect and POROS Purification Products

SEQ Rapid Analytical Methods

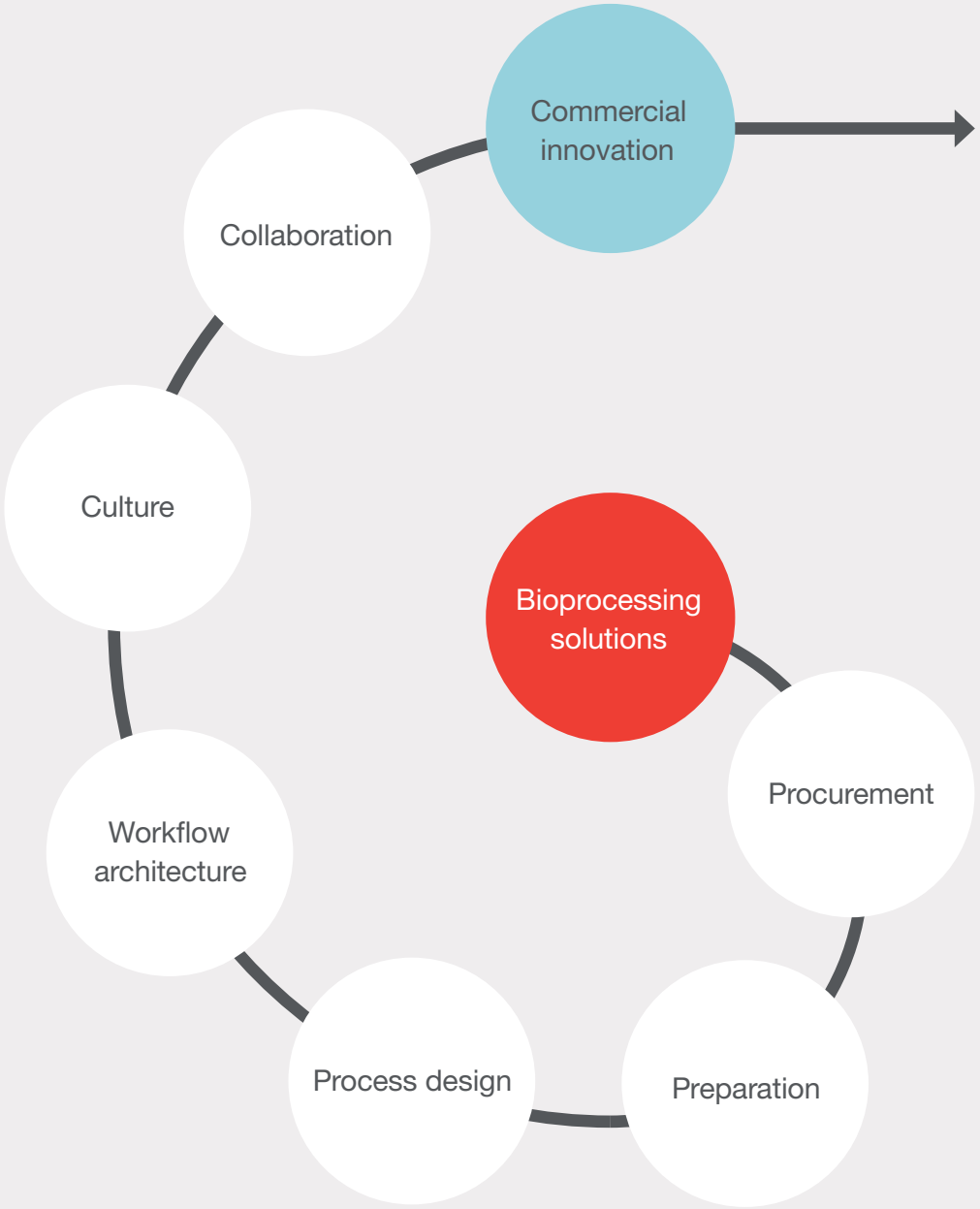
Gibco Cell Culture Media and Cell Therapy Systems

The way forward

Helping accelerate biotherapeutic commercialization in a highly dynamic world

At Thermo Fisher Scientific, we have spent decades building out the systems and expertise necessary to successfully guide customers through every stage of production. Our industry veterans and scientists around the globe are backed by processes, technology, and infrastructure that together can help anticipate and overcome roadblocks that might hamper the commercialization of your next-generation vaccines and therapies.

We're eager to help bring your innovative ideas to fruition and fully realize the power of the science and technology at our disposal.



Overcoming innovation roadblocks in biologics

Procurement
By merging our supply chain with yours, you gain peace of mind in your quest to access raw materials.

Preparation
Our facilities are audit-ready to meet your quality standards.

Process design
Our team of specialists can help you to optimize bioprocesses.

Workflow architecture
We tailor client workflows to improve yield, process efficiency, risk mitigation, and productivity.

Culture
Our purpose is to accelerate your path to successful commercialization.

Collaboration
Our specialists draw upon decades of experience to offer counsel at every step of the way.

Creating supply chain resiliency

Supply chain constraints won't diminish any time soon—choosing the right suppliers can help

Thermo Fisher has been investing in bioprocessing capacity, capabilities, and innovation for decades. But we became especially aggressive during the virus crisis, spending more than $650 million on upgrading our facilities and expanding our manufacturing capacity to support customers with a reliable supply of raw materials.

To help reduce the risks associated with materials supply, we created redundant manufacturing sites across more than a dozen locations in North America, Europe, and Asia, enabling more regional and in-country sourcing strategies. We are standardizing raw materials, processes, equipment, and finished product testing throughout our network to enable equivalency across manufacturing sites and reinforce our network to minimize disruptions.

Now more than ever, we're anticipating and planning for materials shortages before they happen. We qualify suppliers and secure secondary or dual sourcing to help make sure that raw materials and components meet manufacturing specifications. We are working diligently to help ensure that your resources will be available when and where you need them.

Our global footprint

Quality control is vital during every phase of design, development, and manufacturing

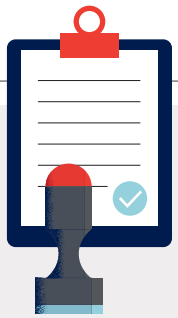
Quality is our priority.

We maintain robust quality control measures in all facets of manufacturing, from sourcing and testing raw materials to our supplier qualification regimen and our ongoing risk mitigation program.

When our supply chain supports your supply chain, we're fully invested in the effort to maximize quality and reduce disruptions in materials and chemicals.

Our goal isn't merely to help you through a project. We're aiming for long-term business continuity.

Our end-to-end focus on quality



Supplier qualification process

- Technical questionnaire
- Raw material qualification testing
- Supplier quality management system (QMS) audits
- Ongoing supplier monitoring program

Quality assurance assets and procedures

- Our QMS and facilities are all ISO certified; most facilities meet the highest QMS standard, ISO 13485
- Our bioprocessing technologies include a certificate of quality assuring that product has been tested and accepted in accordance with specifications
- Applied Biosystems™ analytical testing to help ensure quality and safety of pharmaceutical products
- All quality personnel, including technicians, scientists, and inspectors, are required to complete a rigorous quality-training program
- Certified clean rooms with traceability and rigid environmental specifications to minimize contamination
- Systematic raw material supply chain risk-management program
- We host more than 200 site audits per year, and in 2021 we hosted 51 regulatory or registration audits with no major or critical findings
- 1.5 million bioprocess containers inspected per year

Streamlining workflow processes

Robust, verified, and efficient biomanufacturing workflow processes can greatly reduce manufacturing costs, improve product quality, and accelerate the journey to market

We help customize workflows by matching best practices with your specific needs

Whether you are a startup developing your first molecule or an established manufacturer branching out to novel therapeutics, we have the products, services, and expertise to help transform your processes. We can help build a custom platform—and we can assist with transitions and upgrades.

We've been pioneering innovation in upstream processes for decades

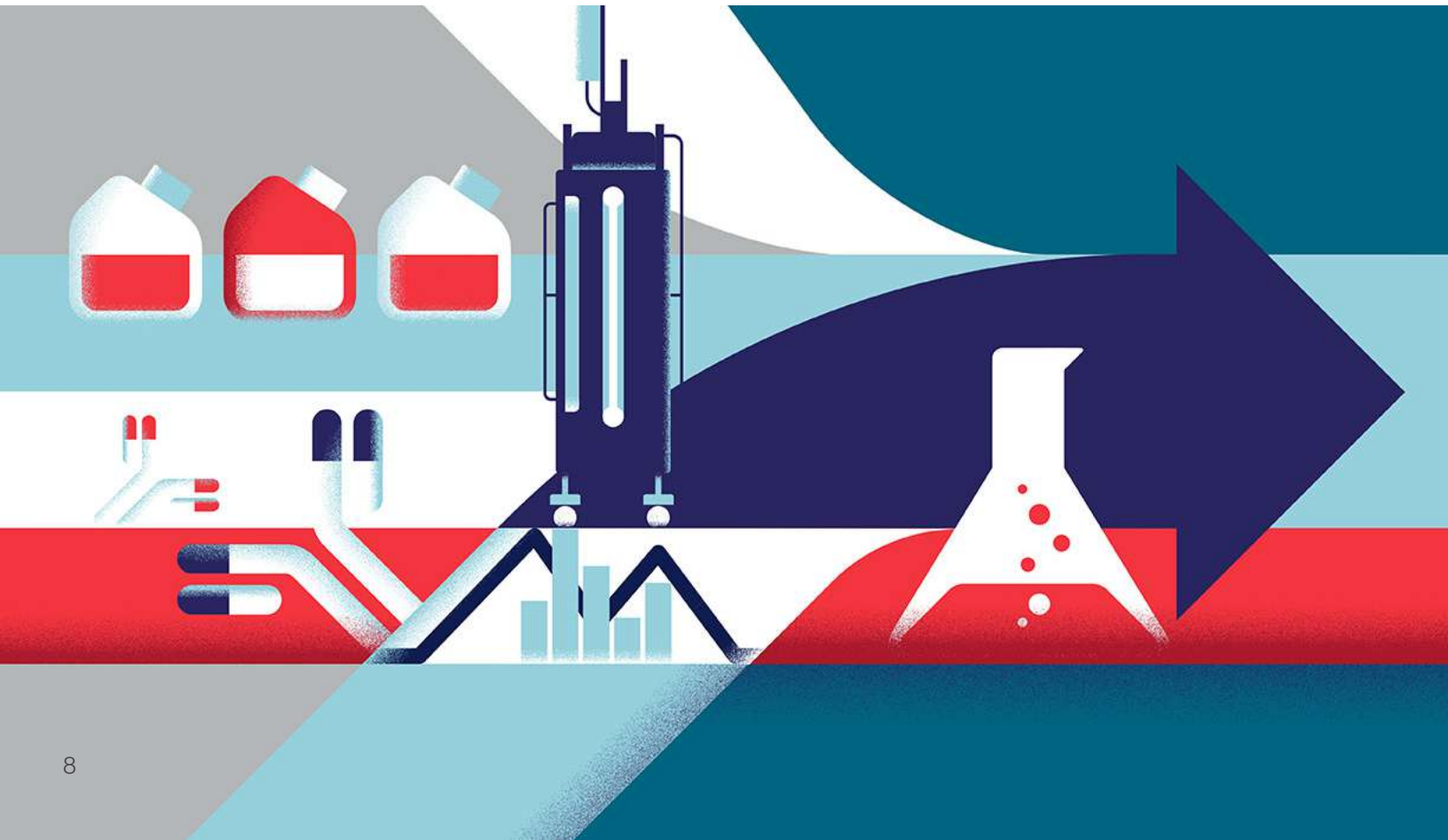
At Thermo Fisher, we've helped hundreds of biomanufacturers accelerate the development, scale-up, and manufacturing of life-changing medicinal products in accordance with current Good Manufacturing Practices (cGMP). Our clients have access to our unique combination of in-depth sourcing, testing, and manufacturing experience. And we make it a priority to simplify and optimize upstream processes to accelerate your path to distribution.

We have the tools and experienced professionals to mitigate downstream bottlenecks

Bottlenecks can hinder downstream development at any phase.

Buffers require significant resources and coordination. We can help maximize manufacturing flexibility by simplifying buffer preparation—whether through in-house single-use mixing systems or complete outsourcing models. Our chromatography resins also offer high resolution and excellent capacity to mitigate pressure from increasing titer upstream, enabling you to achieve high purity and high yield.

Meanwhile, our affinity resin technology and customization capabilities provide purification solutions for a range of emerging modalities, including fusion proteins, antibody fragments, antibody drug conjugates, nucleic acids, exosomes, and virus particles. We also provide sensitive, accurate, and reproducible analytical methods to enable purification process characterization and demonstrate clearance of residual DNA.



Collaborating to commercialize

We collaborate during every phase of production to help get your innovation to market

Our technical specialists around the globe are dedicated to understanding your needs and exploring options for streamlining based on industry best practices and state-of-the-art technologies. They will coordinate a workflow assessment—a Process Walk, or Gemba Walk—to identify potential areas of waste and risk within your workflow.

Our bioprocess design centers offer hands-on training with single-use instruments in our advanced facilities that are devoted to optimizing your process development.

Our educational seminars and webinars provide the latest information about product training, applications, and process optimization.

We offer dedicated technical support at every step as well as regulatory consulting services across biologic modalities.

Production Chemicals and Services

Thermo Scientific™ Production Chemicals and Services offer cGMP chemical solutions for biologics developers and manufacturers who produce life-changing therapeutics and vaccines.

Our professional experience in cGMP chemical supply chain and process liquid and buffer manufacturing enables you to improve productivity, mitigate risk, and reduce total cost of ownership so you can focus on innovation and production.

Planning for growth and scale

To progress from preclinical trials through commercialization, biomanufacturers are challenged to grow and scale their manufacturing capabilities. While also trying to ensure quality, safety, and compliance, you are tasked with strategic business decisions to source reliable raw materials and optimize capacity to increase manufacturing, which are equally critical to meet demand.

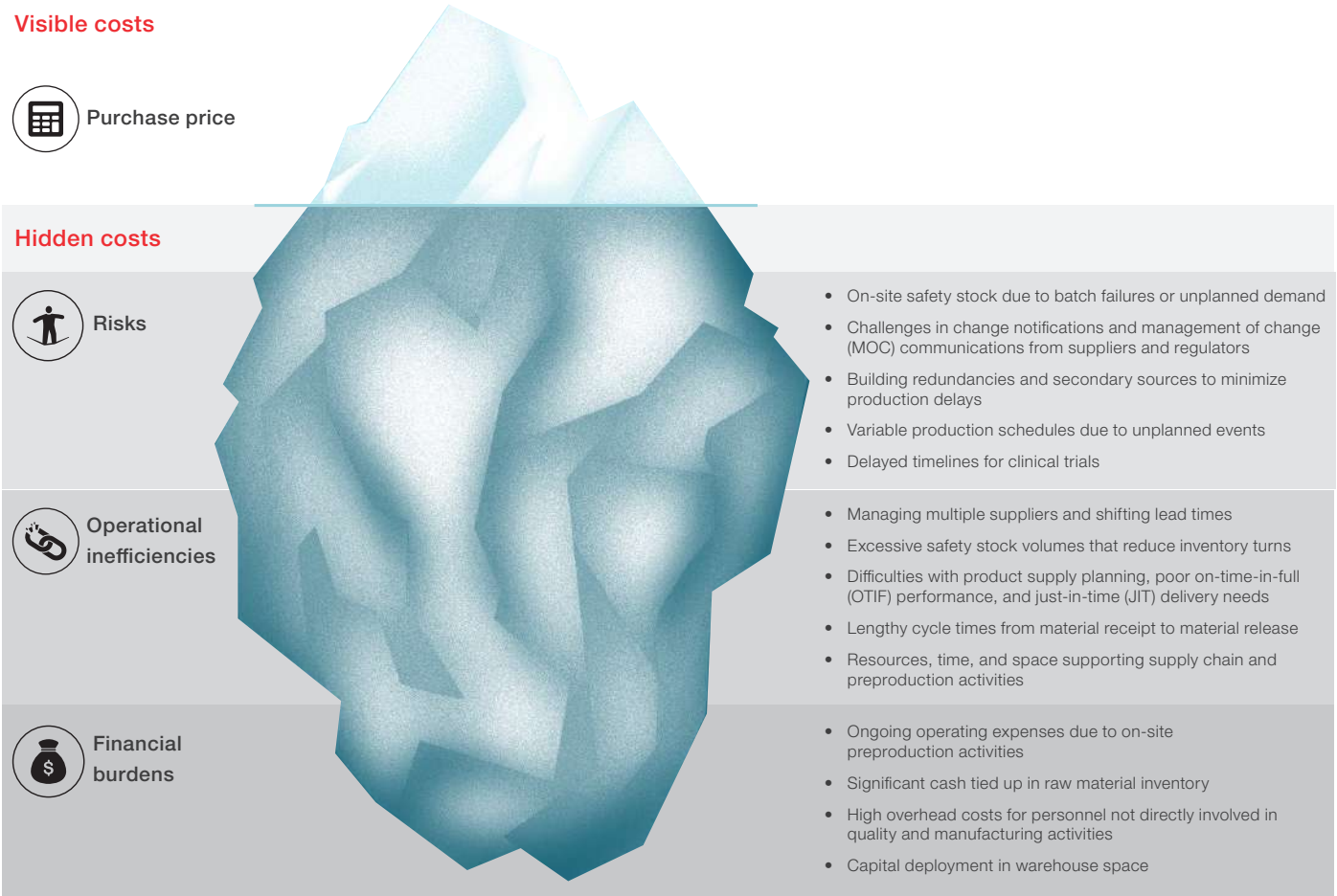
Our team is made up of technical specialists in cGMP chemical sourcing, supply chain management, and process liquid and buffer manufacturing within domestic and international markets to help you meet quality and prevent production delays. We help biologic developers and manufacturers simplify workflows and streamline activities for cGMP chemicals to help accelerate speed to clinic and speed to market.

Find out more at
thermofisher.com/innovateproductivity

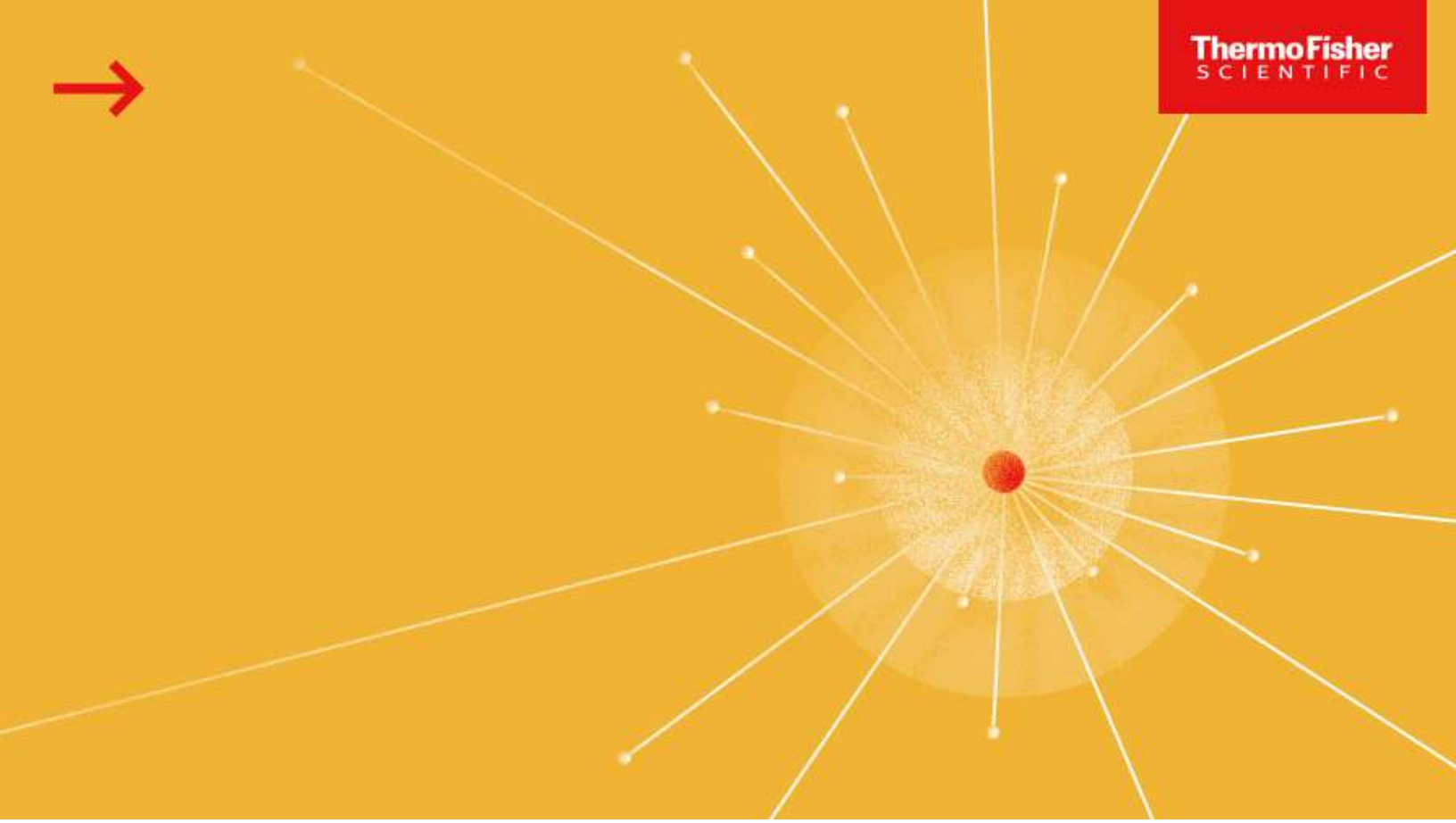
Evaluating spend visibility

Spend visibility for sourcing cGMP chemicals and preparing them for use varies greatly by facility size and capabilities, as well as the drug in production. While chemical price is readily visible, hidden costs can have a significant impact on your internal operations from sourcing through preparation for production.

We collaborate with biomanufacturers like you to take a comprehensive view of your capital expenses and the operating expenditures to run a facility. This framework allows for increased spend visibility so that you can see the direct and indirect costs that make up your total cost of ownership (TCO) involved with the chemical itself, supply chain management, preproduction preparation, and facilities management required.



TCO touches several areas that can adversely impact speed to clinic and to market.



Production Chemicals and Sourcing Services

From early stage through commercialization, you can confidently manage and source the cGMP chemicals you need throughout your entire workflow with Production Chemicals and Sourcing Services.

We provide you with access to a broad portfolio of cGMP multicompendial chemicals through our global network of industry-leading manufacturers and suppliers.

cGMP chemical accessibility

Broad cGMP chemical portfolio
Multicompendial, cGMP chemicals with comprehensive documentation

Supply reliability

Global supplier network
Multiple cGMP chemical manufacturers and suppliers meet rigorous quality standards

Resource efficiency

Order and supply chain management
Customer-centric infrastructure built on a robust QMS and dedicated support team with cGMP chemical experience in supply chain management

Accessible chemical categories

We offer a wide variety of cGMP multicompendial chemicals, both through external manufacturers as well as our internal manufacturing capabilities.

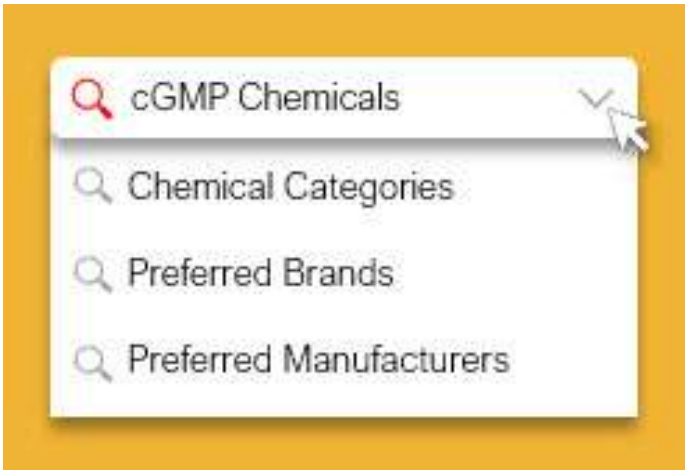
Various grades and concentrations are available.

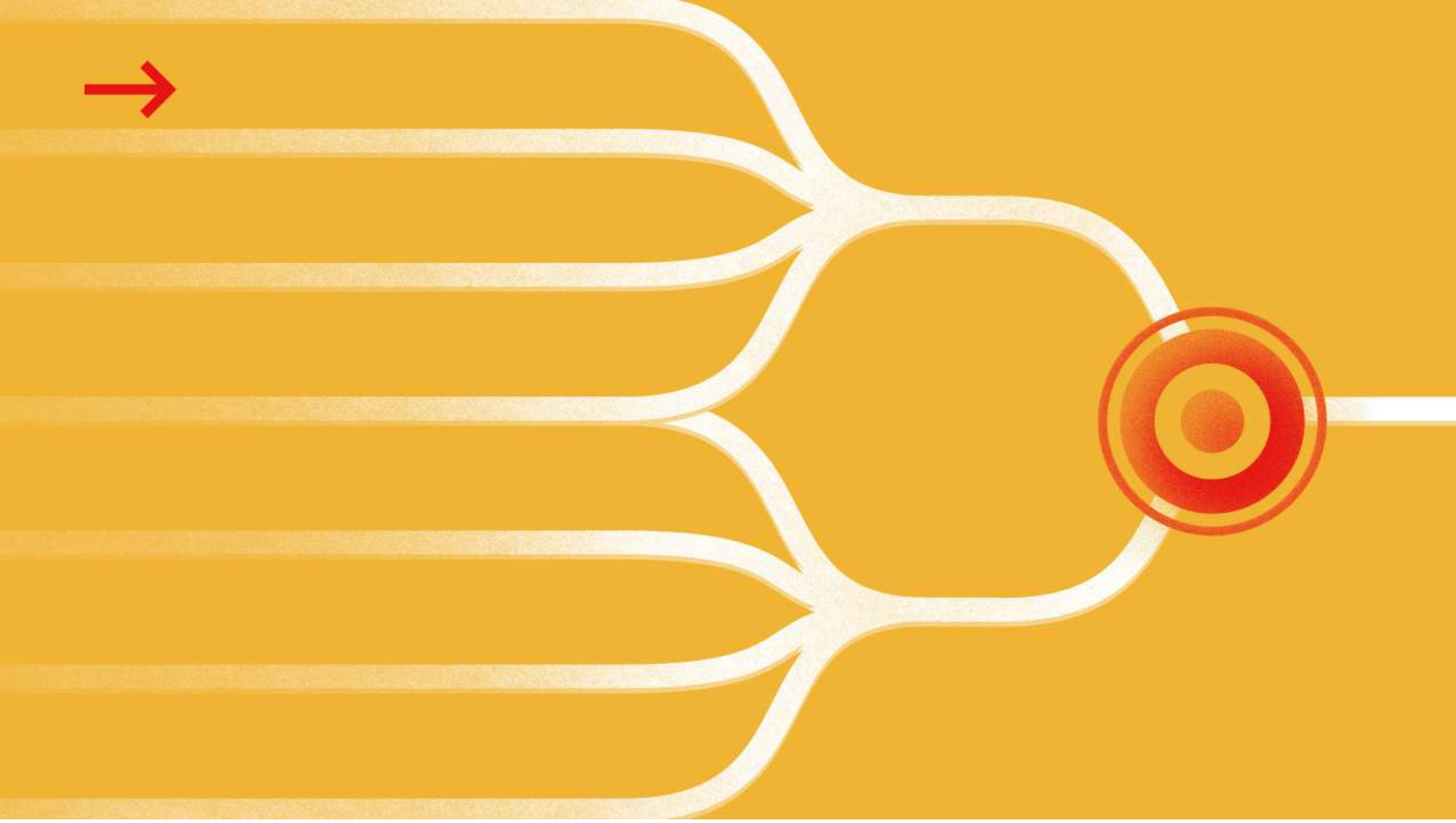
- Acid/base solutions
- Amino acids
- Biological buffers
- Biological reagents
- Carbohydrates
- Chromatography resin cleaning and preservation
- Cleaning agents and disinfectants
- Denaturants
- High-purity water
- Media supplements
- Minerals and vitamins
- Salts
- Solvents
- Surfactants/emulsifiers

Primary and alternative sourcing

Availability of raw materials is critical to business success—lengthy lead times and shortened supply of raw materials cannot stand in your way. By using our global supplier network, our dedicated support team can help you overcome sourcing challenges and proactively build your cGMP chemical library.

Use our portfolio tool to see just a few of the source-able cGMP chemicals accessible through our network:
thermofisher.com/cgmpchemportfolio





Process Liquid Preparation Services

Thermo Scientific™ Process Liquid Preparation Services can help simplify preproduction workflows—for both upstream and downstream bioprocessing. By delivering process liquid and buffer preparation solutions to meet your facility's specifications. To help you produce life-changing therapeutics and vaccines, faster.

Overcome process bottlenecks

Using ready-made buffers or management strategies like in-line conditioning, can help you gain capacity, improve process efficiency, and overcome bottlenecks

Access global network

Meet your biomanufacturing capabilities and capacities through domestic and international facilities

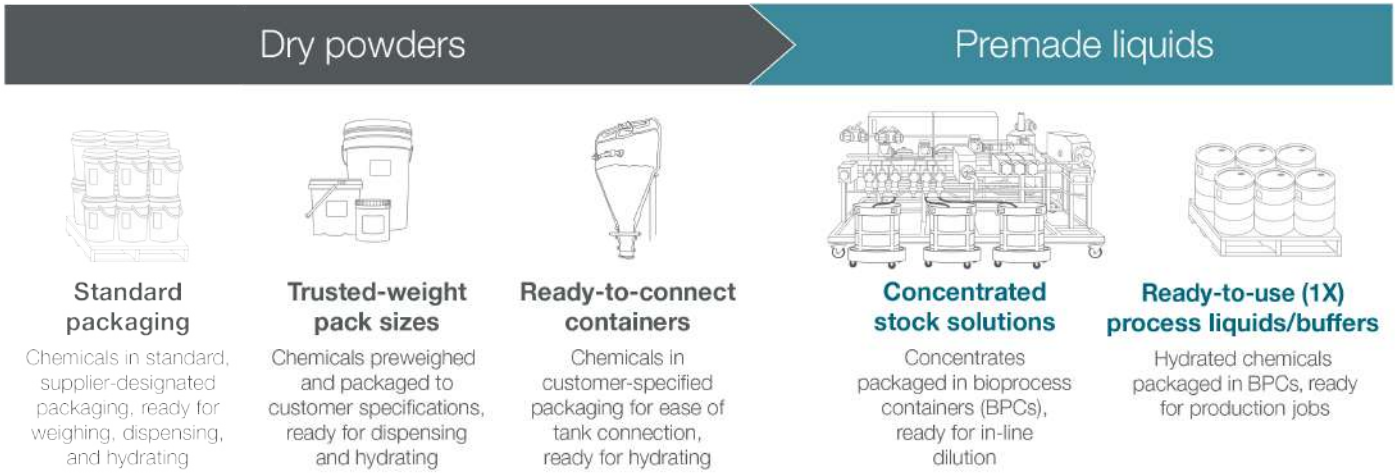
Outsource buffer production

You can trust in extensive chemical manufacturing and bioprocessing container experience when you automate your buffer preparation by outsourcing to help gain capacity and improve process efficiency

Develop a solution that meets your manufacturing needs

Solutions encompass ready-to-hydrate dry powder chemicals and process liquids and buffers for your entire bioproduction workflow. A robust lean assessment and analysis of your formulation workflow can help determine chemical configurations, and areas to optimize and eliminate waste for your process workflow.

Our Process Liquid Preparation Services can help maximize your productivity and outputs by streamlining process liquid and buffer preparation, enabling you to meet current and future production demand by focusing your resources and avoiding additional capital investments.



Find out more at
thermofisher.com/innovateproductivity

Direct material supply chain services

Streamline your supply chain operations

Our Production Chemicals and Services professionals provide solutions to help simplify and streamline overall production material supply chain and warehousing operations. Simplifying supply chain logistics for production chemicals and other direct materials enables companies to significantly increase risk mitigation, improve operational efficiencies, and help reduce TCO.

cGMP Distribution Services

Consolidate distribution workflows

Our cGMP-compliant distribution service centers deliver comprehensive, world-class support to global biopharmaceutical and life science companies. Powered by robust quality management and technology systems, so that we are flexible to meet your dynamic requirements.

- Order Management
- Procurement
- Material Receipt and Handling
- Outbound Logistics Management
- Quality Management System
- Technology Systems
- Direct Material Supply Chain Process Mapping and Assessment

Assurance of Supply Services

Help improve assurance of supply availability with short lead times and high OTIF performance

Through custom stocking agreements and inventory management, customers receive shortened lead times and improved OTIF performance.

- Custom Stocking Agreements and Inventory Management

Warehouse Efficiency Services

Streamline inbound direct material receipt

Our Warehouse Efficiency Services focus on improving customers' speed and efficiency when receiving direct materials. From custom labeling to palletization, these services streamline direct material receiving processes for customers, helping save time and money and free-up resources.

- Custom Labeling and Barcoding
- Poly-Palletization
- Recyling of Empty Containers
- Returnable Fleet Management
- Dip-Tube Exchange

Production Ready Services

Work to reduce capital and operating expenses

Our Production Ready Services help streamline direct material release processes and minimize on-site cGMP and good distribution practice (GDP) warehouse requirements.

- Raw Material Sampling
- Production Material QC/QA Inspection
- Production Material Release Service

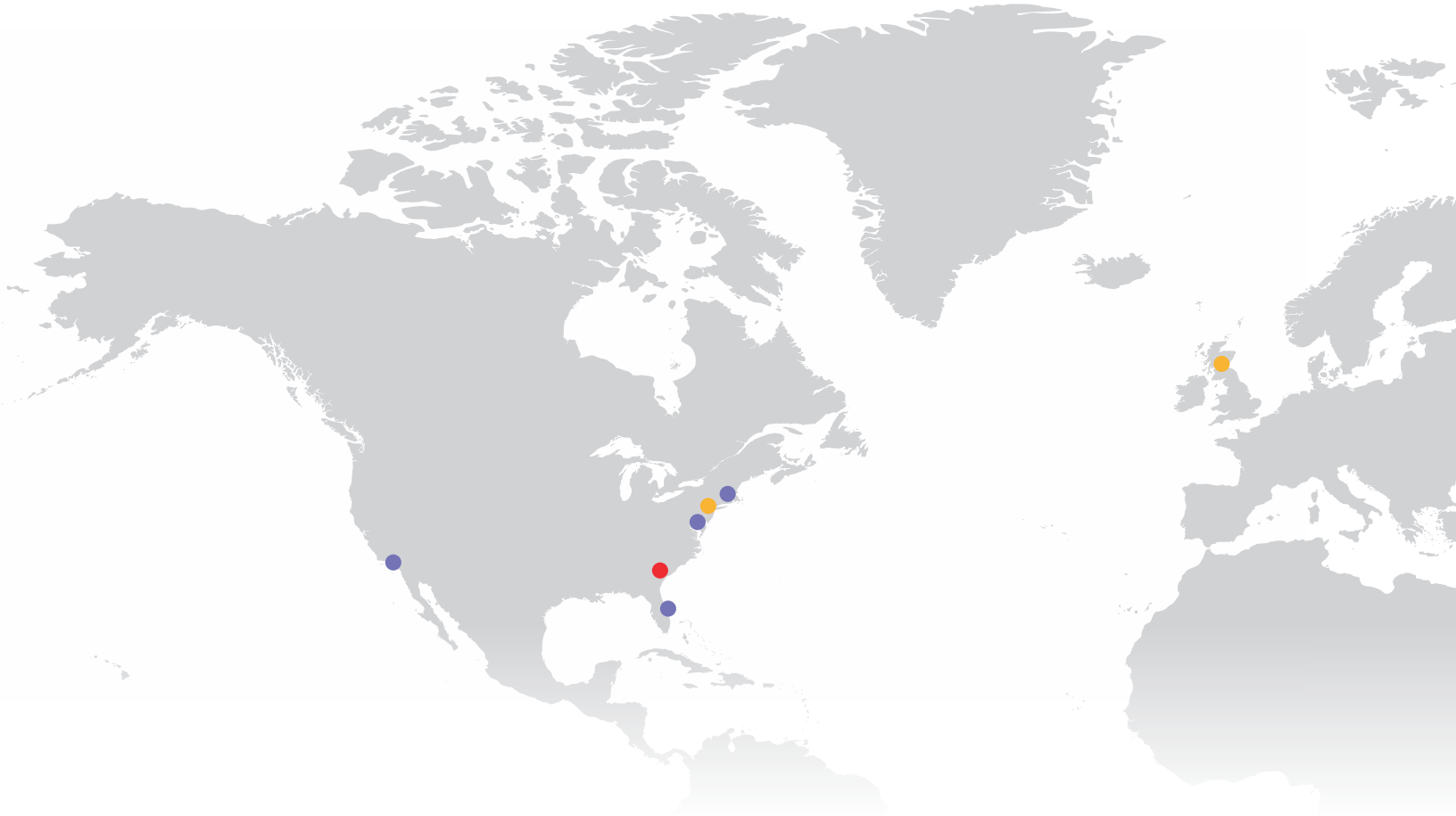
Check with your sales representative for a list of services available in your region.

Production Chemicals and Services global network

Headquarters
- Durham, NC

Service Centers
- Jessup, MD
- Peabody, MA
- Riverside, CA
- Tampa, FL
- Durham, NC

Process Liquid Preparation Services
- Grand Island, NY
- Paisley, Scotland (Inchinnan, UK)

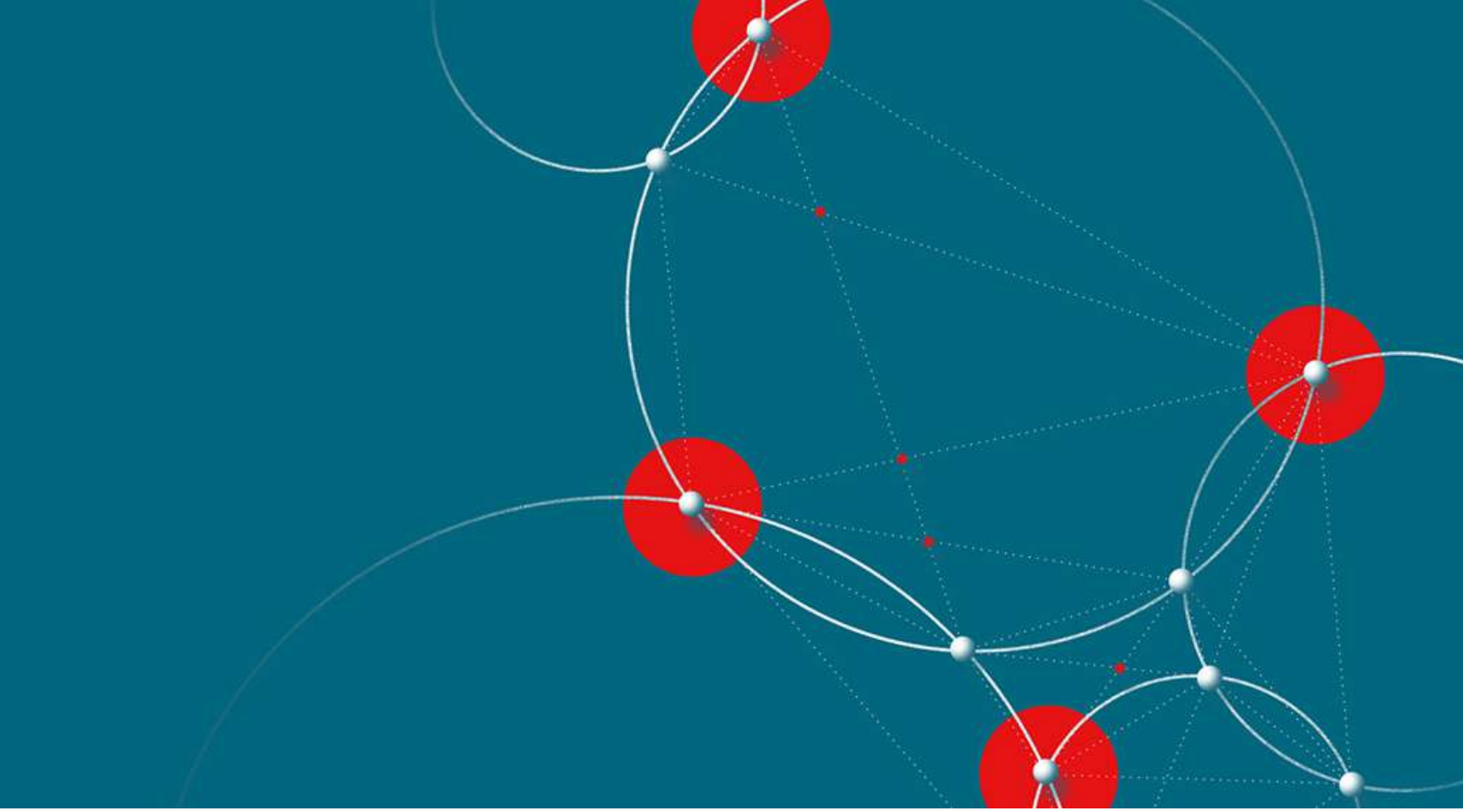


The way forward in supply assurance

Our Production Chemicals and Services help you do what matters most, produce life-changing therapeutics. You can trust our experience in delivering cGMP chemicals with different tiers of supply chain services, in addition to process liquids and buffers, to ultimately manage the productivity of your manufacturing resources.

Check with your service representative for a list of cGMP chemicals and services available in your region.

Find out more at
thermofisher.com/innovateproductivity



Single-Use Technologies

As the paradigm shifts to a broader acceptance of single-use products as a means of decreasing the time it takes to bring a drug to market, the demand for product availability has increased significantly. Our innovative single-use technologies help enable customers to accelerate their biological manufacturing processes to create flexibility and operate more dynamically across their upstream and downstream workflows. This combined with anticipated market growth is expected to continue moving from traditional monoclonal antibody therapeutics to emerging modalities in gene therapy and mRNA vaccines.

Our single-use technologies have been proven as robust and scalable, offering flexibility of design throughout our hardware, flexible containment, and rigid containment product portfolios. Our bioprocess equipment and automation solutions power processes that enable scaling supporting customers from early phase through commercialization. We create consistency in processes that enable future scaling by designing superior bioprocess equipment, automation, and accompanying services and support.

Our end-to-end manufacturing strategy balances flexibility of design with consistent access to raw materials. Our products are backed by a harmonized global manufacturing network to assist with assurance of supply. Our goal is to provide customers with the way forward in assurance of supply and process innovation, enabling customers to focus on capitalizing on new opportunities within existing markets and emerging modalities.

Single-use global manufacturing network

Building a robust manufacturing network to create a reliable and harmonized single-use supply chain

The biotherapeutics market has been rapidly adopting single-use technologies to reduce risk and improve operational efficiencies. Thermo Fisher has been investing in capacity and innovation across all of our portfolios, including flexible containment, single-use bioprocessing equipment, and rigid containment solutions. These portfolios are robust and scalable from laboratory to cGMP production applications.

Flexible containment

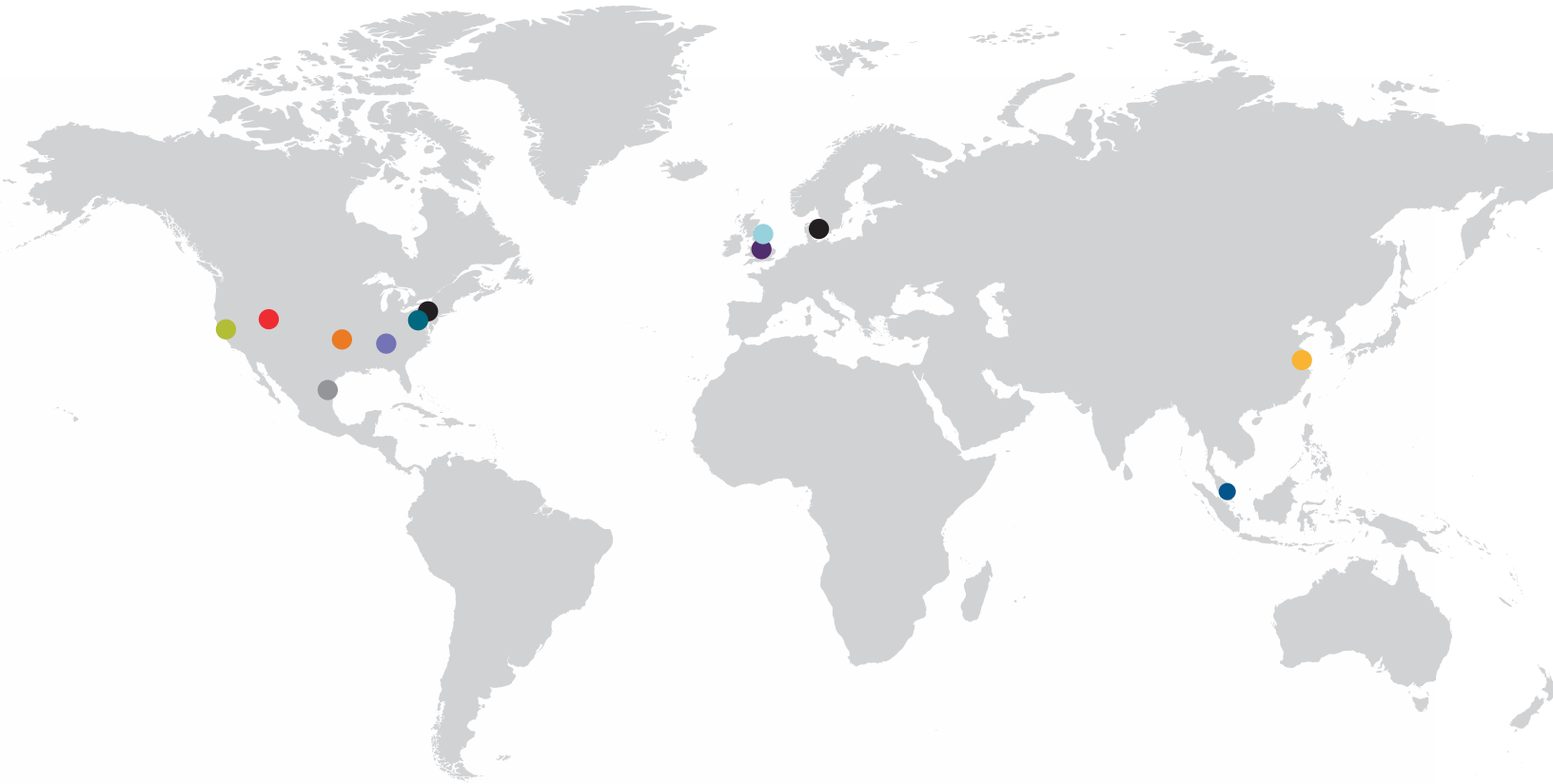
- Logan, Utah
- Millersburg, Pennsylvania
- Nashville, Tennessee
- Cramlington, United Kingdom
- Suzhou, China
- Joo Koon, Singapore
- Matamoros, Mexico

Rigid containment

- Miami, Oklahoma
- Rochester, New York
- Roskilde, Denmark
- Suzhou, China

Equipment and automation

- Santa Clara, California
- Leicester, United Kingdom



Thermo Fisher Scientific single-use manufacturing sites

Logan, UT—BioCenter and Assembly Center

- **Chamber manufacturing**—2D and 3D BioProcess Containers (BPCs)
- **Fluid transfer assembly**—Standard and custom fluid transfer assemblies and manifolds

Cramlington, UK

- **Chamber manufacturing**—2D and 3D BPCs
- **Fluid transfer assembly**—Standard and custom fluid transfer assemblies and manifolds

Millersburg, PA—Main and East Campus

- **Chamber manufacturing**—2D and 3D BPCs
- **Fluid transfer assembly**—Standard and custom fluid transfer assemblies and manifolds
- **Injection molding clean room**—Engineering and commodity resins, full validation services, injection and insert and multishot molding, complete part design with flow simulation analysis, manual and automated assembly

Nashville, TN

- **Chamber manufacturing**—2D and 3D BioProcess Containers (BPCs)
- **Fluid transfer assembly**—Standard and custom fluid transfer assemblies and manifolds

Santa Clara, CA and Leicester, UK

- Assembly and integration of the glass and rocker bioreactors
- Highly configurable G3 bioprocess controllers
- Single-use sensors and the integration of sterilizable sensors

Suzhou, China

- Two automated production lines manufacture Thermo Scientific™ Nunc™ Cell Factory™ systems and carboys
- **Final assembly**—BPCs and fluid transfer assemblies

Thermo Fisher Scientific single-use manufacturing sites

Rochester, NY—Fairport, Penfield, and Lexington

- **Life science research:** cell culture flasks, dishes, plates, laboratory bottles, cryopreservation vial systems, assay plates, storage plates, and matrix 2D barcodes
- **Bioprocessing:** Nunc Cell Factory systems, bottles, and carboys
- **Packaging, diagnostics, and OEM packaging:** PETG, HDPE, PP, LDPE, and OEM bottles
- **General labware:** flasks, centrifuge tubes, Petri dishes, and lab bottles/containers
- **Consumer hydration:** water bottles, accessories, and storage containers

Miami, OK

- Critical environment products
  - Clean room processed containers—pharmaceutical, biotech, microelectronics
  - Containers to exceed USP <788> and USP <85> requirements
  - 1 mL glass vials to 50 L HDPE carboys
  - Autoclave sterilization
  - Depyrogenation-dry heat sterilization
  - Platinum clean biotainers
  - Total Organic Carbon (TOC) certified containers
  - Chemical filtration—semiconductor products

Roskilde, Denmark

- Nunc Cell Factory systems and accessories, cell culture dishes, multidishes, flasks, multilayer flasks, and tissue culture inserts
- 2D and 3D coded biobanking and cell culture cryogenic tubes, and cryogenic racks and boxes
- Immuno plates, multiwell plates, microwell plates, and strip modules

Matamoros, Mexico

- **Chamber manufacturing**—2D and 3D BPCs
- **Fluid transfer assembly**—Standard and custom fluid transfer assemblies and manifolds

Suzhou, China

- **Final assembly**—BPCs and fluid transfer assemblies

Single-use bioprocess containers (BPCs)

What is a single-use BPC?

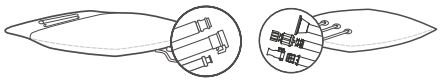
Thermo Scientific™ BPCs are single-use flexible container systems commonly used for critical liquid-handling applications in the biopharmaceutical industry. BPC systems are cost-effective alternatives to conventional stainless steel systems. They employ a novel design approach and are highly valued for their versatility and utility. BPC components readily integrate into a variety of high-performance systems for all steps in the production of biologics, vaccines, cell therapies, and gene therapies.

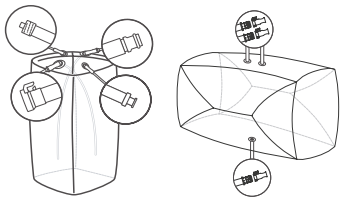
Key features

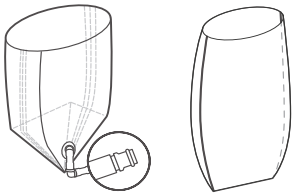
- All BPCs are produced in state-of-the-art facilities with current good manufacturing practices (cGMPs) and common processes for manufacturing redundancy
- Production of chambers from 50 mL to 10,000 L capacity
- Automated lines for producing BPC chambers
- Strong engineering support to design and maintain products and processes

Main types of BPC chambers

The 3 main types of BPCs are the Thermo Scientific™ 2D Labtainer™ BPC, 3D Productainer™ BPC, and tank liner BPC. Specialty BPCs are also available for specific applications and use in bioprocess equipment.







2D Labtainer BPC systems

This design is used for small, simple BPCs and is produced from two sheets of film that are heat-sealed around the perimeter to form a pillow-shaped chamber. The ports are heat-sealed into the end seal or onto one of the panels of the chamber.

3D Productainer BPC systems

This design is used for larger and more complicated BPCs. A square tube is formed by heat-sealing sheets of film together. Top- and bottom-porting options are available, and a greater range of size and complexity of chamber designs is possible.

Tank liner BPC systems

This design is used with commercially available overhead mixers. Tank liners remove the need for tank cleaning and help reduce cycle times. Tank liners are optimized for use with Thermo Scientific™ drums and commonly used industry-standard cylindrical tanks.

BPC manufacturing

BPC manufacturing process

- **Chamber manufacture**—The main components of a BPC chamber are a plastic film and ports that enable tubing to be attached to the chamber. There are a number of different port designs depending on the type of chamber.
- **Final assembly**—Additional components are attached to the BPC chamber to produce a complete BPC. This is done to either a catalog or custom specification in an ISO 7 clean room in one of our four manufacturing facilities. BPC assembly is a manual process, which provides the required flexibility in BPC configuration. Thermo Scientific™ fluid transfer assemblies are also produced to complement BPC systems. Final assembly is done in the same controlled environment and to the same level of quality.
- **Final inspection and packaging**—All BPCs are visually inspected against product specifications, and packaged and sealed in two independent outer dust-cover polyethylene bags while still in the ISO 7–certified area. They are then placed in cardboard cartons labeled with product and lot identification.
- **Sterility assurance level**—BPCs are gamma-irradiated in their outer packaging by a dose of 25–40 kGy for BPCs and fluid transfer assemblies produced in Logan, Utah, US, and Cramlington, UK; and 27.5–45 kGy in Millersburg, Pennsylvania, US and Matamoros, Mexico, by external contractors in the US and Europe.

Quality control and assurance

To help ensure that BPC systems conform to the quality standards expected in the bioprocess industry, BPC systems are in compliance with cGMP (21 CFR Part 820) and ISO 9001:2000 from the receipt of components to the release of the final product.

Our production control processes help ensure complete lot traceability for each batch. The process control document becomes the stepwise manufacturing record that physically accompanies the lot through every step of the manufacturing process. At the end of the process, the production record is reviewed by the quality assurance team for completeness and correctness prior to the release of the lot and issuance of the Certificate of Analysis (CoA).

Component incoming inspection

Component type	Inspection
Film	• Contamination • Gels or carbons • Width and gusset dimensions • Film thickness • Tensile strength and elongation—to ASTM D882 • Chemical—using FTIR spectroscopy to help ensure consistency and reliability
Ports, fittings, and tubing	• Appearance and visual inspection • Dimensions
Chambers	• Appearance • Seam and port seal strength • Dimensions • Leak and burst testing

Final BPC product inspection

Test	Details	
100% visual inspection on a light table	• Correctness • Completeness • Particulate dust cover polyethylene bags	• Defects and damage • Correct packaging
Hydro burst test	Performed according to a statistical process control plan. The container is steadily inflated until there is a breach of integrity.	

Lot release and Certificates of Analysis

Lot release	Certificates of Analysis
• Bill of materials • Certificate of irradiation • Production quality inspections • Production integrity testing • Labels • Deviations • CoA	• Product name • Part number • Lot number • Expiration date • Irradiation dose • Confirmation USP and EP testing of film • Product integrity testing when applicable • Statements on endotoxin content, particles, and sterility when possible

Quality control and assurance

Validation

A BPC validation master plan has been developed for all Thermo Scientific BPC products in compliance with the concepts of cGMP for medical devices. Product validations are designed to demonstrate compliance with release criteria and product claims.

Process validation evaluates manufacturing conditions as well as product cleanliness and consistency. Process qualification is performed when a new product or change in a manufacturing process is introduced. This consists of a production build and validation testing to verify that the product meets the specification acceptance criteria.

Endotoxins and particulates

Process validations and monitoring have been established for endotoxins and particulates for the manufacture of BPC systems. Particulate samples from the fluid path of a worst-case BPC assembly are tested according to USP 788: Light Obscuration Particle Count Test, and endotoxin testing is performed to USP 85 in conjunction with bioburden testing.

EMA/410/01 rev. 3 compliance

Compile vendor certificates of origin on each catalog component.

These certifications provide information as to whether a given component is of animal origin, and may certify whether the component is derived from animals. Supplier statements may contain information on the species, tissue, and country of origin of any animal-derived substance along with supplier information on purification or manufacturing steps that would help reduce risk of adventitious animal-origin agents.

Thermo Scientific™ single-use products for bioproduction have BSE-TSE and EMA/410 information available for each product contact material in our catalog component library. Statements can be made available for each assembly upon request.

Film and BPC validation documentation

Complex BPCs forming the single-use part of systems such as the Thermo Scientific™ single-use bioreactors (S.U.B.s), single-use fermentors (S.U.F.s), and single-use mixers (S.U.M.s), as well as the plastic films used to construct our BPCs, are supported by a validation guide covering important information regarding their testing and design. The document is product-specific rather than lot-specific and is supplied in electronic format. It is organized into two sections:

- **Materials guide**—details of testing protocols and results obtained
- **Performance and functional testing**—an overview of engineering design, testing, and test results of individual components as well as of the complete assembly

BPC system hardware documentation

The hardware systems of the S.U.B., S.U.F., and S.U.M. are supplied with an equipment turnover package (ETP) in electronic format with key supporting information including top-level hardware drawings, component or instrument manuals, utility requirements, recommended maintenance, torque wrench operating instructions, a warranty statement, detailed electrical panel drawings, and electrical schematics. A premium ETP is also available on request for an additional fee and includes a factory acceptance test (FAT) checklist, a site acceptance test (SAT) protocol, and weld and passivation certificates.

BPC application solutions

Support operations	Applications	BPC product
Media or buffer preparation	• Powder delivery • Hydration in open-top vessel • Hydration in closed system	• Thermo Scientific™ Powdertainer™ BPC systems • Tank liners with outer support containers • Thermo Scientific™ HyPerforma™ and imPULSE™ Single-Use Mixers (S.U.M.s)
Filtration	• Filtration of media and buffers	• BPC assembly or manifold/transfer assembly including a filter option
Mixing	• Mixing of media or buffers, bulk drug substances, and bulk drug products	• HyPerforma and imPULSE S.U.M.s
Harvest	• Collection and storage of harvest from a bioreactor or fermentor	• Catalog top- and bottom-drain BPCs from 50 L to 2,000 L with outer support containers • Custom BPCs • Fluid transfer assemblies (standard and custom) • Harvest BPCs for adherent cell lines
Bulk storage	• Storage of media, buffers, and intermediates	• Catalog BPCs from 50 mL to 3,000 L and outer support containers (custom BPCs also available)
Waste collection	• Non-aseptic collection of waste liquid	• Tank liners, catalog BPCs, or custom BPCs
Sampling	• Collection of sample volumes from bioreactors, mixers, and storage containers	• Labtainer BPCs from 50 mL to 50 L • Custom manifolds and transfer assemblies
Shipping	• Shipping of bulk liquids, buffers, process liquids, and intermediates between facilities • Bulk solutions or suspensions requiring mixing after shipping	• Top- and bottom-drain BPCs up to 3,000 L with shipping configurations up to 1,000 L
Separation	• Feeding and receiving liquid from the separation system	• Catalog top- and bottom-drain BPCs from 50 L to 2,000 L with outer support containers • Custom BPCs with and without transfer assemblies
Purification	• Feeding buffers to the purification system • Fraction collection and storage	• Catalog top- and bottom-drain BPCs from 50 L to 2,000 L with outer support containers • Catalog Labtainer systems from 50 mL to 50 L • Custom BPCs with and without transfer assemblies and/or manifolds
Filling	• Bulk reservoir for filling systems	• Catalog top- and bottom-drain BPCs from 50 L to 2,000 L with outer support containers • Transfer assemblies to transfer liquid from reservoir to filling system

Thermo Scientific films

Thermo Scientific BPCs are built with a range of films to meet your single-use bioprocessing needs, whether upstream for cell culture and fermentation, or downstream for sophisticated applications, or simply as holding and transfer systems in your cGMP bioprocessing facilities.

Films engineered for the full range of bioprocessing applications

Thermo Scientific™ films are engineered to meet the most demanding requirements of your processes.

- Thermo Scientific™ Aegis™5-14 film is our newest and best polyethylene (PE) film. This film is a single-web, five-layer film produced in a cGMP facility—the outer layer is a polyester elastomer coextruded with an EVOH barrier layer and a low-density polyethylene product contact layer with greatly reduced additive levels
- Thermo Scientific™ CX5-14 film has the same construction as Aegis5-14 film, and is one of the most widely used PE films in the industry, proven over 10 years
- Thermo Scientific™ ASI™ 26/77 polyethylene (PE) is a dual-web, multilayer film that is produced in a cGMP facility and used for general applications
- Thermo Scientific™ ASI™ 28 film is robust, four-layer, ethylene vinyl acetate (EVA) coextruded film produced in a cGMP facility—this film provides an excellent, highly durable moisture and oxygen barrier
- Thermo Scientific™ CX3-9 film is a three-layer, 9 mil cast film, which is used primarily for open-top tank liners, Powdertainer systems, and S.U.F. condenser BPCs
- Thermo Scientific™ ASI™ 26 film is a single-web, 5 mil cast film, which is also used primarily for open-top tank liners

Labtainer Pro BioProcess Containers

As technology and innovation advance within the bioproduction industry, single-use technologies have also made considerable progress in the drug and vaccine manufacturing space. Some of the well-established and known advantages of single-use technologies are lowered costs, reduced contamination risks, decreased facility footprint, increased flexibility, and production throughput efficiency with less clean-up, all resulting in quicker turnaround and increased production capabilities. The innovative concept of the Thermo Scientific™ Labtainer™ Pro BioProcess Container (BPC) provides improved flexibility and assurance—without compromise.

Key advantages

Bioproduction requirements differ depending on the applications and processes used within a workflow. Products selected should complement workflow requirements. The Labtainer Pro BPC was developed in response to a variety of bioproduction workflow needs. The 2D style of the Labtainer Pro BPC provides improved ease of use, high reliability, and assured quality in sizes ranging from 50 mL to 20 L.

Applications

- Bioreactor feed and harvest
- Buffer and media storage; intermediate product hold and storage
- Bulk product storage prior to filling
- Chromatography feed
- Fraction collection
- Product sampling and transport

Key benefits

- Consistent contact materials in all BPCs of sizes from 50 mL to 2,000 L
- Film robustness for a reliable and durable product
- Improved handling for better ergonomics
- Optimized drainage
- Wider range of port sizing: 1/8–1/2 in. to eliminate the need for setup and step-down connections, resulting in fewer connections and better, less turbulent flow
- High level of assurance with 100% helium testing, automated manufacturing, and lot-based endotoxin and particulate testing
- No sharps or tools required for packaging removal, eliminating the risk of damage from unpacking tools
- Reduction in packaging material, creating a more environmentally friendly product

BioTitan Retention Device—360° of universal retention

The Thermo Scientific™ BioTitan™ Retention Device is now available on Labtainer Pro BPCs. It was designed to provide the best method for retaining flexible tubing on a barbed fitting. What makes the BioTitan Retention Device superior to other technologies is the high performance combined with universal fit. Regardless of materials, the connection geometry of the BioTitan device is designed to provide confidence in your connection.

Product features

Reliability

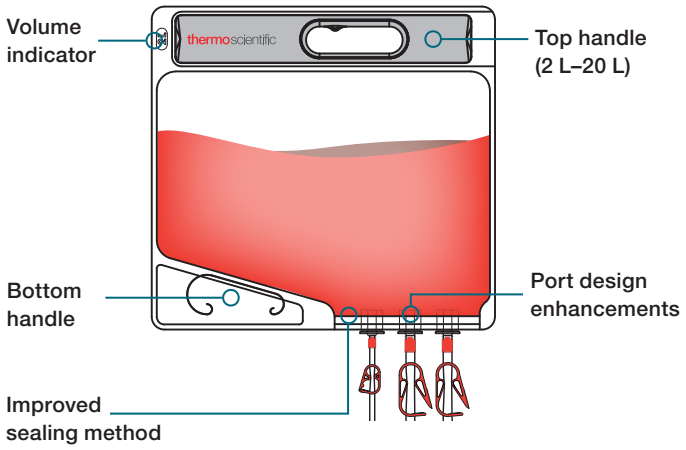
- **Now manufactured with the BioTitan Retention Device**—designed to provide superior universal retention that minimizes the risk of leaks and failures at the connection point
- **Enhanced port design and customization**—2-, 3-, and 4-port configurations available without the need for excess ports in the chamber
- **Improved sealing method**—impulse heat sealing for port insertion utilizing Labtainer Automated Manufacturing (LAM) technology
- **100% helium integrity testing**—helps ensure that our best product is delivered to the customer

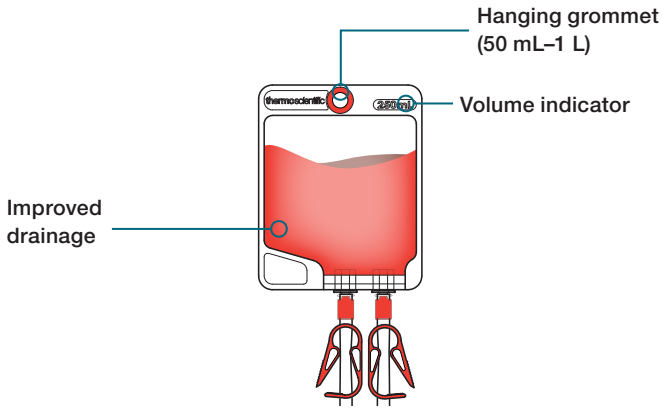
Quality

- **Upgraded packaging**—easy-peel tape on the shipping box and an easy-open polyethylene (PE) outer bag
- **Waste management**—cardboard reduction up to 25%
- **Improved outer polyethylene bag**—manufactured in a controlled environment, resulting in cleaner packaging with less risk of particulates
- **Lot-based testing**—implementation of lot-based bacterial endotoxin (BET) testing and particulate testing of Labtainer Pro BPC products to USP <788> and USP <85> standards

Ease of use

- **Enhanced ergonomics**—improved handle features with the addition of a lower handle on the 2, 5, 10, and 20 L BPCs
- **Optimized drainage**—chamber design, port location, and low-profile port design minimize liquid holdup



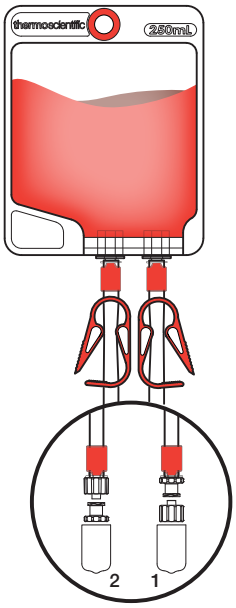


Labtainer Pro BPC chamber specifications and options.

Size	Chamber dimensions (W x L)	Total surface area	Porting range options	Handling options
50 mL	15.0 x 11.7 cm (5.9 x 4.6 in.)	28.6 sq. in.	2-port	Hanging grommet
100 mL	15.0 x 14.2 cm (5.9 x 5.6 in.)	40.1 sq. in.	2-port	Hanging grommet
250 mL	15.0 x 18.8 cm (5.9 x 7.4 in.)	59.9 sq. in.	2-port	Hanging grommet
500 mL	18.5 x 23.6 cm (7.3 x 9.3 in.)	102.3 sq. in.	2- or 3-port	Hanging grommet
1,000 mL	18.5 x 30.0 cm (7.3 x 11.8 in.)	136.8 sq. in.	2- or 3-port	Hanging grommet
2 L	34.3 x 32.5 cm (13.5 x 12.8 in.)	232.2 sq. in.	2-, 3-, or 4-port	Upper reinforced hanging handle
5 L	34.3 x 40.9 cm (13.5 x 16.1 in.)	318.7 sq. in.	2-, 3-, or 4-port	Upper reinforced hanging handle
10 L	34.3 x 64.3 cm (13.5 x 25.3 in.)	550.5 sq. in.	2-, 3-, or 4-port	Upper and lower reinforced hanging handles
15 L	44.7 x 56.6 cm (17.6 x 22.3 in.)	695.6 sq. in.	2-, 3-, or 4-port	Upper and lower reinforced hanging handles
20 L	45.0 x 69.3 cm (17.7 x 27.3 in.)	777.4 sq. in.	2-, 3-, or 4-port	Upper and lower reinforced hanging handles

Labtainer Pro BPCs with BioTitan Retention Device

2 ports

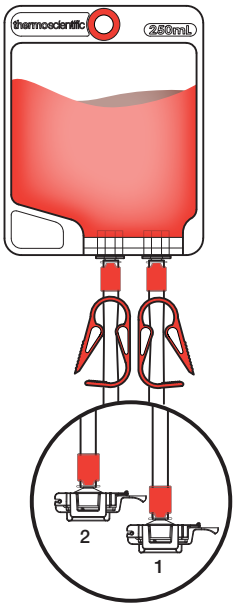


Line 1
Luer lock body with plug
Tubing: thermoplastic elastomers (TPE), length: 30.5 cm (12 in.)
ID x wall x OD: 0.32 x 0.16 x 0.64 cm (1/8 x 1/16 x 1/4 in.)

Line 2
Luer lock insert with cap
Tubing: TPE, length: 30.5 cm (12 in.)
ID x wall x OD: 0.32 x 0.16 x 0.64 cm (1/8 x 1/16 x 1/4 in.)

Size	Cat. No.	
	Aegis5-14	CX5-14
50 mL	PL30014.11	PL30001.11
100 mL	PL30014.12	PL30001.12
250 mL	PL30014.13	PL30001.13

2 ports

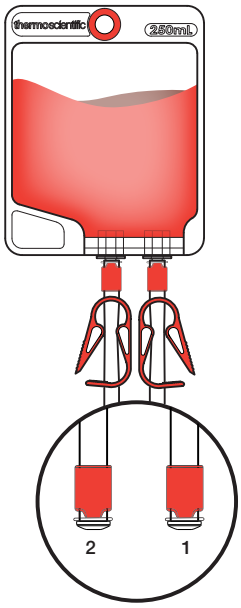


Line 1
CPC™ AseptiQuik™ G Connector
Tubing: TPE, length: 30.5 cm (12 in.)
ID x wall x OD: 0.64 x 0.24 x 1.12 cm (1/4 x 3/32 x 7/16 in.)

Line 2
AseptiQuik G Connector
Tubing: TPE, length: 30.5 cm (12 in.)
ID x wall x OD: 0.64 x 0.24 x 1.12 cm (1/4 x 3/32 x 7/16 in.)

Size	Cat. No.	
	Aegis5-14	CX5-14
50 mL	PL30015.11	PL30002.11
100 mL	PL30015.12	PL30002.12
250 mL	PL30015.13	PL30002.13

2 ports



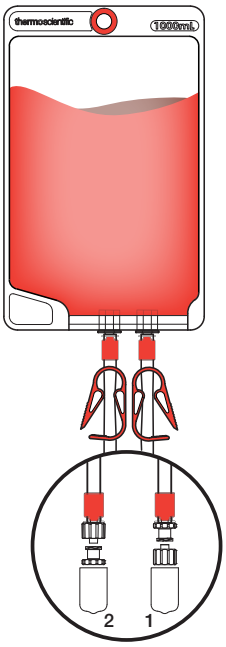
Line 1
Plug
Tubing: TPE, length: 30.5 cm (12 in.)
ID x wall x OD: 0.32 x 0.16 x 0.64 cm (1/8 x 1/16 x 1/4 in.)

Line 2
Plug
Tubing: TPE, length: 30.5 cm (12 in.)
ID x wall x OD: 0.32 x 0.16 x 0.64 cm (1/8 x 1/16 x 1/4 in.)

Size	Cat. No.	
	Aegis5-14	CX5-14
50 mL	PL30016.11	PL30003.11
100 mL	PL30016.12	PL30003.12
250 mL	PL30016.13	PL30003.13

Labtainer Pro BPCs with BioTitan Retention Device

2 ports

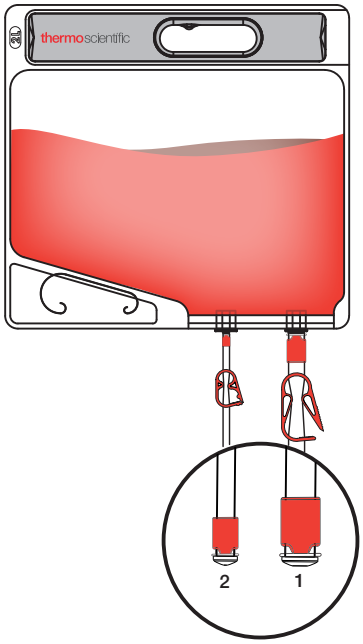


Line 1
Luer lock insert with cap
Tubing: TPE, length: 30.5 cm (12 in.)
ID x wall x OD: 0.64 x 0.24 x 1.12 cm
(1/4 x 3/32 x 7/16 in.)

Line 2
Luer lock body with plug
Tubing: TPE, length: 46 cm (18 in.)
ID x wall x OD: 0.64 x 0.24 x 1.12 cm
(1/4 x 3/32 x 7/16 in.)

Size	Cat. No.	
	Aegis5-14	CX5-14
500 mL	PL30018.11	PL30005.11
1 L	PL30018.12	PL30005.12

2 ports

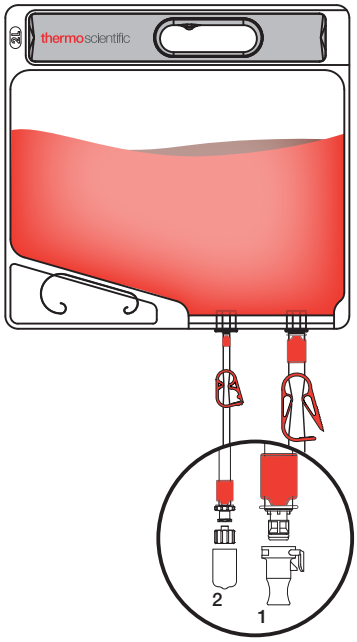


Line 1
Plug
Tubing: TPE, length: 45.7 cm (18 in.)
ID x wall x OD: 0.95 x 0.32 x 1.59 cm
(3/8 x 1/8 x 5/8 in.)

Line 2
Plug
Tubing: TPE, length: 45.7 cm (18 in.)
ID x wall x OD: 0.32 x 0.16 x 0.64 cm
(1/8 x 1/16 x 1/4 in.)

Size	Cat. No.	
	Aegis5-14	CX5-14
500 mL	PL30017.11	PL30004.11
1 L	PL30017.12	PL30004.12
2 L	PL30021.11	PL30008.11
5 L	PL30021.12	PL30008.12
10 L	PL30021.13	PL30008.13
15 L	PL30021.15	PL30008.15
20 L	PL30021.14	PL30008.14

2 ports



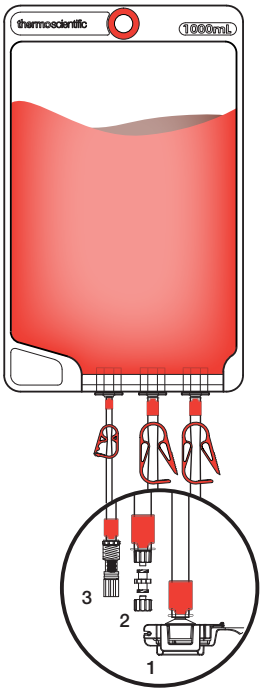
Line 1
MPC insert
Tubing: TPE, length: 15.24 cm (6 in.)
ID x wall x OD: 0.95x0.32x1.59cm
(3/8 x 1/8 x 5/8 in.)

Line 2
Luer lock insert with cap
Tubing: TPE, length: 15.24 cm (6 in.)
ID x wall x OD: 0.32 x 0.16 x 0.64 cm
(1/8 x 1/16 x 1/4 in.)

Size	Cat. No.	
	Aegis5-14	CX5-14
2 L	PL30022.11	PL30009.11
5 L	PL30022.12	PL30009.12
10 L	PL30022.13	PL30009.13
15 L	PL30022.15	PL30009.15
20 L	PL30022.14	PL30009.14

Labtainer Pro BPCs with BioTitan Retention Device

3 ports



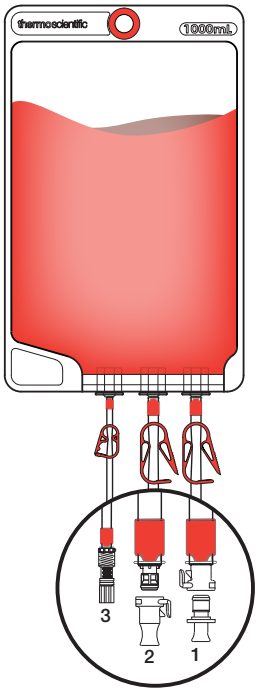
Line 1
AseptiQuik G Connector
Tubing: TPE, length: 30.5 cm (12 in.)
ID x wall x OD: 0.64 x 0.24 x 1.12 cm
(1/4 x 3/32 x 7/16 in.)

Line 2
Luer lock body and insert
Tubing: TPE, length: 30.5 cm (12 in.)
ID x wall x OD: 0.64 x 0.24 x 1.12 cm
(1/4 x 3/32 x 7/16 in.)

Line 3
Luer lock body with needleless Luer insert
Tubing: TPE, length: 10.2 cm (4 in.)
ID x wall x OD: 0.32 x 0.16 x 0.64 cm
(1/8 x 1/16 x 1/4 in.)

Size	Cat. No.	
	Aegis5-14	CX5-14
500 mL	PL30019.11	PL30006.11
1 L	PL30019.12	PL30006.12

3 ports



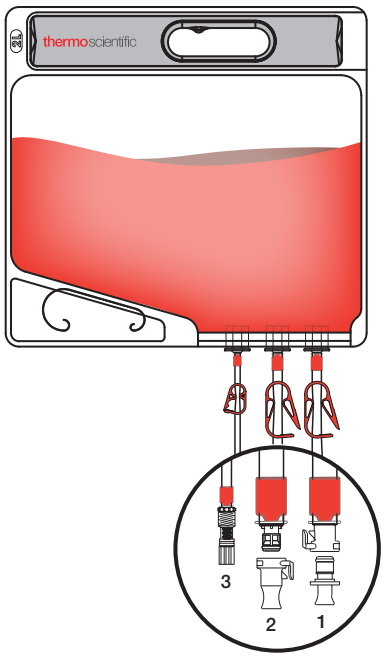
Line 1
MPC body
Tubing: TPE, length: 30.5 cm (12 in.)
ID x wall x OD: 0.95 x 0.32 x 1.59 cm
(3/8 x 1/8 x 5/8 in.)

Line 2
MPC insert
Tubing: TPE, length: 30.5 cm (12 in.)
ID x wall x OD: 0.95 x 0.32 x 1.59 cm
(3/8 x 1/8 x 5/8 in.)

Line 3
Luer lock body with needleless Luer insert
Tubing: TPE, length: 10.2 cm (4 in.)
ID x wall x OD: 0.32 x 0.16 x 0.64 cm
(1/8 x 1/16 x 1/4 in.)

Size	Cat. No.	
	Aegis5-14	CX5-14
500 mL	PL30020.11	PL30007.11
1 L	PL30020.12	PL30007.12

3 ports



Line 1
MPC body
Tubing: TPE, length: 30.5 cm (12 in.)
ID x wall x OD: 0.95 x 0.32 x 1.59 cm
(3/8 x 1/8 x 5/8 in.)

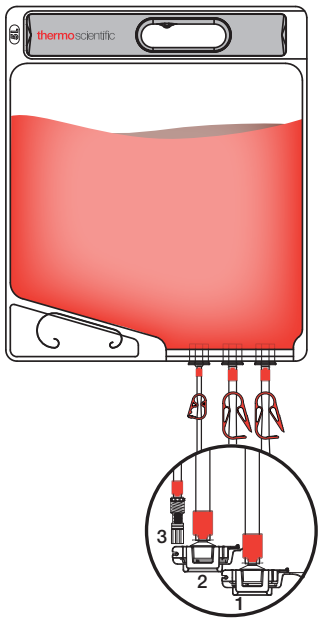
Line 2
MPC insert
Tubing: TPE, length: 30.5 cm (12 in.)
ID x wall x OD: 0.95 x 0.32 x 1.59 cm
(3/8 x 1/8 x 5/8 in.)

Line 3
Luer lock body with needleless Luer insert
Tubing: TPE, length: 10.2 cm (4 in.)
ID x wall x OD: 0.32 x 0.16 x 0.64 cm
(1/8 x 1/16 x 1/4 in.)

Size	Cat. No.	
	Aegis5-14	CX5-14
2 L	PL30023.11	PL30010.11
5 L	PL30023.12	PL30010.12
10 L	PL30023.13	PL30010.13
15 L	PL30023.15	PL30010.15
20 L	PL30023.14	PL30010.14

Labtainer Pro BPCs with BioTitan Retention Device

3 ports



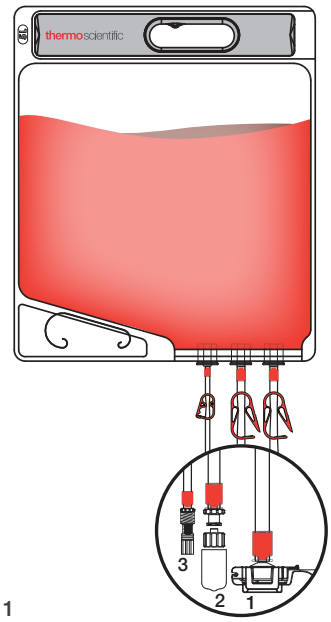
Line 1
AseptiQuik G Connector
Tubing: TPE, length: 61 cm (24 in.)
ID x wall x OD: 0.95 x 0.32 x 1.59 cm
(3/8 x 1/8 x 5/8 in.)

Line 2
AseptiQuik Connector G
Tubing: TPE, length: 61 cm (24 in.)
IDxwallxOD:0.95x0.32x1.59cm
(3/8 x 1/8 x 5/8 in.)

Line 3
Luer lock body with needleless Luer insert
Tubing: TPE, length: 10.2 cm (4 in.)
ID x wall x OD: 0.32 x 0.16 x 0.64 cm
(1/8 x 1/16 x 1/4 in.)

Size	Cat. No.	
	Aegis5-14	CX5-14
2 L	PL30024.11	PL30011.11
5 L	PL30024.12	PL30011.12
10 L	PL30024.13	PL30011.13
15 L	PL30024.15	PL30011.15
20 L	PL30024.14	PL30011.14

3 ports



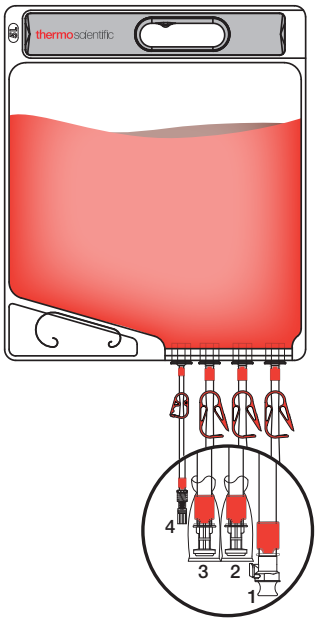
Line 1
AseptiQuik G Connector
Tubing: TPE, length: 30.5 cm (12 in.)
ID x wall x OD: 0.64 x 0.24 x 1.12 cm
(1/4 x 3/32 x 7/16 in.)

Line 2
Luer lock body with plug
Tubing: TPE, length: 30.5 cm (12 in.)
ID x wall x OD: 0.64 x 0.24 x 1.12 cm
(1/4 x 3/32 x 7/16 in.)

Line 3
Luer lock body with needleless Luer insert
Tubing: TPE, length: 10.2 cm (4 in.)
ID x wall x OD: 0.32 x 0.16 x 0.64 cm
(1/8 x 1/16 x 1/4 in.)

Size	Cat. No.	
	Aegis5-14	CX5-14
2 L	PL30025.11	PL30012.11
5 L	PL30025.12	PL30012.12
10 L	PL30025.13	PL30012.13
15 L	PL30025.15	PL30012.15
20 L	PL30025.14	PL30012.14

4 ports



Line 1
MPX body
Tubing: TPE, length: 61 cm (24 in.)
ID x wall x OD: 1.27 x 0.32 x 1.91 cm
(1/2 x 1/8 x 3/4 in.)

Line 2
3/4 in. triclamp with gasket, sterilized
Tubing: TPE, length: 61 cm (24 in.)
ID x wall x OD: 0.95 x 0.32 x 1.59 cm
(3/8 x 1/8 x 5/8 in.)

Line 3
3/4 in. triclamp with gasket, sterilized
Tubing: TPE, length: 61 cm (24 in.)
ID x wall x OD: 0.95 x 0.32 x 1.59 cm
(3/8 x 1/8 x 5/8 in.)

Line 4
Luer lock body with needleless Luer insert
Tubing: TPE, length: 46 cm (18 in.)
ID x wall x OD: 0.32 x 0.16 x 0.64 cm
(1/8 x 1/16 x 1/4 in.)

Size	Cat. No.	
	Aegis5-14	CX5-14
2 L	PL30026.11	PL30013.11
5 L	PL30026.12	PL30013.12
10 L	PL30026.13	PL30013.13
15 L	PL30026.15	PL30013.15
20 L	PL30026.14	PL30013.14

2D Labtainer BPC systems

Thermo Scientific™ Labtainer™ BioProcess Containers (BPCs) effectively address small-volume liquid handling needs. They range in size from 50 mL to 50 L, with a variety of standard configurations to meet most application needs. These Labtainer BPCs are space-saving, ergonomic, and constructed of Aegis5-14, CX5-14, ASI 26/77, and ASI 28 films. Product configurations cover a range of industry-standard connection systems; handling systems are available for transport and storage.

Standard products

Standard Labtainer BPCs are stocked for immediate delivery and are fully supported by our process and product validation program. (For more information on our validation program, please refer to our film validation guides. Additionally, standard Labtainer BPCs have validated liquid shipping configurations.)

Standard Labtainer BPCs made with Aegis5-14 film are available with the BioTitan Retention Device. This universal tubing-retention solution was designed to provide the best method for retaining flexible tubing on a barbed fitting and helps eliminate the risk of leaks and failures of the tubing connection point.

Standard configurations can be customized for optimal fit, form, and function using the one of the industry's largest libraries of qualified components to address process-specific applications.

Whether in a standard or customized configuration, Labtainer BPCs are ideal for:

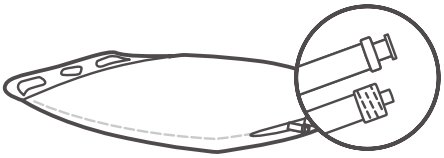
- Dispensing, packaging, and storing cell culture media, buffers, and process liquids
- Delivery of cell culture media or process liquids to small-scale bioproduction systems
- Bioreactor and fermentation feed, sampling, and harvest
- Chromatography feed and fraction collection
- Storage and transport of bulk intermediate products, process intermediates, vaccine conjugates, and other biological products

Now with ultimate connection protection

thermofisher.com/biotitan

2D Labtainer BPCs constructed with Aegis5-14 and CX5-14 films

2 ports
Pack of 10

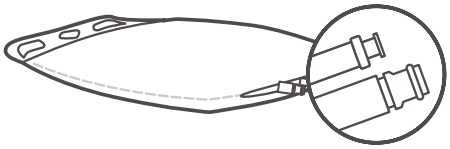


Line 1
Luer lock body connection, polypropylene
Tubing: TPE; 8 cm (3 in.) length
ID x OD: 6.35 x 10.92 mm (0.25 x 0.43 in.)

Line 2
Luer lock insert connection, polypropylene
Tubing: TPE; 8 cm (3 in.) length
ID x OD: 6.35 x 10.92 mm (0.25 x 0.43 in.)

Size	Dimensions (L x W)	Cat. No.
50 mL	11.7 x 13.7 cm (4.6 x 5.4 in.)	**Aegis5-14** SH31292.11
		CX5-14 SH31254.11
100 mL	14.7 x 14.2 cm (5.8 x 5.6 in.)	**Aegis5-14** SH31292.12
		CX5-14 SH31254.12
250 mL	19.1 x 15.0 cm (7.5 x 5.9 in.)	**Aegis5-14** SH31292.13
		CX5-14 SH31254.13
500 mL	26.4 x 17.3 cm (10.4 x 6.8 in.)	**Aegis5-14** SH31292.14
		CX5-14 SH31254.14
1 L	29.7 x 20.1 cm (11.7 x 7.9 in.)	**Aegis5-14** SH31292.15
		CX5-14 SH31254.15
2 L	34.8 x 24.4 cm (13.7 x 9.6 in.)	**Aegis5-14** SH31292.16
		CX5-14 SH31254.16

2 ports
Pack of 10

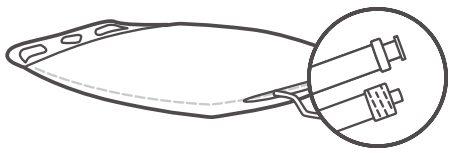


Line 1
Luer lock body connection, polypropylene
Tubing: TPE; 30 cm (12 in.) length
ID x OD: 3.18 x 6.35 mm (0.125 x 0.25 in.)

Line 2
MPC insert, polycarbonate
Tubing: TPE; 8 cm (3 in.) length
ID x OD: 3.18 x 6.35 mm (0.125 x 0.25 in.)

Size	Dimensions (L x W)	Cat. No.
50 mL	11.7 x 13.7 cm (4.6 x 5.4 in.)	**Aegis5-14** SH31293.11
		CX5-14 SH31256.11
100 mL	14.7 x 14.2 cm (5.8 x 5.6 in.)	**Aegis5-14** SH31293.12
		CX5-14 SH31256.12
250 mL	19.1 x 15.0 cm (7.5 x 5.9 in.)	**Aegis5-14** SH31293.13
		CX5-14 SH31256.13
500 mL	26.4 x 17.3 cm (10.4 x 6.8 in.)	**Aegis5-14** SH31293.14
		CX5-14 SH31256.14
1 L	29.7 x 20.1 cm (11.7 x 7.9 in.)	**Aegis5-14** SH31293.15
		CX5-14 SH31256.15
2 L	34.8 x 24.4 cm (13.7 x 9.6 in.)	**Aegis5-14** SH31293.16
		CX5-14 SH31256.16

2 ports
Pack of 10



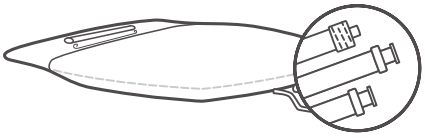
Line 1
Luer lock body connection, polypropylene
Tubing: TPE; 30 cm (12 in.) length
ID x OD: 3.18 x 6.35 mm (0.125 x 0.25 in.)

Line 2
Luer lock insert connection, polypropylene
Tubing: TPE; 30 cm (12 in.) length
ID x OD: 3.18 x 6.35 mm (0.125 x 0.25 in.)

Size	Dimensions (L x W)	Cat. No.
50 mL	11.7 x 13.7 cm (4.6 x 5.4 in.)	**Aegis5-14** SH31265.11
		CX5-14 SH31255.11
100 mL	14.7 x 14.2 cm (5.8 x 5.6 in.)	**Aegis5-14** SH31265.12
		CX5-14 SH31255.12
250 mL	19.1 x 15.0 cm (7.5 x 5.9 in.)	**Aegis5-14** SH31265.13
		CX5-14 SH31255.13
500 mL	26.4 x 17.3 cm (10.4 x 6.8 in.)	**Aegis5-14** SH31265.14
		CX5-14 SH31255.14
1 L	29.7 x 20.1 cm (11.7 x 7.9 in.)	**Aegis5-14** SH31265.15
		CX5-14 SH31255.15
2 L	34.8 x 24.4 cm (13.7 x 9.6 in.)	**Aegis5-14** SH31265.16
		CX5-14 SH31255.16

2D Labtainer BPCs constructed with Aegis5-14 and CX5-14 films

3 ports
Single pack



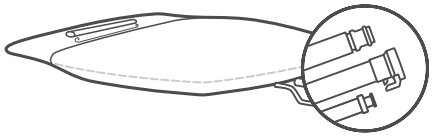
Line 1
Luer lock insert connection, polypropylene
Tubing: TPE; 30 cm (12 in.) length
ID x OD: 6.35 x 9.7 mm (0.25 x 0.38 in.)

Line 2
Luer lock body connection, polypropylene
Tubing: TPE; 30 cm (12 in.) length
ID x OD: 6.35 x 9.7 mm (0.25 x 0.38 in.)

Line 3
Luer lock body connection, polypropylene
Tubing: TPE; 30 cm (12 in.) length
ID x OD: 3.18 x 6.35 mm (0.125 x 0.25 in.)

Size	Dimensions (L x W)	Cat. No.
2 L	29.5 x 31.0 cm (11.6 x 12.2 in.)	**Aegis5-14** SH31294.05 **CX5-14** SH31261.05
5 L	37.6 x 33.3 cm (14.8 x 13.1 in.)	**Aegis5-14** SH31294.01 **CX5-14** SH31261.01
10 L	62.2 x 30.0 cm (24.5 x 11.8 in.)	**Aegis5-14** SH31294.02 **CX5-14** SH31261.02
20 L	65.5 x 43.2 cm (25.8 x 17 in.)	**Aegis5-14** SH31294.03 **CX5-14** SH31261.03
50 L	82.6 x 58.4 cm (32.5 x 23.0 in.)	**Aegis5-14** SH31294.04 **CX5-14** SH31261.04

3 ports
Single pack



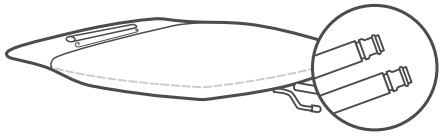
Line 1
MPC insert, polycarbonate
Tubing: TPE; 61 cm (24 in.) length
ID x OD: 9.7 x 15.9 mm (0.38 x 0.63 in.)

Line 2
MPC body, polycarbonate
Tubing: TPE; 61 cm (24 in.) length
ID x OD: 9.7 x 15.9 mm (0.38 x 0.63 in.)

Line 3
Luer lock body connection, polypropylene
Tubing: TPE; 61 cm (24 in.) length
ID x OD: 3.18 x 6.35 mm (0.125 x 0.25 in.)

Size	Dimensions (L x W)	Cat. No.
2 L	29.5 x 31.0 cm (11.6 x 12.2 in.)	**Aegis5-14** SH31266.05 **CX5-14** SH31260.05
5 L	37.6 x 33.3 cm (14.8 x 13.1 in.)	**Aegis5-14** SH31266.01 **CX5-14** SH31260.01
10 L	62.2 x 30.0 cm (24.5 x 11.8 in.)	**Aegis5-14** SH31266.02 **CX5-14** SH31260.02
20 L	65.5 x 43.2 cm (25.8 x 17.0 in.)	**Aegis5-14** SH31266.03 **CX5-14** SH31260.03
50 L	82.6 x 58.4 cm (32.5 x 23.0 in.)	**Aegis5-14** SH31266.04 **CX5-14** SH31260.04

3 ports
Single pack



Line 1
MPC insert, polycarbonate
Tubing: TPE; 30 cm (12 in.) length
ID x OD: 9.7 x 12.7 mm (0.38 x 0.5 in.)

Line 2
MPC insert, polycarbonate
Tubing: TPE; 30 cm (12 in.) length
ID x OD: 9.7 x 12.7 mm (0.38 x 0.5 in.)

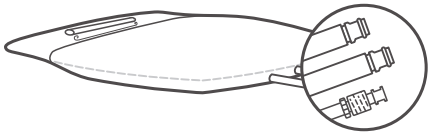
Line 3
End plug, polypropylene
Tubing: TPE; 8 cm (3 in.) length
ID x OD: 6.35 x 10.92 mm (0.25 x 0.43 in.)

Size	Dimensions (L x W)	Cat. No.
2 L	29.5 x 31.0 cm (11.6 x 12.2 in.)	**Aegis5-14** SH31295.05 **CX5-14** SH31262.05
5 L	37.6 x 33.3 cm (14.8 x 13.1 in.)	**Aegis5-14** SH31295.01 **CX5-14** SH31262.01
10 L	62.2 x 30.0 cm (24.5 x 11.8 in.)	**Aegis5-14** SH31295.02 **CX5-14** SH31262.02
20 L	65.5 x 43.2 cm (25.8 x 17.0 in.)	**Aegis5-14** SH31295.03 **CX5-14** SH31262.03
50 L	82.6 x 58.4 cm (32.5 x 23.0 in.)	**Aegis5-14** SH31295.04 **CX5-14** SH31262.04

2D Labtainer BPCs constructed with Aegis5-14 and CX5-14 films

3 ports

Single pack—edge ports



Line 1
MPC insert, polycarbonate
Tubing: TPE; 8 cm (3 in.) length
ID x OD: 9.6 x 12.7 mm (0.378 x 0.50 in.)

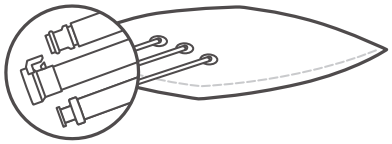
Line 2
MPC insert, polycarbonate
Tubing: TPE; 8 cm (3 in.) length
ID x OD: 9.6 x 12.7 mm (0.378 x 0.50 in.)

Line 3
Injection port
Tubing: TPE; 8 cm (3 in.) length
ID x OD: 6.35 x 9.53 mm (0.25 x 0.375 in.)

Size	Dimensions (L x W)	Cat. No.
2 L	29.5 x 31.0 cm (11.6 x 12.2 in.)	**Aegis5-14** SH31296.05
		CX5-14 SH31259.05
5 L	37.6 x 33.3 cm (14.8 x 13.1 in.)	**Aegis5-14** SH31296.01
		CX5-14 SH31259.01
10 L	62.2 x 30.0 cm (24.5 x 11.8 in.)	**Aegis5-14** SH31296.02
		CX5-14 SH31259.02
20 L	65.5 x 43.2 cm (25.8 x 17.0 in.)	**Aegis5-14** SH31296.03
		CX5-14 SH31259.03
50 L	82.6 x 58.4 cm (32.5 x 23.0 in.)	**Aegis5-14** SH31296.04
		CX5-14 SH31259.04

3 ports

Single pack—pillow design with panel ports



Line 1
MPC insert, polycarbonate
Tubing: TPE; 46 cm (18 in.) length
ID x OD: 3.18 x 6.35 mm (0.125 x 0.25 in.)

Line 2
MPC body, polypropylene
Tubing: TPE; 61 cm (24 in.) length
ID x OD: 9.53 x 15.875 mm (0.375 x 0.625 in.)

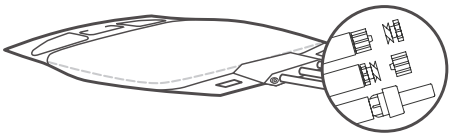
Line 3
Luer lock body connection, polypropylene
Tubing: TPE; 61 cm (24 in.) length
ID x OD: 9.53 x 15.875 mm (0.375 x 0.625 in.)

Size	Outer container Cat. No.	Cat. No.
50 L	SV50076.02	**CX5-14** SH31257.01
100 L	SV50076.03	**CX5-14** SH31257.02
200 L	SV50076.04	**CX5-14** SH31257.03

Note: Aegis5-14 film equivalents for this product are available as custom configurations.

2D Labtainer BPCs constructed with ASI 26/77 film

3 ports



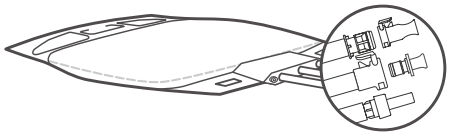
Line 1
Luer lock insert connection with 4.8 mm (3/16 in.) barb, cap, and slide clamp
Tubing: EVA + TPE

Line 2
Luer lock body connection with 4.8 mm (3/16 in.) barb, cap, and slide clamp
Tubing: EVA + TPE

Line 3
Tubing: EVA, injection port

Size	Dimensions (L x W)	Cat. No.
100 mL	16.0 x 10.0 cm (6.3 x 3.9 in.)	**ASI 26/77** SS00024-I
250 mL	16.0 x 13.5 cm (6.3 x 5.3 in.)	**ASI 26/77** SS00025-I
500 mL	25.8 x 13.7 cm (10.2 x 5.4 in.)	**ASI 26/77** SS00026-I
1 L	32.0 x 14.7 cm (12.6 x 5.77 in.)	**ASI 26/77** SS00027-I
2 L	30.5 x 15.2 cm (12 x 6 in.)	**ASI 26/77** SS00028-I

3 ports



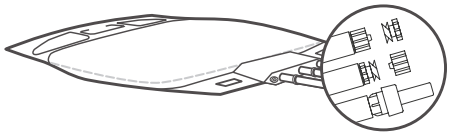
Line 1
MPC insert with 6.4 mm (1/4 in.) barb, cap, and slide clamp
Tubing: EVA + TPE

Line 2
MPC body with 6.4 mm (1/4 in.) barb, plug, and slide clamp
Tubing: EVA + TPE

Line 3
Tubing: EVA, injection port

Size	Dimensions (L x W)	Cat. No.
100 mL	16.0 x 10.0 cm (6.3 x 3.9 in.)	**ASI 26/77** SS00034-I
250 mL	16.0 x 13.5 cm (6.3 x 5.3 in.)	**ASI 26/77** SS00035-I
500 mL	25.8 x 13.7 cm (10.2 x 5.4 in.)	**ASI 26/77** SS00036-I
1 L	32.0 x 14.7 cm (12.6 x 5.77 in.)	**ASI 26/77** SS00037-I
2 L	30.5 x 15.2 cm (12.0 x 6.0 in.)	**ASI 26/77** SS00038-I

3 ports



Line 1
Luer lock insert connection with 4.1 mm (5/32 in.) barb, cap, slide clamp, and 4.8 x 4.1 mm (3/16 x 5/32 in.) reducer
Tubing: TPE, length: 30 cm (12 in.)
ID x OD: 3.2 x 6.4 mm (0.13 x 0.25 in.)

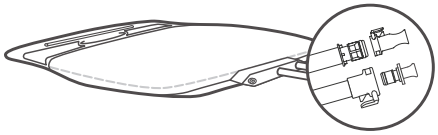
Line 2
Luer lock body connection with 4.1 mm (5/32 in.) barb, plug, slide clamp, and 4.8 x 4.1 mm (3/16 x 5/32 in.) reducer
Tubing: TPE, length: 30 cm (12 in.)
ID x OD: 3.2 x 6.4 mm (0.13 x 0.25 in.)

Line 3
Tubing: EVA, injection port

Size	Dimensions (L x W)	Cat. No.
100 mL	16.0 x 10.0 cm (6.3 x 3.9 in.)	**ASI 26/77** SS00029-I
250 mL	16.0 x 13.5 cm (6.3 x 5.3 in.)	**ASI 26/77** SS00030-I
500 mL	25.8 x 13.7 cm (10.2 x 5.4 in.)	**ASI 26/77** SS00031-I
1 L	32.0 x 14.7 cm (12.6 x 5.77 in.)	**ASI 26/77** SS00032-I
2 L	30.5 x 15.2 cm (12.0 x 6.0 in.)	**ASI 26/77** SS00033-I

2D Labtainer BPCs constructed with ASI 26/77 film

3 ports



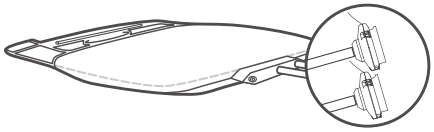
Line 1
MPC insert with 9.7 mm (3/8 in.) barb, cap, and pinch clamp
Tubing: TPE, length: 30 cm (12 in.)
ID x OD: 9.7 x 16 mm (0.38 x 0.63 in.)

Line 2
MPC body with 9.7 mm (3/8 in.) barb, plug, and pinch clamp
Tubing: TPE, length: 30 cm (12 in.)
ID x OD: 9.7 x 16 mm (0.38 x 0.63 in.)

Line 3
Injection port

Size	Dimensions (L x W)	Cat. No.
5 L	32.0 x 31.6 cm (12.6 x 12.4 in.)	**ASI 26/77** SS00039-I
10 L	32.0 x 56.5 cm (12.6 x 22.3 in.)	**ASI 26/77** SS00040-I
20 L	42.6 x 63.5 cm (16.8 x 25.0 in.)	**ASI 26/77** SS00041-I

3 ports



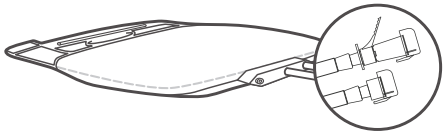
Line 1
ReadyMate connector and pinch clamp
Tubing: TPE, length: 30 cm (12 in.)
ID x OD: 9.7 x 16 mm (0.38 x 0.63 in.)

Line 2
ReadyMate connector and pinch clamp
Tubing: TPE, length: 30 cm (12 in.)
ID x OD: 9.7 x 16 mm (0.38 x 0.63 in.)

Line 3
Injection port

Size	Dimensions (L x W)	Cat. No.
5 L	32.0 x 31.6 cm (12.6 x 12.4 in.)	**ASI 26/77** SS00106-I
10 L	32.0 x 56.5 cm (12.6 x 22.3 in.)	**ASI 26/77** SS00107-I
20 L	42.6 x 63.5 cm (16.8 x 25.0 in.)	**ASI 26/77** SS00108-I

3 ports



Line 1
Kleenpak™ insert and pinch clamp
Tubing: TPE, length: 30 cm (12 in.)
ID x OD: 9.7 x 16 mm (0.38 x 0.63 in.)

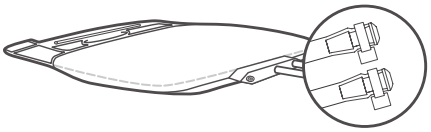
Line 2
Kleenpak body and pinch clamp
Tubing: TPE, length: 30 cm (12 in.)
ID x OD: 9.7 x 16 mm (0.38 x 0.63 in.)

Line 3
Injection port

Size	Dimensions (L x W)	Cat. No.
5 L	32.0 x 31.6 cm (12.6 x 12.4 in.)	**ASI 26/77** SS00112-I
10 L	32.0 x 56.5 cm (12.6 x 22.3 in.)	**ASI 26/77** SS00113-I
20 L	42.6 x 63.5 cm (16.8 x 25.0 in.)	**ASI 26/77** SS00114-I

2D Labtainer BPCs constructed with ASI 26/77 film

3 ports



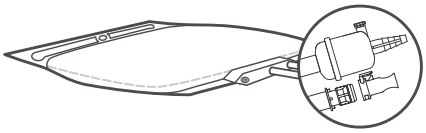
Line 1
Plug 6.4 mm (1/4 in.) and pinch clamp
Tubing: TPE, length: 30 cm (12 in.)
ID x OD: 6.4 x 9.7 mm (0.25 x 0.38 in.)

Line 2
Plug 6.4 mm (1/4 in.) and pinch clamp
Tubing: TPE, length: 30 cm (12 in.)
ID x OD: 6.4 x 9.7 mm (0.25 x 0.38 in.)

Line 3
Injection port

Size	Dimensions (L x W)	Cat. No.
5 L	32.0 x 31.6 cm (12.6 x 12.4 in.)	**ASI 26/77** SS00118-I
10 L	32.0 x 56.5 cm (12.6 x 22.3 in.)	**ASI 26/77** SS00119-I
20 L	42.6 x 63.5 cm (16.8 x 25 in.)	**ASI 26/77** SS00120-I

3 ports



Line 1
0.2 µm PES membrane capsule filter and pinch clamp
Tubing: TPE, length: 30 cm (12 in.)
ID x OD: 9.7 x 16 mm (0.38 x 0.63 in.)

Line 2
MPC insert with cap and pinch clamp
Tubing: TPE, length: 91.4 cm (36 in.)
ID x OD: 9.7 x 16 mm (0.38 x 0.63 in.)

Line 3
Injection port

Size	Dimensions (L x W)	Cat. No.
1 L	24.9 x 19.8 cm (9.8 x 7.8 in.)	**ASI 26/77** SS00158-I
5 L	32.0 x 31.6 cm (12.6 x 12.4 in.)	**ASI 26/77** SS00159-I
10 L	32.0 x 56.5 cm (12.6 x 22.3 in.)	**ASI 26/77** SS00160-I
20 L	42.6 x 63.5 cm (16.8 x 25 in.)	**ASI 26/77** SS00161-I

Labtainer BPC tote

Storage and handling is simplified with the Labtainer BPC tote. Designed to protect single-use BPCs, the tote can be used in a wide range of applications. The tote was designed with a sloped bottom for improved draining, and for the larger scale, a kickstand is included to aid in draining. There is also a tubing access window, allowing for access while stacked or in light sensitive applications the lid can remain on. The tote can be used with both the Labtainer Pro and Labtainer BPCs.

- Compatible with 2D BPCs up to 20 L in volume
- Made of durable high-grade HDPE material
- Nesting capability for easy storage
- Stackable for better utilization of space
- Provides UV protection to BPCs

Labtainer BPC tote specifications

Description	Cat. No.
Small tote with lid (5 L and smaller)	SV30200.01
Large tote with lid and kickstand (10 L and 20 L)	SV30200.02

Harvestainer Microcarrier Separation System

The Thermo Scientific™ Harvestainer™ BPC System is a closed, single-use microcarrier separation system that is designed to enable separation of microcarrier beads from cell culture supernatant in a single step.

Unique design features

The Harvestainer system helps to increase product yields compared to traditional methods, while reducing clean-in-place (CIP) and steam-in-place (SIP) requirements.

The Harvestainer system is designed for both small- and large-scale microcarrier separation applications. The 3 L and 12 L Harvestainer systems are ideal for separating small volumes (12 L or less) of cell culture supernatant and microcarrier beads. These systems are designed around our 2D pillow-style BPC in a preassembled tray, designed for secondary containment and optimal supernatant recovery.

The large-scale Harvestainer system features a dual-chamber system that comprises a 200 L 3D Productainer BPC with either one or two interior 25 L microbarrier 2D Labtainer BPCs. These unique design features help enable the separation of cell culture supernatant and microcarrier beads.

Now with ultimate connection protection

thermofisher.com/biotitan

Harvestainer BPCs

Description	Size	Inner BPC	Cat. No.
Harvestainer system with BioTitan Retention Device	3 L	NA	SH31268.01
Harvestainer system with BioTitan Retention Device	12 L	NA	SH31268.02
Top-drain Harvestainer system with single 25 L microbarrier BPC with BioTitan Retention Device	25 L	1 x 25 L	SH31267.01
Top-drain Harvestainer system with dual 25 L microbarrier BPC with BioTitan Retention Device	50 L	2 x 25 L	SH31267.02

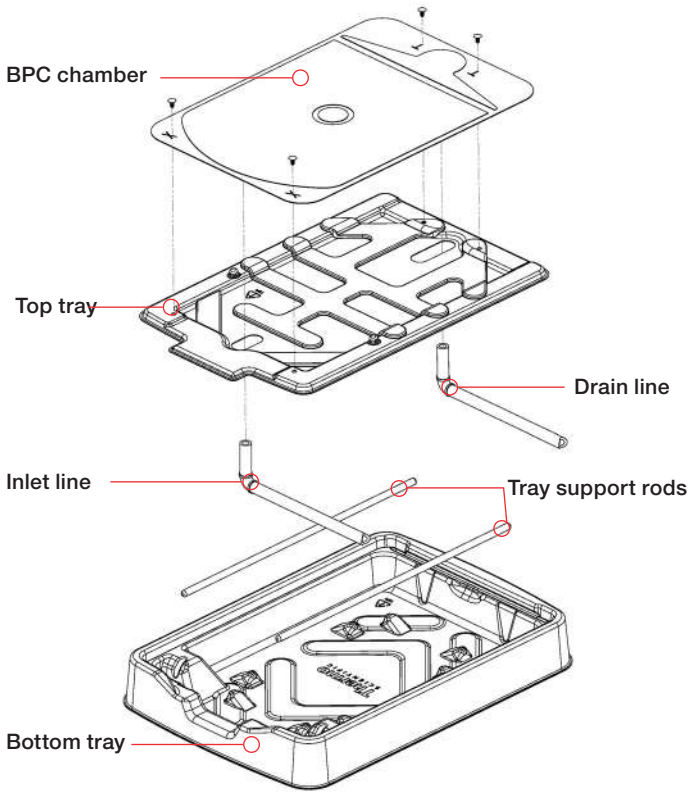
Accessories

Description	Cat. No.
Polyethylene drum, bottom-drain, with lid, latches, and cap plug	SV50517.07
Drum dolly, 61.91 x 18.09 cm (24.38 x 7.13 in.) (D x H)	SV50029.03

2D Harvestainer design features

Use the 3 L or 12 L Harvestainer system when separating small volumes of cell culture supernatant and microcarrier beads (12 L or less). This system consists of a preassembled 2D BPC and tray, which acts as a secondary containment device. The Harvestainer system consists of four parts:

- **BioProcess Container (BPC)**—composed of three layers; the outer two layers are constructed of Thermo Scientific CX5-14 film with the inner layer constructed of polyester mesh
- **Inlet and drain lines**—for easy system connection, these lines are made of weldable 3/8 x 5/8 in. TPE tubing with a 3/8 in. quick-connect body on the inlet line and a 3/8 in. quick-connect insert on the drain line
- **Support rods**—the Harvestainer system support rods are designed to angle the Harvestainer BPC for optimal drainage and improve recovery rates
- **Top support tray and bottom containment tray**—the support trays are made of polyethylene terephthalate (PETG) material; the top tray is designed to support the Harvestainer BPC while the bottom tray acts as a storage tray, bottom support, and secondary containment



12 L Harvestainer tray and BPC system

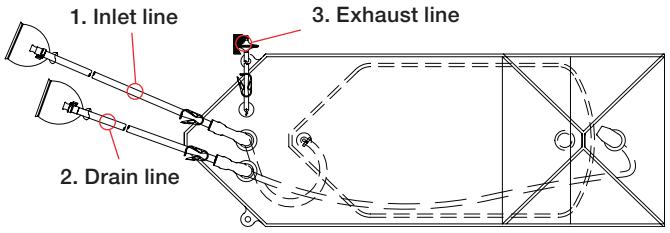
3 L and 12 L Harvestainer BPC specifications

Description	3 L	12 L
Tray dimensions (H x W x D)	7.11 x 36.6 x 55.25 cm (2.8 x 15.2 x 21.75 in.)	7.59 x 57.09 x 81.28 cm (2.99 x 22.48 x 32.0 in.)
Chamber dimensions (H x W)	46.94 x 28.96 cm (18.5 x 11.4 in.)	70.36 x 50.04 cm (27.7 x 19.7 in.)
Chamber weight	0.11 kg (0.25 lb)	0.25 kg (0.56 lb)
Chamber surface area	2,303 cm^2 (357 $in.^2$)	5,909 cm^2 (916 $in.^2$)
Mesh surface area	1,000 cm^2 (155 $in.^2$)	2,710 cm^2 (420 $in.^2$)
Tray material thickness	0.18 cm (0.050 in.)	0.18 cm (0.050 in.)
Tray material type	PETG	
BPC inlet line	TPE tubing; ID x OD: 9.53 x 16.0 mm (3/8 x 5/8 in.) Polycarbonate quick connect 9.53 mm (3/8 in.) MPC body and MPC cap	
BPC drain line	TPE tubing; ID x OD: 9.53 x 16.0 mm (3/8 x 5/8 in.) Polycarbonate quick connect 9.53 mm (3/8 in.) MPC insert and MPC plug	

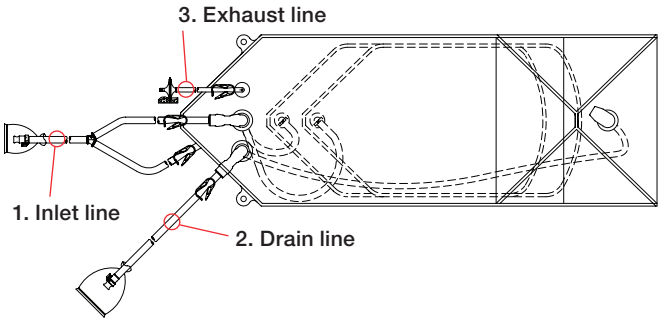
3D Harvestainer design features

For large-scale applications, when more than 12 L of microcarrier beads require separation, the 25 L or 50 L Harvestainer system is recommended for in-process microcarrier separation workflows. This system consists of a 200 L 3D BPC with inner 25 L microbarrier 2D BPCs that fits into a conical bottom drum as the secondary containment device. The BPC features a dip tube design for better drainage and minimal manipulation.

- **BioProcess Container (BPC)**—a dual-chamber system composed of a 200 L 3D BPC with either one or two interior 25 L microbarrier 2D Labtainer BPCs
- **Microcarrier inlet line**—for easy system connection, the inlet line is made of weldable 1/2 x 5/8 in. TPE tubing with a 1/2 in. quick-connect insert on the inlet line
- **Drain line**—for easy system connection, the drain line is made of weldable 1/2 x 5/8 in. TPE tubing with a 1/2 in. quick-connect body; the dip tube drain line is connected to a dipwell and placed in a conical bottom drum to allow for optimal drainage and secondary containment with the top drain feature
- **Exhaust line**—exhaust line to be used for inflation of the Harvestainer BPC for setup and allows for air displacement during the separation process



25 L Harvestainer system (1 x 25 L microbarrier BPC)



50 L Harvestainer system (2 x 25 L microbarrier BPCs)

25 L and 50 L Harvestainer BPC specifications

Description	25 L	50 L
Chamber dimensions (H x W x D)	137.16 x 48.26 x 48.26 cm (54 x 19 x 19 in.)	137.16 x 48.26 x 48.26 cm (54 x 19 x 19 in.)
Chamber weight	2.36 kg (5.2 lb)	2.90 kg (6.4 lb)
Chamber surface area	20,923 cm^2 (3,243 $in.^2$)	20,923 cm^2 (3,243 $in.^2$)
Mesh surface area	30,000 cm^2 (465 $in.^2$)	60,000 cm^2 (930 $in.^2$)
Line descriptions	**Line set**	**End treatment**
1. Inlet line	TPE tubing ID x OD: 12.7 x 16.0 mm (1/2 x 5/8 in.)	Polycarbonate quick connect 12.7 mm (1/2 in.) MPX insert Polycarbonate quick connect MPX cap
2. Drain line	TPE tubing ID x OD: 12.7 x 16.0 mm (1/2 x 5/8 in.)	Polycarbonate quick connect 12.7 mm (1/2 in.) MPX body Polycarbonate quick connect MPX plug
3. Exhaust line	TPE tubing ID x OD: 6.35 x 9.7 mm (1/4 x 3/8 in.)	Pall™ gas filter

Powdertainer BPC systems

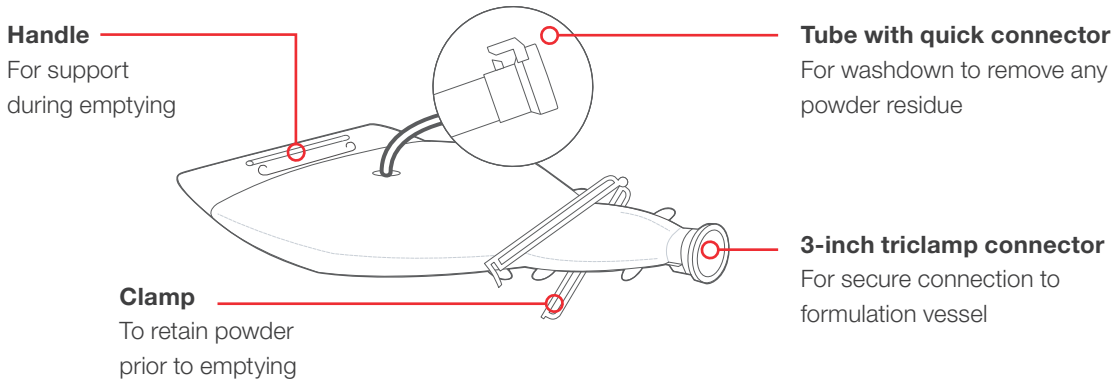
Thermo Scientific™ Powdertainer™ BPCs are specifically designed for powder containment and discharge applications, and maintain a closed system for maximum recovery of powder while minimizing the risk of cross-contamination.

Key features

- Designed for powder containment and powder hydration applications
- Employ a closed system to help minimize dust contaminant and cross-contamination risk
- Three-inch triclamp port designed for secure connection to, and easy integration with, hydration vessels
- Suspensor handle for support during discharge and neck clamp to retain powder prior to discharge
- Two models, including one with a washdown line to remove residual powder, enabling maximal recovery
- Three sizes for process flexibility: 1, 5, and 25 kg
- Constructed from CX3-9 film
- Stainless steel filling stand to facilitate the powder discharge process

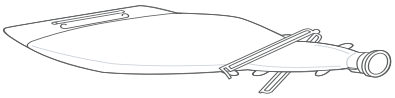
Applications

- Storage and delivery of powder culture media and buffers
- Storage and dispensing of preweighed chemicals or other process powders



Powdertainer BPC system specifications and accessories

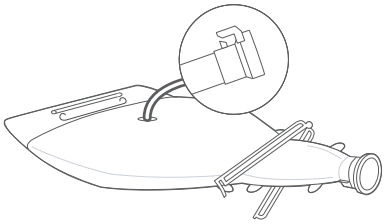
Powdertainer II BPC, 1 port



Washdown line
NA
Powder port
7.6 cm (3 in.) triclamp with integrated seal

Size	Dimensions (L x W)	Cat. No.
1 kg	42.7 x 31.8 cm (16.8 x 12.5 in.)	**CX3-9** SH30864.01
5 kg	56.1 x 36.3 cm (22.1 x 14.3 in.)	**CX3-9** SH30864.02
25 kg	83.3 x 59.2 cm (32.8 x 23.3 in.)	**CX3-9** SH30864.03

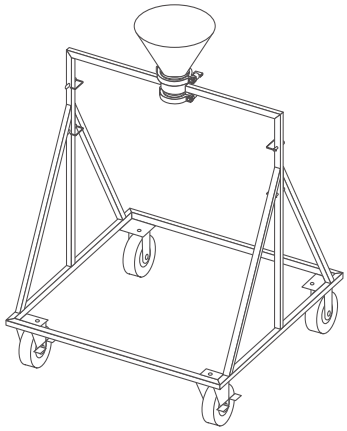
Powdertainer II BPC, 2 ports



Washdown line
MPX insert, polycarbonate
Tubing: silicone, length: 20.3 cm (8 in.)
ID x OD: 12.7 x 19.1 mm (0.5 x 0.75 in.)
Powder port
7.6 cm (3 in.) triclamp with integrated seal

Size	Dimensions (L x W)	Cat. No.
1 kg	42.7 x 31.8 cm (16.8 x 12.5 in.)	**CX3-9** SH30737.01
5 kg	56.1 x 36.3 cm (22.1 x 14.3 in.)	**CX3-9** SH30737.02
25 kg	83.3 x 59.2 cm (32.8 x 23.3 in.)	**CX3-9** SH30737.03

Filling stand



Materials
Stainless steel with casters

Dimensions (L x W)	Cat. No.
91.4 x 91.4 x 34.6 cm (36 x 36 x 53 in.)	SV50143.01
91.4 x 91.4 x 114.3 cm (36 x 36 x 45 in.)	SV50143.02

CentriPAK BPC

Next-generation centrifuge container providing a single-use, sterilized, closed system for cell culture separations

As technology and innovation advance within the bioprocessing industry, single-use technologies (SUT) have also made considerable progress in centrifugation. Some of the well-established and known advantages of SUT are lowered costs, reduced contamination risks, decreased facility footprint, increased flexibility, and production throughput efficiency with less cleanup—all resulting in quicker turnaround and increased production capabilities. The innovative concept of the Thermo Scientific™ CentriPAK™ BioProcess Container (BPC) provides a single-use, sterilized, closed system for centrifugation.

Key features

- All CentriPAK BPCs are produced in state-of-the-art facilities with current good manufacturing practices (cGMPs) and assembled in an ISO 7 clean room
- CentriPAK BPCs are prepared for multicontainer manifold configurations (total capacity: 10.2 L)
- CentriPAK BPCs are sterilized and single-use and provide a closed system for cell culture separations in the bioprocessing industry
- BPCs are specially designed to work in gentle high-throughput centrifuge applications (up to 4,700 rpm/7,187 x *g*)

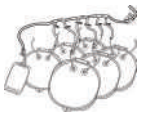
Applications

These systems are commonly used for centrifugation of cell culture (mammalian cells) or fermentation broth (bacterial, yeast) in the bioprocessing industry.

The CentriPAK BPC is intended for centrifugation in biotechnological applications. It is specifically designed for use in combination with Thermo Scientific™ Sorvall™ BIOS 16 Centrifuges with 6 x 2,000 mL and 8 x 2,000 mL swinging bucket rotors.

CentriPAK BPCs are not approved or intended for, and should not be used for, medical, clinical, surgical, or other patient-oriented applications.

CentriPAK BPC

	Description	Quantity	Cat. No.
	6 x 1.7 L harvest manifold (sterilized) for sterilized connect, quick connect, or weld-on 3/8 in. ID, (1/8 in. wall) connection	Set of 2	75003880

CentriPAK Labtainer BPC

	Description	Quantity	Cat. No.
	10 L Labtainer BPC for collection of supernatant	Set of 2	75003883

Three60 Single-Use Sampling System

The simple design behind the Thermo Scientific™ Three60™ Sampling System provides the ability to take a representative product sample with minimal effort. For a small-volume liquid transfer, CIP or SIP process is utilized to prepare the tank. The pre-irradiated BPCs and assemblies help ensure an integral fluid path while the quick-turn valve and pinch-and-cut disconnectors maintain liquid transfer and removal from BPCs.

With the Three60 single-use sampling system, there are no parts to be assembled, disassembled, or cleaned, and unlike other single-use sampling systems, no additional tools are needed. The entire set can be easily applied to any fluid holding vessel or transfer line and four samples can be removed in only a few minutes.

The Three60 system is compatible with a variety of vessels through a sanitary connector; no expensive hardware is needed. Each Three60 system package contains a valve and four assemblies with pinch-and-cut disconnectors.

Kit to tank

The Three60 system is pre-irradiated and assembled into a one-piece kit. Simply remove the device from the kit and apply to the vessel.

- **Quick-turn valve with the Three60 system**—the face of the Three60 valve can be sterilized with the tank through traditional CIP/SIP processes. The valve has four assemblies. This helps keep the product and technician contamination-free.
- **Pinch-and-cut disconnectors**—allow the technician to quickly separate the sample and eliminate the need for tools or tube sealing.
- **Injection ports**—Luer lock injection site; extract through either the septum or twist-off Luer lock to pour.
- **Pre-irradiated BPC assemblies**—provided with pre-irradiated BPC assemblies in sizes ranging from 50 mL to 2 L produced using the ASI 77 film.

Ordering information

Description	Cat. No.
Three60 sampling BPCs	
50 mL, 2-port sampling BPC	B100563-I
100 mL, 2-port sampling BPC	B100564-I
250 mL, 2-port sampling BPC	B100565-I
500 mL, 2-port sampling BPC	B100566-I
1 L, 2-port sampling BPC	B100567-I
Three60 sampling systems	
50 mL Three60 sampling system with 4 x 2-port sampling BPCs	4MP0034
100 mL Three60 sampling system with 4 x 2-port sampling BPCs	4MP0035
250 mL Three60 sampling system with 4 x 2-port sampling BPCs	4MP0036
500 mL Three60 sampling system with 4 x 2-port sampling BPCs	4MP0037
1 L Three60 sampling system with 4 x 2-port sampling BPCs	4MP0038
2 L Three60 sampling system with 4 x 2-port sampling BPCs	4MP0039

3D Productainer BPC systems

Thermo Scientific™ 3D Productainer™ BioProcess Container (BPC) systems are used for harvesting, handling, and storing large volumes of sterile process liquids such as buffers, culture media, and bulk drug precursors and substances. These Productainer systems are available in a range of sizes and configurations and can also be customized for optimal performance. Our process capabilities enable many choices for the number, size, and location of ports. Chambers are available with options for both top and bottom drains.

Key features

- Use these systems to eliminate post-use cleaning steps required with reusable containers, and to reduce cross-contamination risks
- All Productainer BPC systems are constructed in ISO 7–certified clean rooms under cGMP conditions
- All 3D Productainer BPCs are designed to fit the full range of support containers—both square and cylindrical, from 50 L to 10,000 L, which includes Thermo Scientific™ high-density polyethylene drums, Thermo Scientific™ Smartainer™ stainless steel systems, and square plastic totes

Applications

Whether you choose a standard or customized configuration, Productainer BPC systems are ideal for:

- Hydration and filtration of process buffers, liquids, and culture media
- Chromatography feed and fraction collection
- Storage and transport of bulk drug products and bulk drug precursors
- Harvesting from and feeding into bioreactors and fermentors
- Dispensing, packaging, and storage of cell culture media, buffers, and process liquids

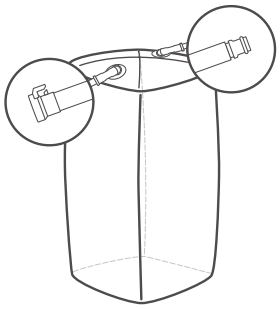
3D Productainer BPCs are available with the BioTitan Retention Device. This universal tubing-retention solution was designed to provide the best method for retaining flexible tubing on a barbed fitting and helps eliminate the risk of leaks and failures of the tubing connection point.

Now with ultimate connection protection

thermofisher.com/biotitan

3D Productainer BPCs—square tube with top port dispense

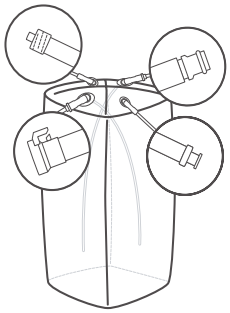
2 ports



Line 1
MPC insert, polycarbonate
Tubing: TPE, length: 45.7 cm (18 in.)
ID x OD: 9.7 x 15.9 mm (0.38 x 0.63 in.)

Line 2
MPC body, polycarbonate
Tubing: TPE, length: 45.7 cm (18 in.)
ID x OD: 9.7 x 15.9 mm (0.38 x 0.63 in.)

4 ports



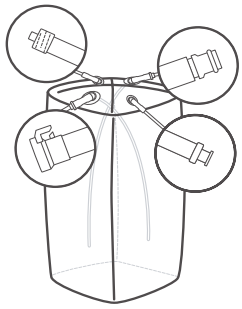
Line 1
MPC insert, polycarbonate
Tubing: TPE, length: 121.9 cm (48 in.)
ID x OD: 9.7 x 15.9 mm (0.38 x 0.63 in.), with dip tube length dependent on BPC size

Line 2
Luer lock insert connection, polypropylene
Tubing: TPE, length: 121.9 cm (48 in.)
ID x OD: 6.4 x 9.7 mm (0.25 x 0.38 in.)

Line 3
Luer lock body connection, polypropylene
Tubing: TPE, length: 121.9 cm (48 in.)
ID x OD: 6.4 x 9.7 mm (0.25 x 0.38 in.)

Line 4
MPC body, polycarbonate
Tubing: TPE, length: 121.9 cm (48 in.)
ID x OD: 9.7 x 15.9 mm (0.38 in. x 0.63 in.), dip tube length: 30.5 cm (12 in.)

4 ports



Line 1
MPX insert, polycarbonate
Tubing: TPE, length: 121.9 cm (48 in.)
ID x OD: 9.7 x 15.9 mm (0.38 x 0.63 in.), with dip tube length dependent on BPC size

Line 2
Luer lock insert connection, polypropylene
Tubing: TPE, length: 121.9 cm (48 in.)
ID x OD: 9.7 x 15.9 mm (0.38 x 0.63 in.)

Line 3
Luer lock body connection, polypropylene
Tubing: TPE, length: 121.9 cm (48 in.)
ID x OD: 6.4 x 9.7 mm (0.25 x 0.38 in.)

Line 4
MPX body, polycarbonate
Tubing: TPE, length: 121.9 cm (48 in.)
ID x OD: 12.7 x 19.1 mm (0.5 x 0.75 in.), dip tube length: 30.5 cm (12 in.)

Size	Outer container Cat. No.	Cat. No.
50 L	SV50076.02	**Aegis5-14** SH31297.01
		CX5-14 SH31249.01
100 L	SV50076.03	**Aegis5-14** SH31297.02
		CX5-14 SH31249.02
200 L	SV50076.04	**Aegis5-14** SH31297.03
		CX5-14 SH31249.03

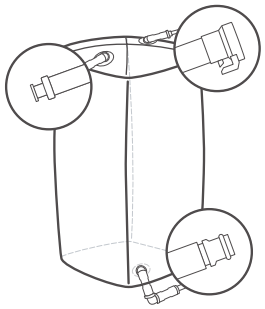
Size	Outer container Cat. No.	Cat. No.
50 L Dip tube: 38 cm (15 in.)	SV50076.02	**Aegis5-14** SH31298.01
		CX5-14 SH31251.01
100 L Dip tube: 71 cm (28 in.)	SV50076.03	**Aegis5-14** SH31298.02
		CX5-14 SH31251.02
200 L Dip tube: 81 cm (32 in.)	SV50076.04	**Aegis5-14** SH31298.03
		CX5-14 SH31251.03

Size	Outer container Cat. No.	Cat. No.
50 L Dip tube: 38 cm (15 in.)	SV50076.02	**Aegis5-14** SH31299.01
		CX5-14 SH31253.01
100 L Dip tube: 71 cm (28 in.)	SV50076.03	**Aegis5-14** SH31299.02
		CX5-14 SH31253.02
200 L Dip tube: 81 cm (32 in.)	SV50076.04	**Aegis5-14** SH31299.03
		CX5-14 SH31253.03

All dip tube lengths for the Cat. Nos. above are 9 cm (3.5 in.) or shorter.

3D Productainer BPCs—square tube with top and bottom port dispense

3 ports



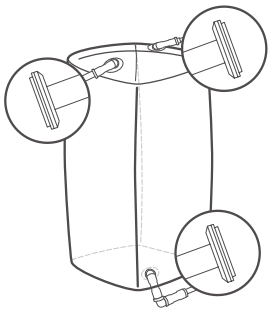
Line 1
MPX body, polycarbonate
Tubing: TPE, length: 45.7 cm (18 in.)
ID x OD: 12.7 x 19.1 mm (0.5 x 0.75 in.)

Line 2
Luer lock body connection, polypropylene
Tubing: TPE, length: 30.5 cm (12 in.)
ID x OD: 6.4 x 9.7 mm (0.25 x 0.38 in.)

Line 3
MPX insert, polycarbonate
Tubing: TPE, length: 121.9 cm (48 in.)
ID x OD: 12.7 x 19.1 mm (0.5 x 0.75 in.), bottom port

Size	Outer container Cat. No.	Cat. No.
50 L	SV50517.04	**Aegis5-14** SH31300.01
		CX5-14 SH31250.01
100 L	SV50517.05	**Aegis5-14** SH31300.02
		CX5-14 SH31250.02
200 L	SV50517.06	**Aegis5-14** SH31300.03
		CX5-14 SH31250.03

3 ports



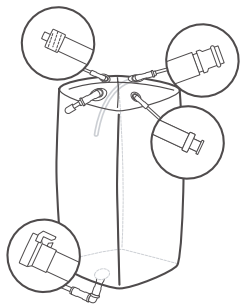
Line 1
19.1 mm (0.75 in.) triclamp, polyethylene
Tubing: TPE, length: 45.7 cm (18 in.)
ID x OD: 12.7 x 19.1 mm (0.5 x 0.75 in.)

Line 2
19.1 mm (0.75 in.) triclamp, polyethylene
Tubing: TPE, length: 45.7 cm (18 in.)
ID x OD: 12.7 x 19.1 mm (0.5 x 0.75 in.)

Line 3
19.1 mm (0.75 in.) triclamp, polyethylene
Tubing: TPE, length: 121.9 cm (48 in.)
ID x OD: 12.7 x 19.1 mm (0.5 x 0.75 in.)

Size	Outer container Cat. No.	Cat. No.
50 L	SV50517.04	**Aegis5-14** SH31301.01
		CX5-14 SH31258.01
100 L	SV50517.05	**Aegis5-14** SH31301.02
		CX5-14 SH31258.02
200 L	SV50517.06	**Aegis5-14** SH31301.03
		CX5-14 SH31258.03

5 ports



Line 1
MPC insert, polycarbonate
Tubing: TPE, length: 121.9 cm (48 in.) dip tube
ID x OD: 9.7 x 15.9 mm (0.38 x 0.63 in.), with dip tube length dependent on BPC size

Line 2
Luer lock insert connection, polypropylene
Tubing: TPE, length: 121.9 cm (48 in.)
ID x OD: 6.4 x 9.7 mm (0.25 x 0.38 in.)

Line 3
Luer lock body connection, polypropylene
Tubing: TPE, length: 121.9 cm (48 in.)
ID x OD: 6.4 x 9.7 mm (0.25 x 0.38 in.)

Line 4
Plugged, no tubing

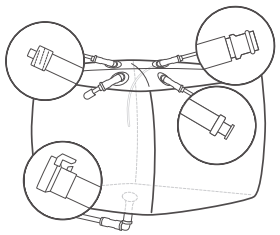
Line 5
MPC body, polycarbonate
Tubing: silicone, length: 121.9 cm (48 in.)
ID x OD: 9.7 x 15.9 mm (0.38 x 0.63 in.), bottom port

Size	Outer container Cat. No.	Cat. No.
50 L Dip tube: 30.5 cm (12.5 in.)	SV50517.04	**Aegis5-14** SH31302.01
		CX5-14 SH31252.01
100 L Dip tube: 30.5 cm (12.5 in.)	SV50517.05	**Aegis5-14** SH31302.02
		CX5-14 SH31252.02
200 L Dip tube: 81 cm (32 in.)	SV50517.06	**Aegis5-14** SH31302.03
		CX5-14 SH31252.03

3D Productainer BPCs—square tube with top and bottom port dispense

4–5 ports

Single pack



Line 1
MPC insert, polycarbonate
Tubing: TPE, length: 121.9 cm (48 in.)
ID x OD: 9.7 x 15.9 mm (0.38 x 0.63 in.),
dip tube length: 30.5 cm (12 in.)

Line 2 & 3
Luer lock insert connection, polypropylene
Tubing: TPE, length: 121.9 cm (48 in.)
ID x OD: 6.4 x 9.7 mm (0.25 x 0.38 in.)

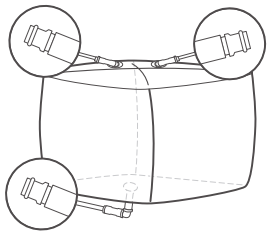
Line 4
Plugged, no tubing

Line 5
MPC body, polycarbonate
Tubing: platinum-cured silicone,
length: 121.9 cm (48 in.), ID x OD:
9.7 x 15.9 mm (0.38 x 0.63 in.), bottom port

Size	Outer container Cat. No.	Cat. No.
500 L	SV50160.02	**Aegis5-14** SH31303.04 **CX5-14** SH30652.04
1,000 L	SV50160.03	**Aegis5-14** SH31303.05 **CX5-14** SH30652.05
1,500 L	SV50160.04	**Aegis5-14** SH31303.06 **CX5-14** SH30652.06
2,000 L	SV50160.05	**Aegis5-14** SH31303.08 **CX5-14** SH30652.08

3 ports

Single pack



Line 1
MPX insert, polycarbonate
Tubing: platinum-cured silicone,
length: 51 cm (20 in.)
ID x OD: 12.7 x 19.1 mm (0.5 x 0.75 in.)

Line 2
MPX insert, polycarbonate
Tubing: platinum-cured silicone,
length: 51 cm (20 in.)
ID x OD: 12.7 x 19.1 mm (0.5 x 0.75 in.)

Line 3
MPX insert, polycarbonate
Tubing: platinum-cured silicone,
length: 51 cm (20 in.)
ID x OD: 12.7 x 19.1 mm (0.5 x 0.75 in.),
bottom port

Size	Outer container Cat. No.	Cat. No.
100 L	SV50160.01	**Aegis5-14** SH31304.01 **CX5-14** SH30717.01
200 L	SV50160.01	**Aegis5-14** SH31304.02 **CX5-14** SH30717.02
500 L	SV50160.02	**Aegis5-14** SH31305.03 **CX5-14** SH30717.03

Open-top tank liners

Key features

- Thermo Scientific™ tank liners are designed for use with commercially available overhead mixers (not supplied)
- Chambers are constructed from a variety of Thermo Scientific™ films, manufactured using animal origin–free components and optimized for Thermo Scientific™ catalog drums and Thermo Scientific™ Nalgene™ cylindrical tanks
  - CX3-9 film is a three-layer, 9 mil cast film with an outer layer constructed of polyester elastomer coextruded with a low-density polyethylene (LDPE) product contact layer
  - ASI 26 film is a single-web, 5 mil cast film made of highly flexible and stretchable material
- Removes the need for tank cleaning and helps reduce cycle times
- Top access only in unit volumes of 50, 100, 200, 300, and 500 L; top and bottom access in unit volumes of 50, 100, and 200 L for maximum functionality
- Supplied gamma-irradiated to minimize bioburden

Selecting tank liners and the correct outer support containers

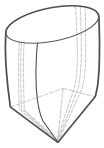
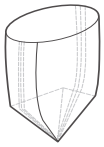
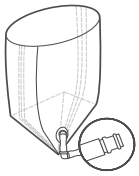
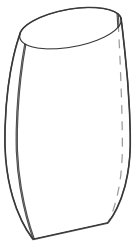
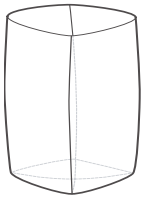
There are multiple design considerations, depending on your needs:

- Application—storage, mixing, or waste collection
- Batch size, filling, and emptying—determines the volume and need for bottom access port
- Characteristics of the process liquid

Associated applications

- Hydration of powdered media and buffers
- Pooling of nonsterile solutions and fluids

Open-top tank liner specifications

Description	Size	Outer container Cat. No.	Tank liner Cat. No.
Top-drain, for use with Thermo Scientific drums			
 0 ports	50 L	SV50076.02	**CX3-9** SH30647.01
	100 L	SV50076.03	**CX3-9** SH30647.02
	200 L	SV50076.04	**CX3-9** SH30647.03
Top-drain, for use with cylindrical tanks			
 0 ports	50 L	SV30111 11100-0015	**CX3-9** SH30647.04
	100 L	SV30112 11100-0030	**CX3-9** SH30647.05
	300 L	SV30114 11100-0080	**CX3-9** SH30647.06
	560 L	SV30116 11100-0150	**CX3-9** SH30647.07
Top- and bottom-drain			
 Line 1: MPX insert, polycarbonate TPE tubing, length: 182.9 cm (72 in.) ID x OD: 12.7 x 19.1 mm (0.5 x 0.75 in.)	50 L	SV50517.04	**Aegis5-14** SH31306.01
			CX3-9 SH30646.01
	100 L	SV50517.05	**Aegis5-14** SH31306.02
			CX3-9 SH30646.02
	200 L	SV50517.06	**Aegis5-14** SH31306.03
			CX3-9 SH30646.03
2D pillow-style			
 These 2D (pillow-style) tank liners are available as a simple and low-cost solution. A single BPC will accommodate a variety of tank sizes.	50 L	SV30111 11100-0015	**ASI 26** B100048-I
	130 L	SV30112 11100-0030	**ASI 26** B100038-I
	200 L	SV30113 11100-0055	**ASI 26** B100037-I
	340 L	SV30114 11100-0080	**ASI 26** B100049-I
	400 L	SV30115 11100-0100	**ASI 26** B100050-I
	560 L	SV30116 11100-0150	**ASI 26** B100051-I
3D pillow-style			
 The 3D liners are available and sized for specific totes. This seamless design offers a more streamlined fit, eliminating pooling areas or “pleats”.	50 L	SV30111 11100-0015	**ASI 26** B100364-I
	100 L	SV30112 11100-0030	**ASI 26** B100373-I
	200 L	SV30113 11100-0055	**ASI 26** B100363-I
	300 L	SV30114 11100-0080	**ASI 26** B101459-I
	560 L	SV30116 11100-0150	**ASI 26** B101460-I

Storage and transport solutions

Durable and built for performance

Our rigid support containers hold Thermo Scientific™ BioProcess Containers (BPCs) and tank liners for in-house harvest and storage, or transportation needs.

These reusable support containers accommodate a range of functionalities and chamber dimensions.

- **Plastic**—useful for in-house and transportation applications
  - – Top-drain only and top- and bottom-drain, high-density polyethylene (HDPE) cylindrical drums
  - – Square or rectangular polypropylene (PP) containers
  - – Regular and cylindrical HDPE, PP, linear low-density polyethylene (LLDPE) tanks
- **Stainless steel**—Thermo Scientific™ HyPerforma™ Smartainer™ 3.0 systems are used for in-house, large-volume liquid-handling operations and range from 200 to 3,000 L

Outer support containers fulfill two primary needs

- **In-process/internal unit operations**—we offer a range of products such as HyPerforma Smartainer 3.0 systems, Thermo Scientific™ plastic rigid outer support containers, drums, and industry-standard cylindrical tanks to take care of your storage and collection, process liquid preparation and storage, and waste collection needs
- **Transport**—large-volume liquid shipping including Thermo Scientific plastic outer support containers and drums

Selecting BPCs and the correct support containers

These multiple design considerations can help determine the ideal container solution for your process needs:

- **Application**—storage, mixing, waste collection, or shipping
- **Batch size, filling, and emptying**—determines the volume and port size
- **Number of process steps**—determines the number of ports and their location
- **Location of process step**—clean room–ready containers for clean room operations

Plastic tanks, drums, and accessories

Description		Size	Dimensions (D x H)	Cat. No.
	Flat-bottom LLDPE drum; top dispense with clamps	50 L	44 x 51 cm (17 x 20 in.)	SV50076.02
		100 L	45 x 79 cm (19.25 x 35 in.)	SV50076.03
		200 L	59 x 93 cm (23.5 x 36.75 in.)	SV50076.04
	Conical LLDPE drum; 1 port, 4.5 cm (1.75 in.) size with clamps	50 L	60 x 58 cm (23.5 x 23 in.)	SV50517.04
		100 L	60 x 76 cm (23.5 x 29.75 in.)	SV50517.05
		200 L	60 x 114 cm (23.5 x 44.75 in.)	SV50517.06
	Conical LLDPE drum; 1 port, 10.2 cm (4 in.) size with clamps; use support plate	50 L	60 x 58 cm (23.5 x 23 in.)	SV50517.08
		100 L	60 x 76 cm (23.5 x 29.75 in.)	SV50517.09
		200 L	60 x 114 cm (23.5 x 44.75 in.)	SV50517.10
	Plastic drum dolly	50, 100, 200 L	62 x 18 cm (23.38 x 7.13 in.)	SV50029.03

Large-volume rigid plastic outer support containers

Thermo Scientific™ rigid plastic support containers to support BPCs help meet your needs for large-volume liquid storage, handling, and transportation.

Key features

- Robust design and sturdy HDPE/acrylonitrile butadiene styrene (ABS), and PP construction permits multiple uses
- Collapsible walls fold down for easy storage when containers are not in use
- Stackable—enables extra storage when empty or full
- Bottom- and top-drain options are available
- Clean room units designed with smoother surfaces to help simplify clean-in-place operations
- Qualified for transportation

BPC options

- Standard BPCs available in CX5-14 and Aegis5-14 films
- Custom BPCs available in ASI 26/77 film

Rigid plastic outer support containers

Size	Outer dimensions (W x D x H)	Dispensing and material	Cat. No.
250 L	80.9 x 60.9 x 96.5 cm (31.8 x 23.9 x 38 in.)	Top and bottom, polypropylene	SV50139.15
500 L	120 x 80 x 104 cm (47.2 x 31.5 x 41 in.)	Top and bottom, ABS/HDPE	SV50139.12
600 L	115.5 x 115.5 x 98 cm (45.5 x 45.5 x 38.6 in.)	Top and bottom, polypropylene	SV50139.11
1,000 L	115.5 x 115.5 x 129.4 cm (45.5 x 45.5 x 50.9 in.)	Top and bottom, polypropylene	SV50139.06

Stainless steel carts

Size	Support bin Cat. No.	Cat. No.
250 L	SV50139.15	SV50139.17
500 L	SV50139.12	SV50139.13
600 L	SV50139.11	SV50139.16
1,000 L	SV50139.06	SV50139.16

BPCs

Size	Container Cat. No.	Cat. No.
200 L	SV50139.15	**Aegis5-14** SH30976.01
		CX5-14 SH31060.01
250 L	SV50139.15	**Aegis5-14** SH30976.02
		CX5-14 SH31060.02
500 L	SV50139.12	**Aegis5-14** SH30976.03
		CX5-14 SH31060.03
600 L	SV50139.11	**Aegis5-14** SH30976.04
		CX5-14 SH31060.04
1,000 L	SV50139.06	**Aegis5-14** SH30976.05
		CX5-14 SH31060.05

HyPerforma Smartainer 3.0 systems

Large-volume rigid stainless steel outer support containers

HyPerforma Smartainer 3.0 systems are stainless steel support containers used for in-house, large-volume, liquid-handling operations. These systems have an updated design and offer multiple sizes up to 3,000 L.

Key features

- Available in 100, 200, 500, 1,000, 1,500, 2,000, 2,500, and 3,000 L
- Containers constructed with 304 stainless steel
- Available in nonjacketed or jacketed options for applications requiring heating and cooling
- Designed to allow bottom draining from BPCs
- Modular system with optional accessories for increased mobility and BPC handling
- Smooth surface for easy cleaning

HyPerforma Smartainer 3.0 system specifications

Size	Inner dimensions (L x W x H)	Outer dimensions (L x W x H)	HyPerforma Smartainer 3.0 system Cat. No.	
200 L	73.02 x 53.34 x 58.67 cm (28.75 x 21.0 x 23.1 in.)	83.18 x 63.5 x 106.04 cm (32.75 x 25.0 x 41.75 in.)	Nonjacketed	SBN0200.7001
		83.82 x 64.01 x 106.04 cm (33.0 x 25.2 x 41.75 in.)	Jacketed	SBN0200.7002
500 L	114.3 x 73.66 x 88.64 cm (45.0 x 29.0 x 34.9 in.)	124.46 x 83.82 x 125.73 cm (49 x 33.0 x 49.5 in.)	Nonjacketed	SBN0500.7001
		125.22 x 84.07 x 125.73 cm (49.3 x 33.1 x 49.5 in.)	Jacketed	SBN0500.7002
1,000 L	114.3 x 91.44 x 126.74 cm (45.0 x 36.0 x 49.9 in.)	124.46 x 101.6 x 163.83 cm (49.0 x 40.0 x 64.5 in.)	Nonjacketed	SBN1000.7001
		125.22 x 101.85 x 163.83 cm (49.3 x 40.1 x 64.5 in.)	Jacketed	SBN1000.7002
1,500 L	114.3 x 91.44 x 179.83 cm (45.0 x 36.0 x 70.8 in.)	124.46 x 101.6 x 214.63 cm (49.0 x 40.0 x 84.5 in.)	Nonjacketed	SBN1500.7001
		125.22 x 101.85 x 214.63 cm (49.3 x 40.1 x 84.5 in.)	Jacketed	SBN1500.7002
2,000 L	114.3 x 19.44 x 233.42 cm (45.0 x 36.0 x 91.9 in.)	124.46 x 101.6 x 267.33 cm (49.0 x 40.0 x 105.25 in.)	Nonjacketed	SBN2000.7001
		125.22 x 101.85 x 267.33 cm (49.3 x 40.1 x 105.25 in.)	Jacketed	SBN2000.7002
2,500 L	129.54 x 120.65 x 212.59 cm (51.0 x 47.5 x 83.7 in.)	139.7 x 130.81 x 247.01 cm (55.0 x 51.5 x 97.25 in.)	Nonjacketed	SBN2500.7001
		140.46 x 131.06 x 247.01 cm (55.3 x 51.6 x 97.25 in.)	Jacketed	SBN2500.7002
3,000 L	129.54 x 120.65 x 212.59 cm (51 x 47.5 x 97.7 in.)	139.7 x 130.81 x 282.57 cm (55.0 x 51.5 x 111.25 in.)	Nonjacketed	SBN3000.7001
		140.46 x 131.06 x 282.57 cm (55.3 x 51.6 x 111.25 in.)	Jacketed	SBN3000.7002

Note: Dimensions are provided for estimates only. Actual outer dimensions will vary depending on configuration selected.

HyPerforma Smartainer 3.0 system components and BPCs

HyPerforma Smartainer 3.0 system components

1. **Jacketed or nonjacketed HyPerforma Smartainer 3.0 system**—supports BPCs by design.

2. **BPC hoist**—for handling and loading BPCs. Optional for the 500 L system, available options include a manual or pneumatic hoist (shown below) for the 1,000 L system, and pneumatic hoist only for larger sizes.

3. **Tray assembly**—holds dispense pumps, tube welders, and other items for convenient storage and access. It can be located on the cart or at the base of the HyPerforma Smartainer 3.0 system.

4. **Cart**—for moving empty HyPerforma Smartainer 3.0 systems over smooth and level surfaces within or between in-house storage or clean room areas. Available for vessels up to 1,000 L.

5. **Lid**—stainless steel lid, which helps ensure protection of the BPC against light and physical damage. Options include insulated lid with pneumatic lift assist and noninsulated lid.

6. **Load cells**—integrated load cells on all sizes, which provide weight measurements for liquid inside the container.

7. **Display location**—load cell and temperature transmitters can be mounted on the left or right side of the HyPerforma Smartainer 3.0 system.

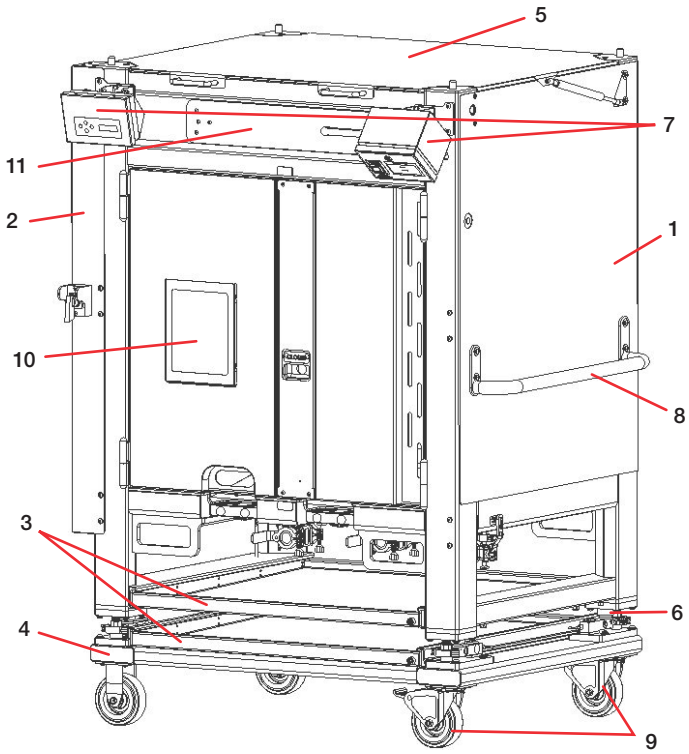
8. **Handle**—available on either the left or right side for vessels with a cart or casters, up to 1,000 L. Recommended for mobile units.

9. **Casters**—option available to mount units up to 1,000 L directly onto casters.

10. **Document holder**—for easy access to process control or production documents.

11. **Top port access cover**—helps ensure light protection and access to ports.

Note: Components above vary based on selected configuration.



1,000 L HyPerforma Smartainer 3.0 system

HyPerforma Smartainer 3.0 system BPCs

- Catalog BPC configurations are available in unit volumes of 200, 500, 1,000, 1,500, 2,000, 2,500, and 3,000 L
- BPCs are constructed from Aegis5-14, CX5-14, and ASI 26/77 film with dimensions optimized for HyPerforma Smartainer systems

HyPerforma Smartainer BPC ordering information

Size	Cat. No.		
	Aegis5-14	CX5-14	ASI 26/77
200 L (horizontal gusseted)	SH31188.01	SH31058.01	SS00195-I
500 L (horizontal gusseted)	SH31188.02	SH31058.02	SS00196-I
500 L (vertical gusseted)	SH31188.03	SH31058.03	SS00197-I
1,000 L	SH31188.04	SH31058.04	SS00198-I
1,500 L	SH31188.05	SH31058.05	SS00199-I
2,000 L	SH31188.06	SH31058.06	SS00200-I
2,500 L	SH31188.07	SH31058.07	SS00201-I
3,000 L	SH31188.08	SH31058.08	SS00202-I

Nalgene PP Closed-Dome Tanks

Thermo Scientific™ Nalgene™ PP Closed-Dome Tanks with white PP closure are an excellent choice for reagent storage, aseptic mixing, and dispensing. Autoclavable and offered in a variety of sizes to meet application needs.

Key features

- Designed for use as a closed-containment system
- Includes 150 mm gasketed screw closure, greatly reducing evaporation and contamination
- Domed bottoms offer good drainage
- Mounting flats accept bulkhead fittings up to 2 in.
- Graduated in liters and gallons

Compliance: Comply with FDA Reg. 177.1520 and USP Class VI.

Nalgene PP Closed-Dome Tanks

Capacity, gal (L)	Nominal OD x H, in. (cm)*	No. per case	Cat. No.
20 (76)	17 x 32 (42 x 79)	1	2650-0020
30 (114)	18 x 39 (47 x 99)	1	2650-0030
55 (210)	22 x 44 (57 x 112)	1	2650-0055
100 (380)	29 x 52 (72 x 132)	1	2650-0100

* Height measurement includes closure.

Nalgene Closed-Dome Bio Tank Closure with Mixer Support Assembly

Thermo Scientific™ Nalgene™ Closed-Dome Bio Tank Closure with Mixer Support Assembly is for use with all sizes of Nalgene closed-dome tanks. The unique sanitary flange assembly allows overhead mixing in a closed system.

Key features

- 6 in. (15.2 cm) PP screw closure with a 2 in. (5.1 cm) sanitary ferrule welded in the center
- 2 in. (5.1 cm) silicone gasket and a PDVF true-union clamp
- Autoclavable
- Mixer not included

Compatible products:
Nalgene Closed-Dome Tanks (Cat. No. 2650 series).

Nalgene Closed-Dome Bio Tank Closure with Mixer Support Assembly

Closure size, mm (in.)	Material	No. per pack	No. per case	Cat. No.
15.2 (6)	Polypropylene, PVDF, silicone	1	1	2651-0200

Nalgene Spigots for Storage Tanks

Thermo Scientific™ Nalgene™ Spigots for Storage Tanks are used for safe and efficient liquid dispensing. For use only with Nalgene tanks up to 100 gallons with factory-installed threaded boss.

Key features

- Includes two PTFE O-rings that provide positive seal

Note: Make sure container and spigot have compatible chemical resistance before installing.

Nalgene Spigots for Storage Tanks

Fitting	No. per pack	No. per case	Cat. No.
Polypropylene			
1 1/2 in. x 12 female screw thread	12	12	6421-0010
Low-density polyethylene			
19 mm NPT male thread	6	6	6420-0750
12.7 mm NPT male thread	6	6	6420-0500

Nalgene LLDPE Lightweight Cylindrical Tanks

Nalgene LLDPE Lightweight Cylindrical Tank with Cover and Spigot

Thermo Scientific™ Nalgene™ LLDPE Lightweight Cylindrical Tanks with installed spigots are an economical solution for less rigorous applications. These tanks offer the same characteristics as the Nalgene 54100 tank series with a spigot installed for dispensing. Equipped with the Thermo Scientific™ Nalgene™ Needle Spigot (Cat. No. 96423) for dispensing.

Key features

- Seamless construction for easy cleaning
- Offers excellent stress-crack resistance
- Economical alternative to stainless steel tanks
- Includes matching cover that significantly reduces evaporation and contamination

Ordering information

Capacity, gal (L)	Nominal OD x H, in. (cm)	No. per case	Cat. No.
Nalgene LLDPE Lightweight Cylindrical Tank with Cover and Spigot			
5 (19)	11 x 15 (28 x 38)	1	54102-0005
7.5 (28)	12 x 18 (30 x 46)	1	54102-0007
10 (38)	13 x 20 (33 x 51)	1	54102-0010
15 (57)	14 x 28 (36 x 71)	1	54102-0015
30 (113)	18 x 30 (46 x 76)	1	54102-0030
55 (208)	22 x 36 (56 x 91)	1	54102-0055

Note: All Nalgene tanks used at elevated temperatures or with liquids of high specific gravity should be externally supported.
Caution: Plastic tanks are generally subject to more severe conditions than plastic labware; exposure is constant, stresses are greater, and different classes and concentrations of chemicals are involved. Please pay special attention to chemical compatibility.

Nalgene LLDPE Heavy-Duty Tanks

Nalgene LLDPE Heavy-Duty Cylindrical Tank with Spigot

- Offered with a needle-type spigot for easy dispensing
- Factory-installed spigot accepts 5/8 in. ID tubing
- Features rigid walls for maximum strength and durability
- Seamless construction for easy cleaning
- Molded of LLDPE offering increased chemical and temperature resistance
- Includes matching cover that significantly reduces evaporation and contamination

Nalgene LLDPE Heavy-Duty Cylindrical Tank with Cover

- Features rigid walls for maximum strength and durability
- Molded of LLDPE offering increased chemical and temperature resistance
- Includes matching cover that significantly reduces evaporation and contamination
- Compatible products: CX3-9 Tank Liners (Cat. No. SH3067 series)

Ordering information

Capacity, gal (L)	Nominal OD x H, in. (cm)	No. per case	Cat. No.
Nalgene LLDPE Heavy-Duty Cylindrical Tank with Spigot			
5 (19)	11 x 15 (28 x 38)	1	11102-0005
7.5 (28)	12 x 18 (30 x 46)	1	11102-0007
10 (38)	13 x 20 (33 x 51)	1	11102-0010
15 (57)	14 x 28 (36 x 71)	1	11102-0015
30 (113)	19 x 30 (48 x 76)	1	11102-0030
55 (208)	22 x 36 (56 x 91)	1	11102-0055
Nalgene LLDPE Heavy-Duty Cylindrical Tank with Cover			
5 (19)	11 x 15 (28 x 38)	1	11100-0005
7.5 (28)	12 x 18 (30 x 46)	1	11100-0007
10 (38)	13 x 20 (33 x 51)	1	11100-0010
15 (57)	14 x 28 (36 x 71)	1	11100-0015
30 (113)	19 x 30 (48 x 76)	1	11100-0030
55 (208)	22 x 36 (56 x 91)	1	11100-0055
80 (303)	24 x 48 (61 x 122)	1	11100-0080
100 (378)	28 x 44 (71 x 112)	1	11100-0100
150 (568)	32 x 49 (81 x 124)	1	11100-0150
200 (757)	37 x 51 (94 x 130)	1	11100-0200

Caution: Plastic tanks are generally subject to more severe conditions than plastic labware; exposure is constant, stresses are greater, and different classes and concentrations of chemicals are involved. Please pay special attention to chemical compatibility.

Nalgene PP Cylindrical Tank with Cover

Thermo Scientific™ Nalgene™ PP Cylindrical Tanks are autoclavable and available in a variety of sizes to meet application needs.

Key features

- Seamless construction for easy cleaning
- Offers excellent stress-crack resistance
- Economical alternative to stainless steel tanks
- Includes matching cover that significantly reduces evaporation and contamination

Note: All Nalgene tanks used at elevated temperatures or with liquids of high specific gravity should be externally supported.

Caution: Plastic tanks are generally subject to more severe conditions than plastic labware; exposure is constant, stresses are greater, and different classes and concentrations of chemicals are involved. Please pay special attention to chemical compatibility.

Nalgene Cylindrical PP Tank with Cover

Capacity, gal (L)	Nominal OD x H, in. (cm)	No. per case	Cat. No.
5 (19)	11 x 15 (28 x 38)	1	11200-0005
7.5 (28)	12 x 18 (30 x 46)	1	11200-0007
10 (38)	13 x 20 (33 x 51)	1	11200-0010
15 (57)	14 x 28 (36 x 71)	1	11200-0015
30 (113)	18 x 30 (46 x 76)	1	11200-0030
55 (208)	22 x 36 (56 x 91)	1	11200-0055
100 (378)	28 x 44 (71 x 112)	1	11200-0100

Nalgene PP Rectangular Tank with Cover

Thermo Scientific™ Nalgene™ PP Rectangular Tanks are autoclavable and available in a variety of sizes to meet your application needs.

Key features

- Seamless construction for easy cleaning
- Suitable for use with many organic chemicals
- Offers excellent stress-crack resistance
- Includes matching cover that significantly reduces evaporation and contamination

Nalgene PP Rectangular Tank with Cover

Capacity, gal (L)	Nominal L x W x H, in. (cm)	No. per case	Cat. No.
2 (8)	8 x 8 x 9 (21 x 21 x 24)	1	14200-0002
5 (20)	14 x 10 x 11 (37 x 26 x 29)	1	14200-0005
8 (30)	12 x 12 x 14 (31 x 31 x 36)	1	14200-0010
10 (38)	14 x 13 x 9 (34 x 32 x 24)	1	14200-0015
13 (50)	18 x 13 x 20 (47 x 32 x 50)	1	14200-0020
32 (120)	24 x 18 x 19 (61 x 47 x 48)	1	14200-0045

Nalgene LLDPE Heavy-Duty Rectangular Tank with Cover

Thermo Scientific™ Nalgene™ LLDPE Heavy-Duty Rectangular Tanks are versatile, economical alternatives to stainless steel tanks.

Key features

- Seamless construction for easy cleaning
- Stepped flange provides drip containment and grip for lifting
- Includes matching cover that significantly reduces evaporation and contamination
- Molded of LLDPE offering increased chemical and temperature resistance

Note: All Nalgene tanks used at elevated temperatures or with liquids of high specific gravity should be externally supported.

Caution: Plastic tanks are generally subject to more severe conditions than plasticlabware; exposure is constant, stresses are greater, and different classes and concentrations of chemicals are involved. Please pay special attention to chemical compatibility.

Nalgene LLDPE Heavy-Duty Rectangular Tank with Cover

Capacity, gal (L)	Nominal L x W x H, in. (cm)	No. per case	Cat. No.
2 (8)	8 x 8 x 9 (21 x 21 x 24)	1	14100-0002
5 (20)	14 x 10 x 11 (37 x 26 x 29)	1	14100-0005
8 (30)	12 x 12 x 14 (31 x 31 x 36)	1	14100-0010
10 (38)	14 x 13 x 9 (34 x 32 x 24)	1	14100-0015
13 (50)	18 x 13 x 20 (47 x 32 x 50)	1	14100-0020
16 (60)	24 x 13 x 13 (62 x 32 x 34)	1	14100-0040
32 (120)	24 x 18 x 19 (61 x 47 x 48)	1	14100-0045
40 (160)	24 x 18 x 25 (62 x 47 x 64)	1	14100-0065

Nalgene tank liners

Thermo Scientific™ Nalgene™ tank liners feature an open-bag, flat-bottom design to enhance your mixing capabilities. They are ideal for single-use, biopharmaceutical, and diagnostic reagent fluid processing using Nalgene plastic rigid cylindrical tanks, and are available in sizes ranging from 19 L to 757 L.

Key features

- Designed specifically to fit Nalgene cylindrical tanks from 19 L to 757 L
- 343050 series film tank liners are supplied gamma-irradiated

Nalgene tank liners

Capacity, gal (L)	Fits Nalgene tank Cat. No.	No. per pack	No. per case	Cat. No.
5 (19)	11100-0005 11200-0005 54100-0005	1	10	343050-0005
7.5 (28)	11100-0007 11200-0007 54100-0007	1	10	343050-0007
10 (38)	11100-0010 11200-0010 54100-0010	1	10	343050-0010
15 (57)	11100-0015 11200-0015 54100-0015	1	10	343050-0015
30 (113)	11100-0030 11200-0030 54100-0030	1	10	343050-0030
55 (208)	11100-0055 11200-0055 54100-0055	1	10	343050-0055
80 (303)	11100-0080	1	10	343050-0080
100 (378)	11100-0100	1	10	343050-0100
150 (568)	11100-0150	1	10	343050-0150
200 (757)	11100-0200	1	10	343050-0200

Fluid transfer assemblies

We are a premier supplier of single-use technologies, including catalog and custom single-use fluid transfer assemblies.

Fluid transfer assemblies that are unique to your process

We offer a multitude of tubing sizes and types combined with an expansive portfolio of one of the industry's largest component libraries to provide optimal performance for your unique process.

Working hard for assurance of supply

Our transfer assemblies are manufactured in three efficient, cGMP-compliant manufacturing sites: two in North America—Logan, UT, and Millersburg, PA—and one in Cramlington, UK.

Open architecture

Choose from an assortment of catalog tubing options in a wide variety of inside and outside diameters (ID and OD). We also maintain a leading catalog component library including steam valves, aseptic connectors, manifolds, and filter assemblies ensuring your transfer assembly can be specially configured to your unique process and requirements.

Applications

- Media and buffer transfer
- Product sampling
- Bioreactor feed transfer
- Harvest collection
- Filtration and purification process connection
- Bulk product and final fill
- Dispensing and aliquoting

Key benefits

- Compatibility with any hardware system
- Design systems to integrate within your processes
- Helps save time and money through partnering
- No need for cleaning and gamma-irradiation
- Helps reduce cross-contamination

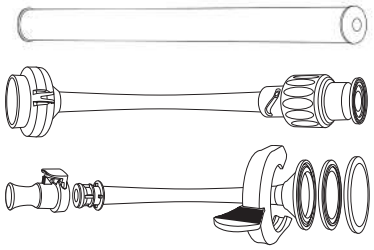
Criteria to consider when selecting transfer assemblies	
Pumping characteristics	Peristaltic pumping is the most common method so the flow rate and pump life of tubing in a system are important.
Clarity	Most but not all of the tubing types are clear. The ability to see tubing contents is normally important.
Method of connection	Most connection systems involve attaching the tubing to a hose barb in a standard size. Tubing welders and sealers require specific types of tubing.
Supporting data	Regulatory compliance, NOA status, and extractables studies are often required. A database of information on all standard tubing is available.
Economics	Different tubing types, bore sizes, and wall thicknesses can vary widely in cost. In general, the larger the bore size and wall thickness, the more expensive the tubing.

Transfer assembly jumper tubing

- Single length of tubing to connect separate vessels, BPCs, or other single-use accessories
- Available in multiple lengths
- Can be combined to bridge additional distances

Tubing size	Tubing length	End connections	Cat. No.
3.2 mm (1/8 in.) ID, 1.6 mm (1/16 in.) wall, TPE	1 m (39.4 in.)	Capped—for welders	SH31269.01
	2.5 m (98.4 in.)	Capped—for welders	SH31269.02
	5 m (196.9 in.)	Capped—for welders	SH31269.03
6.35 mm (1/4 in.) ID, 1.6 mm (1/16 in.) wall, TPE	1 m (39.4 in.)	Capped—for welders	SH31270.01
	2.5 m (98.4 in.)	Capped—for welders	SH31270.02
	5 m (196.9 in.)	Capped—for welders	SH31270.03
6.35 mm (1/4 in.) ID, 2.4 mm (3/32 in.) wall, TPE	1 m (39.4 in.)	Capped—for welders	SH31271.01
	2.5 m (98.4 in.)	Capped—for welders	SH31271.02
	5 m (196.9 in.)	Capped—for welders	SH31271.03
9.52 mm (3/8 in.) ID, 3.2 mm (1/8 in.) wall, TPE	1 m (39.4 in.)	Capped—for welders	SH31272.01
	2.5 m (98.4 in.)	Capped—for welders	SH31272.02
	5 m (196.9 in.)	Capped—for welders	SH31272.03
12.7 mm (1/2 in.) ID, 3.2 mm (1/8 in.) wall, TPE	1 m (39.4 in.)	Capped—for welders	SH31273.01
	2.5 m (98.4 in.)	Capped—for welders	SH31273.02
	5 m (196.9 in.)	Capped—for welders	SH31273.03
6.35 mm (1/4 in.) ID, 11.11 mm (7/16 in.) wall, TPE	1 m (39.4 in.)	Luer	SH31117.01
	1 m (39.4 in.)	MPC	SH31118.01
	2.5 m (98.4 in.)	Luer	SH31117.02
	2.5 m (98.4 in.)	MPC	SH31118.02
	5 m (196.9 in.)	Luer	SH31117.03
	5 m (196.9 in.)	MPC	SH31118.03

Transfer assembly jumper tubing—continued



Tubing size	Tubing length	End connections	Cat. No.
3.2 mm (1/8 in.) ID, 6.3 mm (1/4 in.) wall, TPE	1 m (39.4 in.)	Luer	SH31119.01
	2.5 m (98.4 in.)		SH31119.02
	5 m (196.9 in.)		SH31119.03
9.52 mm (3/8 in.) ID, 15.88 mm (5/8 in.) wall, TPE	1 m (39.4 in.)	MPC	SH31116.01
	2.5 m (98.4 in.)		SH31116.02
	5 m (196.9 in.)		SH31116.03
12.7 mm (1/2 in.) ID, 19.05 mm (3/4 in.) wall, TPE	1 m (39.4 in.)	MPX	SH31120.01
	2.5 m (98.4 in.)		SH31120.02
	5 m (196.9 in.)		SH31120.03
12.7 mm (1/2 in.) ID, 19.1 mm (3/4 in.) wall, silicone tubing	91.4 cm (36 in.)	Steam-Thru™ II connection 19.1 x 38.1 mm (3/4 x 1 1/2 in.) sanitary x 12.7 mm (1/2 in.) barb; ReadyMate™ DAC with 12.7 mm (1/2 in.) barb	SS00042-I
		Steam-Thru II connection 19.1 x 38.1 mm (3/4 x 1 1/2 in.) sanitary x 12.7 mm (1/2 in.) barb; Kleenpak insert connection with 12.7 mm (1/2 in.) barb	SS00043-I
		Lynx™ ST connection 19.1 x 38.1 mm (3/4 x 1 1/2 in.) sanitary x 12.7 mm (1/2 in.) barb; ReadyMate DAC with 12.7 mm (1/2 in.) barb	SS00044-I
		Lynx ST connection 38.1 mm (1 1/2 in.) sanitary x 12.7 mm (1/2 in.) barb; Kleenpak insert connection with 12.7 mm (1/2 in.) barb	SS00045-I
		38.1 mm (1 1/2 in.) sanitary x 12.7 mm (1/2 in.) barb with gasket, end cap, and push/pull clip; MPX body + cap	SS00062-I
		19.1 mm (3/4 in.) sanitary x 12.7 mm (1/2 in.) barb with gasket, end cap, and push/pull clip; MPX body + cap	SS00063-I
9.5 mm (3/8 in.) ID, 16 mm (5/8 in.) wall, silicone tubing	91.4 cm (36 in.)	38.1 mm (1 1/2 in.) sanitary x 9.5 mm (3/8 in.) barb with gasket, end cap, and push/pull clip; MPC insert + cap	SS00064-I
		38.1 mm (1 1/2 in.) sanitary x 12.7 mm (1/2 in.) barb with gasket, end cap, and push/pull clip; MPC insert + cap	SS00065-I

Transfer assembly jumper tubing—continued

Description	Cat. No.
5 ft, 1/8 in. ID TPE, AseptiQuik S connectors	SH31198.01
10 ft, 1/8 in. ID TPE, AseptiQuik S connectors	SH31198.02
15 ft, 1/8 in. ID TPE, AseptiQuik S connectors	SH31198.03
5 ft, 1/8 in. ID silicone, AseptiQuik S connectors	SH31379.01
10 ft, 1/8 in. ID silicone, AseptiQuik S connectors	SH31379.02
15 ft, 1/8 in. ID silicone, AseptiQuik S connectors	SH31379.03
5 ft, 1/4 in. ID TPE, AseptiQuik S connectors	SH31198.11
10 ft, 1/4 in. ID TPE, AseptiQuik S connectors	SH31198.12
15 ft, 1/4 in. ID TPE, AseptiQuik S connectors	SH31198.13
5 ft, 1/4 in. ID silicone, AseptiQuik S connectors	SH31379.11
10 ft, 1/4 in. ID silicone, AseptiQuik S connectors	SH31379.12
15 ft, 1/4 in. ID silicone, AseptiQuik S connectors	SH31379.13
5 ft, 1/4 in. ID braided silicone, AseptiQuik S connectors	SH31391.11
10 ft, 1/4 in. ID braided silicone, AseptiQuik S connectors	SH31391.12
15 ft, 1/4 in. ID braided silicone, AseptiQuik S connectors	SH31391.13
5 ft, 3/8 in. ID TPE, AseptiQuik S connectors	SH31198.21
10 ft, 3/8 in. ID TPE, AseptiQuik S connectors	SH31198.22
15 ft, 3/8 in. ID TPE, AseptiQuik S connectors	SH31198.23
5 ft, 3/8 in. ID silicone, AseptiQuik S connectors	SH31379.21
10 ft, 3/8 in. ID silicone, AseptiQuik S connectors	SH31379.22
15 ft, 3/8 in. ID silicone, AseptiQuik S connectors	SH31379.23
5 ft, 3/8 in. ID braided silicone, AseptiQuik S connectors	SH31391.21
10 ft, 3/8 in. ID braided silicone, AseptiQuik S connectors	SH31391.22
15 ft, 3/8 in. ID braided silicone, AseptiQuik S connectors	SH31391.23
5 ft, 1/4 in. ID TPE, AseptiQuik G connectors	SH31319.01
10 ft, 1/4 in. ID TPE, AseptiQuik G connectors	SH31319.02
15 ft, 1/4 in. ID TPE, AseptiQuik G connectors	SH31319.03
5 ft, 1/4 in. ID silicone, AseptiQuik G connectors	SH31197.01
10 ft, 1/4 in. ID silicone, AseptiQuik G connectors	SH31197.02
15 ft, 1/4 in. ID silicone, AseptiQuik G connectors	SH31197.03
5 ft, 1/4 in. ID braided silicone, AseptiQuik G connectors	SH31389.01
10 ft, 1/4 in. ID braided silicone, AseptiQuik G connectors	SH31389.02
15 ft, 1/4 in. ID braided silicone, AseptiQuik G connectors	SH31389.03
5 ft, 3/8 in. ID TPE, AseptiQuik G connectors	SH31319.11
10 ft, 3/8 in. ID TPE, AseptiQuik G connectors	SH31319.12
15 ft, 3/8 in. ID TPE, AseptiQuik G connectors	SH31319.13
5 ft, 3/8 in. ID silicone, AseptiQuik G connectors	SH31197.11
10 ft, 3/8 in. ID silicone, AseptiQuik G connectors	SH31197.12
15 ft, 3/8 in. ID silicone, AseptiQuik G connectors	SH31197.13
5 ft, 3/8 in. ID braided silicone, AseptiQuik G connectors	SH31389.11

Description	Cat. No.
10 ft, 3/8 in. ID braided silicone, AseptiQuik G connectors	SH31389.12
15 ft, 3/8 in. ID braided silicone, AseptiQuik G connectors	SH31389.13
5 ft, 1/2 in. ID TPE, AseptiQuik G connectors	SH31319.21
10 ft, 1/2 in. ID TPE, AseptiQuik G connectors	SH31319.22
15 ft, 1/2 in. ID TPE, AseptiQuik G connectors	SH31319.23
5 ft, 1/2 in. ID silicone, AseptiQuik G connectors	SH31197.21
10 ft, 1/2 in. ID silicone, AseptiQuik G connectors	SH31197.22
15 ft, 1/2 in. ID silicone, AseptiQuik G connectors	SH31197.23
5 ft, 1/2 in. ID braided silicone, AseptiQuik G connectors	SH31389.21
10 ft, 1/2 in. ID braided silicone, AseptiQuik G connectors	SH31389.22
15 ft, 1/2 in. ID braided silicone, AseptiQuik G connectors	SH31389.23
5 ft, 3/4 in. ID TPE, AseptiQuik G connectors	SH31317.01
10 ft, 3/4 in. ID TPE, AseptiQuik G connectors	SH31317.02
15 ft, 3/4 in. ID TPE, AseptiQuik G connectors	SH31317.03
5 ft, 3/4 in. ID silicone, AseptiQuik G connectors	SH31197.31
10 ft, 3/4 in. ID silicone, AseptiQuik G connectors	SH31197.32
15 ft, 3/4 in. ID silicone, AseptiQuik G connectors	SH31197.33
5 ft, 3/4 in. ID braided silicone, AseptiQuik G connectors	SH31389.31
10 ft, 3/4 in. ID braided silicone, AseptiQuik G connectors	SH31389.32
15 ft, 3/4 in. ID braided silicone, AseptiQuik G connectors	SH31389.33
5 ft, 3/4 in. ID TPE, AseptiQuik L connectors	SH31199.01
10 ft, 3/4 in. ID TPE, AseptiQuik L connectors	SH31199.02
15 ft, 3/4 in. ID TPE, AseptiQuik L connectors	SH31199.03
5 ft, 3/4 in. ID silicone, AseptiQuik L connectors	SH31208.01
10 ft, 3/4 in. ID silicone, AseptiQuik L connectors	SH31208.02
15 ft, 3/4 in. ID silicone, AseptiQuik L connectors	SH31208.03
5 ft, 3/4 in. ID braided silicone, AseptiQuik L connectors	SH31390.01
10 ft, 3/4 in. ID braided silicone, AseptiQuik L connectors	SH31390.02
15 ft, 3/4 in. ID braided silicone, AseptiQuik L connectors	SH31390.03
5 ft, 1 in. ID TPE, AseptiQuik L connectors	SH31199.11
10 ft, 1 in. ID TPE, AseptiQuik L connectors	SH31199.12
15 ft, 1 in. ID TPE, AseptiQuik L connectors	SH31199.13
5 ft, 1 in. ID silicone, AseptiQuik L connectors	SH31208.11
10 ft, 1 in. ID silicone, AseptiQuik L connectors	SH31208.12
15 ft, 1 in. ID silicone, AseptiQuik L connectors	SH31208.13
5 ft, 1 in. ID braided silicone, AseptiQuik L connectors	SH31390.11
10 ft, 1 in. ID braided silicone, AseptiQuik L connectors	SH31390.12
15 ft, 1 in. ID braided silicone, AseptiQuik L connectors	SH31390.13
5 ft, 1/4 in. ID TPE, AseptiQuik G connector, and 3/4 triclamp	SH31211.01
10 ft, 1/4 in. ID TPE, AseptiQuik G connector, and 3/4 triclamp	SH31211.02

Transfer assembly jumper tubing—continued

Description	Cat. No.
15 ft, 1/4 in. ID TPE, AseptiQuik G connector, and 3/4 triclamp	SH31211.03
5 ft, 1/4 in. ID silicone, AseptiQuik G connector, and 3/4 triclamp	SH31380.01
10 ft, 1/4 in. ID silicone, AseptiQuik G connector, and 3/4 triclamp	SH31380.02
15 ft, 1/4 in. ID silicone, AseptiQuik G connector, and 3/4 triclamp	SH31380.03
5 ft, 1/4 in. ID braided silicone, AseptiQuik G connector, and 3/4 triclamp	SH31392.01
10 ft, 1/4 in. ID braided silicone, AseptiQuik G connector, and 3/4 triclamp	SH31392.02
15 ft, 1/4 in. ID braided silicone, AseptiQuik G connector, and 3/4 triclamp	SH31392.03
5 ft, 3/8 in. ID TPE, AseptiQuik G connector, and 3/4 triclamp	SH31211.11
10 ft, 3/8 in. ID TPE, AseptiQuik G connector, and 3/4 triclamp	SH31211.12
15 ft, 3/8 in. ID TPE, AseptiQuik G connector, and 3/4 triclamp	SH31211.13
5 ft, 3/8 in. ID silicone, AseptiQuik G connector, and 3/4 triclamp	SH31380.11
10 ft, 3/8 in. ID silicone, AseptiQuik G connector, and 3/4 triclamp	SH31380.12
15 ft, 3/8 in. ID silicone, AseptiQuik G connector, and 3/4 triclamp	SH31380.13
5 ft, 3/8 in. ID braided silicone, AseptiQuik G connector, and 3/4 triclamp	SH31392.11
10 ft, 3/8 in. ID braided silicone, AseptiQuik G connector, and 3/4 triclamp	SH31392.12
15 ft, 3/8 in. ID braided silicone, AseptiQuik G connector, and 3/4 triclamp	SH31392.13
5 ft, 1/2 in. ID TPE, AseptiQuik G connector, and 3/4 triclamp	SH31211.21
10 ft, 1/2 in. ID TPE, AseptiQuik G connector, and 3/4 triclamp	SH31211.22
15 ft, 1/2 in. ID TPE, AseptiQuik G connector, and 3/4 triclamp	SH31211.23
5 ft, 1/2 in. ID silicone, AseptiQuik G connector, and 3/4 triclamp	SH31380.21
10 ft, 1/2 in. ID silicone, AseptiQuik G connector, and 3/4 triclamp	SH31380.22
15 ft, 1/2 in. ID silicone, AseptiQuik G connector, and 3/4 triclamp	SH31380.23
5 ft, 1/2 in. ID braided silicone, AseptiQuik G connector, and 3/4 triclamp	SH31392.21
10 ft, 1/2 in. ID braided silicone, AseptiQuik G connector, and 3/4 triclamp	SH31392.22
15 ft, 1/2 in. ID braided silicone, AseptiQuik G connector, and 3/4 triclamp	SH31392.23
5 ft, 3/4 in. ID TPE, AseptiQuik G connector, and 3/4 triclamp	SH31211.31
10 ft, 3/4 in. ID TPE, AseptiQuik G connector, and 3/4 triclamp	SH31211.32
15 ft, 3/4 in. ID TPE, AseptiQuik G connector, and 3/4 triclamp	SH31211.33
5 ft, 3/4 in. ID silicone, AseptiQuik G connector, and 3/4 triclamp	SH31380.31
10 ft, 3/4 in. ID silicone, AseptiQuik G connector, and 3/4 triclamp	SH31380.32
15 ft, 3/4 in. ID silicone, AseptiQuik G connector, and 3/4 triclamp	SH31380.33
5 ft, 3/4 in. ID braided silicone, AseptiQuik G connector, and 3/4 triclamp	SH31392.31

Description	Cat. No.
10 ft, 3/4 in. ID braided silicone, AseptiQuik G connector, and 3/4 triclamp	SH31392.32
15 ft, 3/4 in. ID braided silicone, AseptiQuik G connector, and 3/4 triclamp	SH31392.33
5 ft, 1/4 in. ID TPE, AseptiQuik G connector, and 1 1/2 triclamp	SH31204.01
10 ft, 1/4 in. ID TPE, AseptiQuik G connector, and 1 1/2 triclamp	SH31204.02
15 ft, 1/4 in. ID TPE, AseptiQuik G connector, and 1 1/2 triclamp	SH31204.03
5 ft, 1/4 in. ID silicone, AseptiQuik G connector, and 1 1/2 triclamp	SH31212.01
10 ft, 1/4 in. ID silicone, AseptiQuik G connector, and 1 1/2 triclamp	SH31212.02
15 ft, 1/4 in. ID silicone, AseptiQuik G connector, and 1 1/2 triclamp	SH31212.03
5 ft, 1/4 in. ID braided silicone, AseptiQuik G connector, and 1 1/2 triclamp	SH31489.01
10 ft, 1/4 in. ID braided silicone, AseptiQuik G connector, and 1 1/2 triclamp	SH31489.02
15 ft, 1/4 in. ID braided silicone, AseptiQuik G connector, and 1 1/2 triclamp	SH31489.03
5 ft, 3/8 in. ID TPE, AseptiQuik G connector, and 1 1/2 triclamp	SH31204.11
10 ft, 3/8 in. ID TPE, AseptiQuik G connector, and 1 1/2 triclamp	SH31204.12
15 ft, 3/8 in. ID TPE, AseptiQuik G connector, and 1 1/2 triclamp	SH31204.13
5 ft, 3/8 in. ID silicone, AseptiQuik G connector, and 1 1/2 triclamp	SH31212.11
10 ft, 3/8 in. ID silicone, AseptiQuik G connector, and 1 1/2 triclamp	SH31212.12
15 ft, 3/8 in. ID silicone, AseptiQuik G connector, and 1 1/2 triclamp	SH31212.13
5 ft, 3/8 in. ID braided silicone, AseptiQuik G connector, and 1 1/2 triclamp	SH31489.11
10 ft, 3/8 in. ID braided silicone, AseptiQuik G connector, and 1 1/2 triclamp	SH31489.12
15 ft, 3/8 in. ID braided silicone, AseptiQuik G connector, and 1 1/2 triclamp	SH31489.13
5 ft, 1/2 in. ID TPE, AseptiQuik G connector, and 1 1/2 triclamp	SH31204.21
10 ft, 1/2 in. ID TPE, AseptiQuik G connector, and 1 1/2 triclamp	SH31204.22
15 ft, 1/2 in. ID TPE, AseptiQuik G connector, and 1 1/2 triclamp	SH31204.23
5 ft, 1/2 in. ID silicone, AseptiQuik G connector, and 1 1/2 triclamp	SH31212.21
10 ft, 1/2 in. ID silicone, AseptiQuik G connector, and 1 1/2 triclamp	SH31212.22
15 ft, 1/2 in. ID silicone, AseptiQuik G connector, and 1 1/2 triclamp	SH31212.23
5 ft, 1/2 in. ID braided silicone, AseptiQuik G connector, and 1 1/2 triclamp	SH31489.21
10 ft, 1/2 in. ID braided silicone, AseptiQuik G connector, and 1 1/2 triclamp	SH31489.22

Transfer assembly jumper tubing—continued

Description	Cat. No.
15 ft, 1/2 in. ID braided silicone, AseptiQuik G connector, and 1 1/2 triclamp	SH31489.23
5 ft, 3/4 in. ID TPE, AseptiQuik G connector, and 1 1/2 triclamp	SH31204.31
10 ft, 3/4 in. ID TPE, AseptiQuik G connector, and 1 1/2 triclamp	SH31204.32
15 ft, 3/4 in. ID TPE, AseptiQuik G connector, and 1 1/2 triclamp	SH31204.33
5 ft, 3/4 in. ID silicone, AseptiQuik G connector, and 1 1/2 triclamp	SH31212.31
10 ft, 3/4 in. ID silicone, AseptiQuik G connector, and 1 1/2 triclamp	SH31212.32
15 ft, 3/4 in. ID silicone, AseptiQuik G connector, and 1 1/2 triclamp	SH31212.33
5 ft, 3/4 in. ID braided silicone, AseptiQuik G connector, and 1 1/2 triclamp	SH31489.31
10 ft, 3/4 in. ID braided silicone, AseptiQuik G connector, and 1 1/2 triclamp	SH31489.32
15 ft, 3/4 in. ID braided silicone, AseptiQuik G connector, and 1 1/2 triclamp	SH31489.33
5 ft, 3/4 in. ID TPE, AseptiQuik L connector, and 1 1/2 triclamp	SH31207.01
10 ft, 3/4 in. ID TPE, AseptiQuik L connector, and 1 1/2 triclamp	SH31207.02
15 ft, 3/4 in. ID TPE, AseptiQuik L connector, and 1 1/2 triclamp	SH31207.03
5 ft, 3/4 in. ID silicone, AseptiQuik L connector, and 1 1/2 triclamp	SH31378.01
10 ft, 3/4 in. ID silicone, AseptiQuik L connector, and 1 1/2 triclamp	SH31378.02
15 ft, 3/4 in. ID silicone, AseptiQuik L connector, and 1 1/2 triclamp	SH31378.03
5 ft, 3/4 in. ID braided silicone, AseptiQuik L connector, and 1 1/2 triclamp	SH31395.01
10 ft, 3/4 in. ID braided silicone, AseptiQuik L connector, and 1 1/2 triclamp	SH31395.02
15 ft, 3/4 in. ID braided silicone, AseptiQuik L connector, and 1 1/2 triclamp	SH31395.03
5 ft, 1 in. ID TPE, AseptiQuik L connector, and 1 1/2 triclamp	SH31207.11
10 ft, 1 in. ID TPE, AseptiQuik L connector, and 1 1/2 triclamp	SH31207.12
15 ft, 1 in. ID TPE, AseptiQuik L connector, and 1 1/2 triclamp	SH31207.13
5 ft, 1 in. ID silicone, AseptiQuik L connector, and 1 1/2 triclamp	SH31378.11
10 ft, 1 in. ID silicone, AseptiQuik L connector, and 1 1/2 triclamp	SH31378.12
15 ft, 1 in. ID silicone, AseptiQuik L connector, and 1 1/2 triclamp	SH31378.13
5 ft, 1 in. ID braided silicone, AseptiQuik L connector, and 1 1/2 triclamp	SH31395.11
10 ft, 1 in. ID braided silicone, AseptiQuik L connector, and 1 1/2 triclamp	SH31395.12
15 ft, 1 in. ID braided silicone, AseptiQuik L connector, and 1 1/2 triclamp	SH31395.13
5 ft, 1/2 in. ID TPE, AseptiQuik G connector, and MPX body	SH31218.01
10 ft, 1/2 in. ID TPE, AseptiQuik G connector, and MPX body	SH31218.02
15 ft, 1/2 in. ID TPE, AseptiQuik G connector, and MPX body	SH31218.03

Description	Cat. No.
5 ft, 1/2 in. ID silicone, AseptiQuik G connector, and MPX body	SH31490.01
10 ft, 1/2 in. ID silicone, AseptiQuik G connector, and MPX body	SH31490.02
15 ft, 1/2 in. ID silicone, AseptiQuik G connector, and MPX body	SH31490.03
5 ft, 1/2 in. ID braided silicone, AseptiQuik G connector, and MPX body	SH31394.01
10 ft, 1/2 in. ID braided silicone, AseptiQuik G connector, and MPX body	SH31394.02
15 ft, 1/2 in. ID braided silicone, AseptiQuik G connector, and MPX body	SH31394.03
5 ft, 3/8 in. ID TPE, MPC insert, and MPC body	SH31321.01
10 ft, 3/8 in. ID TPE, MPC insert, and MPC body	SH31321.02
15 ft, 3/8 in. ID TPE, MPC insert, and MPC body	SH31321.03
15 ft, 3/8 in. ID silicone, MPC insert, and MPC body	SH31377.01
10 ft, 3/8 in. ID silicone, MPC insert, and MPC body	SH31377.02
15 ft, 3/8 in. ID silicone, MPC insert, and MPC body	SH31377.03
5 ft, 3/8 in. ID braided silicone, MPC insert, and MPC body	SH31396.01
10 ft, 3/8 in. ID braided silicone, MPC insert, and MPC body	SH31396.02
15 ft, 3/8 in. ID braided silicone, MPC insert, and MPC body	SH31396.03
5 ft, 1/2 in. ID TPE, MPX insert, and MPX body	SH31220.01
10 ft, 1/2 in. ID TPE, MPX insert, and MPX body	SH31220.02
15 ft, 1/2 in. ID TPE, MPX insert, and MPX body	SH31220.03
5 ft, 1/2 in. ID silicone, MPX insert, and MPX body	SH31382.01
10 ft, 1/2 in. ID silicone, MPX insert, and MPX body	SH31382.02
15 ft, 1/2 in. ID silicone, MPX insert, and MPX body	SH31382.03
5 ft, 1/2 in. ID braided silicone, MPX insert, and MPX body	SH31401.01
10 ft, 1/2 in. ID braided silicone, MPX insert, and MPX body	SH31401.02
15 ft, 1/2 in. ID braided silicone, MPX insert, and MPX body	SH31401.03
5 ft, 3/4 in. ID TPE, MPU body, and MPU insert	SH31315.01
10 ft, 3/4 in. ID TPE, MPU body, and MPU insert	SH31315.02
15 ft, 3/4 in. ID TPE, MPU body, and MPU insert	SH31315.03
5 ft, 3/4 in. ID silicone, MPU body, and MPU insert	SH31205.01
10 ft, 3/4 in. ID silicone, MPU body, and MPU insert	SH31205.02
15 ft, 3/4 in. ID silicone, MPU body, and MPU insert	SH31205.03
5 ft, 3/4 in. ID braided silicone, MPU body, and MPU insert	SH31398.01
10 ft, 3/4 in. ID braided silicone, MPU body, and MPU insert	SH31398.02
15 ft, 3/4 in. ID braided silicone, MPU body, and MPU insert	SH31398.03
5 ft, 1 in. ID TPE, MPU body, and MPU insert	SH31224.01
10 ft, 1 in. ID TPE, MPU body, and MPU insert	SH31224.02
15 ft, 1 in. ID TPE, MPU body, and MPU insert	SH31224.03
5 ft, 1 in. ID silicone, MPU body, and MPU insert	SH31205.11

Transfer assembly jumper tubing—continued

Description	Cat. No.
10 ft, 1 in. ID silicone, MPU body, and MPU insert	SH31205.12
15 ft, 1 in. ID silicone, MPU body, and MPU insert	SH31205.13
5 ft, 1 in. ID braided silicone, MPU body, and MPU insert	SH31398.11
10 ft, 1 in. ID braided silicone, MPU body, and MPU insert	SH31398.12
15 ft, 1 in. ID braided silicone, MPU body, and MPU insert	SH31398.13
5 ft, 3/4 in. ID TPE, 1 1/2 triclamp, and MPU insert	SH31206.01
10 ft, 3/4 in. ID TPE, 1 1/2 triclamp, and MPU insert	SH31206.02
15 ft, 3/4 in. ID TPE, 1 1/2 triclamp, and MPU insert	SH31206.03
5 ft, 1 in. ID TPE, 1 1/2 triclamp, and MPU insert	SH31206.11
10 ft, 1 in. ID TPE, 1 1/2 triclamp, and MPU insert	SH31206.12
15 ft, 1 in. ID TPE, 1 1/2 triclamp, and MPU insert	SH31206.13
5 ft, 1 in. ID braided silicone, 1 1/2 triclamp, and MPU insert	SH31225.01
10 ft, 1 in. ID braided silicone, 1 1/2 triclamp, and MPU insert	SH31225.02
15 ft, 1 in. ID braided silicone, 1 1/2 triclamp, and MPU insert	SH31225.03
5 ft, 1/4 in. ID TPE, 1 1/2 triclamp, and 3/4 triclamp	SH31201.01
10 ft, 1/4 in. ID TPE, 1 1/2 triclamp, and 3/4 triclamp	SH31201.02
15 ft, 1/4 in. ID TPE, 1 1/2 triclamp, and 3/4 triclamp	SH31201.03
5 ft, 1/4 in. ID silicone, 1 1/2 triclamp, and 3/4 triclamp	SH31386.01
10 ft, 1/4 in. ID silicone, 1 1/2 triclamp, and 3/4 triclamp	SH31386.02
15 ft, 1/4 in. ID silicone, 1 1/2 triclamp, and 3/4 triclamp	SH31386.03
5 ft, 1/4 in. ID braided silicone, 1 1/2 triclamp, and 3/4 triclamp	SH31403.01
10 ft, 1/4 in. ID braided silicone, 1 1/2 triclamp, and 3/4 triclamp	SH31403.02
15 ft, 1/4 in. ID braided silicone, 1 1/2 triclamp, and 3/4 triclamp	SH31403.03
5 ft, 3/8 in. ID TPE, 1 1/2 triclamp, and 3/4 triclamp	SH31201.11
10 ft, 3/8 in. ID TPE, 1 1/2 triclamp, and 3/4 triclamp	SH31201.12
15 ft, 3/8 in. ID TPE, 1 1/2 triclamp, and 3/4 triclamp	SH31201.13
5 ft, 3/8 in. ID silicone, 1 1/2 triclamp, and 3/4 triclamp	SH31386.11
10 ft, 3/8 in. ID silicone, 1 1/2 triclamp, and 3/4 triclamp	SH31386.12
15 ft, 3/8 in. ID silicone, 1 1/2 triclamp, and 3/4 triclamp	SH31386.13
5 ft, 3/8 in. ID braided silicone, 1 1/2 triclamp, and 3/4 triclamp	SH31403.11
10 ft, 3/8 in. ID braided silicone, 1 1/2 triclamp, and 3/4 triclamp	SH31403.12
15 ft, 3/8 in. ID braided silicone, 1 1/2 triclamp, and 3/4 triclamp	SH31403.13
5 ft, 1/2 in. ID TPE, 1 1/2 triclamp, and 3/4 triclamp	SH31201.21
10 ft, 1/2 in. ID TPE, 1 1/2 triclamp, and 3/4 triclamp	SH31201.22
15 ft, 1/2 in. ID TPE, 1 1/2 triclamp, and 3/4 triclamp	SH31201.23
5 ft, 1/2 in. ID silicone, 1 1/2 triclamp, and 3/4 triclamp	SH31386.21
10 ft, 1/2 in. ID silicone, 1 1/2 triclamp, and 3/4 triclamp	SH31386.22
15 ft, 1/2 in. ID silicone, 1 1/2 triclamp, and 3/4 triclamp	SH31386.23
5 ft, 1/2 in. ID braided silicone, 1 1/2 triclamp, and 3/4 triclamp	SH31403.21

Description	Cat. No.
10 ft, 1/2 in. ID braided silicone, 1 1/2 triclamp, and 3/4 triclamp	SH31403.22
15 ft, 1/2 in. ID braided silicone, 1 1/2 triclamp, and 3/4 triclamp	SH31403.23
5 ft, 3/4 in. ID TPE, 1 1/2 triclamp, and 3/4 triclamp	SH31201.31
10 ft, 3/4 in. ID TPE, 1 1/2 triclamp, and 3/4 triclamp	SH31201.32
15 ft, 3/4 in. ID TPE, 1 1/2 triclamp, and 3/4 triclamp	SH31201.33
5 ft, 3/4 in. ID silicone, 1 1/2 triclamp, and 3/4 triclamp	SH31386.31
10 ft, 3/4 in. ID silicone, 1 1/2 triclamp, and 3/4 triclamp	SH31386.32
15 ft, 3/4 in. ID silicone, 1 1/2 triclamp, and 3/4 triclamp	SH31386.33
5 ft, 3/4 in. ID braided silicone, 1 1/2 triclamp, and 3/4 triclamp	SH31403.31
10 ft, 3/4 in. ID braided silicone, 1 1/2 triclamp, and 3/4 triclamp	SH31403.32
15 ft, 3/4 in. ID braided silicone, 1 1/2 triclamp, and 3/4 triclamp	SH31403.33
5 ft, 1/4 in. ID TPE, 1 1/2 triclamps	SH31217.01
10 ft, 1/4 in. ID TPE, 1 1/2 triclamps	SH31217.02
15 ft, 1/4 in. ID TPE, 1 1/2 triclamps	SH31217.03
5 ft, 1/4 in. ID silicone, 1 1/2 triclamps	SH31387.01
10 ft, 1/4 in. ID silicone, 1 1/2 triclamps	SH31387.02
15 ft, 1/4 in. ID silicone, 1 1/2 triclamps	SH31387.03
5 ft, 1/4 in. ID braided silicone, 1 1/2 triclamps	SH31404.01
10 ft, 1/4 in. ID braided silicone, 1 1/2 triclamps	SH31404.02
15 ft, 1/4 in. ID braided silicone, 1 1/2 triclamps	SH31404.03
5 ft, 3/8 in. ID TPE, 1 1/2 triclamps	SH31217.11
10 ft, 3/8 in. ID TPE, 1 1/2 triclamps	SH31217.12
15 ft, 3/8 in. ID TPE, 1 1/2 triclamps	SH31217.13
5 ft, 3/8 in. ID silicone, 1 1/2 triclamps	SH31387.11
10 ft, 3/8 in. ID silicone, 1 1/2 triclamps	SH31387.12
15 ft, 3/8 in. ID silicone, 1 1/2 triclamps	SH31387.13
5 ft, 3/8 in. ID braided silicone, 1 1/2 triclamps	SH31404.11
10 ft, 3/8 in. ID braided silicone, 1 1/2 triclamps	SH31404.12
15 ft, 3/8 in. ID braided silicone, 1 1/2 triclamps	SH31404.13
5 ft, 1/2 in. ID TPE, 1 1/2 triclamps	SH31217.21
10 ft, 1/2 in. ID TPE, 1 1/2 triclamps	SH31217.22
15 ft, 1/2 in. ID TPE, 1 1/2 triclamps	SH31217.23
5 ft, 1/2 in. ID silicone, 1 1/2 triclamps	SH31387.21
10 ft, 1/2 in. ID silicone, 1 1/2 triclamps	SH31387.22
15 ft, 1/2 in. ID silicone, 1 1/2 triclamps	SH31387.23
5 ft, 1/2 in. ID braided silicone, 1 1/2 triclamps	SH31404.21
10 ft, 1/2 in. ID braided silicone, 1 1/2 triclamps	SH31404.22
15 ft, 1/2 in. ID braided silicone, 1 1/2 triclamps	SH31404.23
5 ft, 3/4 in. ID TPE, 1 1/2 triclamps	SH31217.31

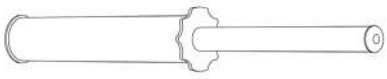
Transfer assembly jumper tubing—continued

Description	Cat. No.
10 ft, 3/4 in. ID TPE, 1 1/2 triclamps	SH31217.32
15 ft, 3/4 in. ID TPE, 1 1/2 triclamps	SH31217.33
5 ft, 3/4 in. ID silicone, 1 1/2 triclamps	SH31387.31
10 ft, 3/4 in. ID silicone, 1 1/2 triclamps	SH31387.32
15 ft, 3/4 in. ID silicone, 1 1/2 triclamps	SH31387.33
5 ft, 3/4 in. ID braided silicone, 1 1/2 triclamps	SH31404.31
10 ft, 3/4 in. ID braided silicone, 1 1/2 triclamps	SH31404.32
15 ft, 3/4 in. ID braided silicone, 1 1/2 triclamps	SH31404.33
5 ft, 1 in. ID silicone, 1 1/2 triclamps	SH31388.01
10 ft, 1 in. ID silicone, 1 1/2 triclamps	SH31388.02
15 ft, 1 in. ID silicone, 1 1/2 triclamps	SH31388.03
5 ft, 1 in. ID braided silicone, 1 1/2 triclamps	SH31405.01
10 ft, 1 in. ID braided silicone, 1 1/2 triclamps	SH31405.02
15 ft, 1 in. ID braided silicone, 1 1/2 triclamps	SH31405.03
5 ft, 1/2 in. ID TPE, MPX insert, and 1 1/2 triclamp	SH31209.01
10 ft, 1/2 in. ID TPE, MPX insert, and 1 1/2 triclamp	SH31209.02
15 ft, 1/2 in. ID TPE, MPX insert, and 1 1/2 triclamp	SH31209.03
5 ft, 1/2 in. ID silicone, MPX insert, and 1 1/2 triclamp	SH31383.01
10 ft, 1/2 in. ID silicone, MPX insert, and 1 1/2 triclamp	SH31383.02
15 ft, 1/2 in. ID silicone, MPX Insert and 1 1/2 triclamp	SH31383.03
5 ft, 1/2 in. ID TPE, MPX body, and 1 1/2 triclamp	SH31210.01
10 ft, 1/2 in. ID TPE, MPX body, and 1 1/2 triclamp	SH31210.02
15 ft, 1/2 in. ID TPE, MPX body, and 1 1/2 triclamp	SH31210.03
5 ft, 1/2 in. ID silicone, MPX body, and 1 1/2 triclamp	SH31385.01
10 ft, 1/2 in. ID silicone, MPX body, and 1 1/2 triclamp	SH31385.02
15 ft, 1/2 in. ID silicone, MPX body, and 1 1/2 triclamp	SH31385.03

Description	Cat. No.
5 ft, 1/2 in. ID braided silicone, MPX body, and 1 1/2 triclamp	SH31402.01
10 ft, 1/2 in. ID braided silicone, MPX body, and 1 1/2 triclamp	SH31402.02
15 ft, 1/2 in. ID braided silicone, MPX body, and 1 1/2 triclamp	SH31402.03
5 ft, 1/2 in. braided silicone, 3/4 triclamp, and MPX insert	SH31223.01
10 ft, 1/2 in. braided silicone, 3/4 triclamp, and MPX insert	SH31223.02
15 ft, 1/2 in. braided silicone, 3/4 triclamp, and MPX insert	SH31223.03
5 ft, 1 in. ID TPE, MPU body, and 1 1/2 triclamp	SH31215.01
10 ft, 1 in. ID TPE, MPU body, and 1 1/2 triclamp	SH31215.02
15 ft, 1 in. ID TPE, MPU body, and 1 1/2 triclamp	SH31215.03
5 ft, 1 in. ID silicone, MPU body, and 1 1/2 triclamp	SH31221.01
10 ft, 1 in. ID silicone, MPU body, and 1 1/2 triclamp	SH31221.02
15 ft, 1 in. ID silicone, MPU body, and 1 1/2 triclamp	SH31221.03
5 ft, 1 in. ID braided silicone, MPU body, and 1 1/2 triclamp	SH31400.01
10 ft, 1 in. ID braided silicone, MPU body, and 1 1/2 triclamp	SH31400.02
15 ft, 1 in. ID braided silicone, MPU body, and 1 1/2 triclamp	SH31400.03
5 ft, 3/4 in. ID silicone, MPU insert, and 1 1/2 triclamp	SH31381.01
10 ft, 3/4 in. ID silicone, MPU insert, and 1 1/2 triclamp	SH31381.02
15 ft, 3/4 in. ID silicone, MPU insert, and 1 1/2 triclamp	SH31381.03
5 ft, 1 in. ID silicone, MPU insert, and 1 1/2 triclamp	SH31381.11
10 ft, 1 in. ID silicone, MPU insert, and 1 1/2 triclamp	SH31381.12
15 ft, 1 in. ID silicone, MPU insert, and 1 1/2 triclamp	SH31381.13
5 ft, 3/4 in. ID braided silicone, MPU insert, and 1 1/2 triclamp	SH31399.01
10 ft, 3/4 in. ID braided silicone, MPU insert, and 1 1/2 triclamp	SH31399.02
15 ft, 3/4 in. ID braided silicone, MPU insert, and 1 1/2 triclamp	SH31399.03

Transfer Assembly Adapters

- Two lengths of TPE tubing differing in size joined in a single length
- Useful for connecting tubing or porting of differing sizes



Tubing size	Tubing length	End connections	Cat. No.
3.2 mm (1/8 in.) ID x 1.6 mm (1/16 in.) wall to 6.35 mm (1/4 in.) ID x 1.6 mm (1/16 in.) wall, TPE	0.5 m (19.7 in.)	Capped—for welders	SH31274.01
3.2 mm (1/8 in.) ID x 1.6 mm (1/16 in.) wall to 6.35 mm (1/4 in.) ID x 2.4 mm (3/32 in.) wall, TPE	0.5 m (19.7 in.)	Capped—for welders	SH31275.01
3.2 mm (1/8 in.) ID x 1.6 mm (1/16 in.) wall to 9.52 mm (3/8 in.) ID x 3.2 mm (1/8 in.) wall, TPE	0.5 m (19.7 in.)	Capped—for welders	SH31276.01
6.35 mm (1/4 in.) ID x 1.6 mm (1/16 in.) wall to 9.52 mm (3/8 in.) ID x 3.2 mm (1/8 in.) wall, TPE	0.5 m (19.7 in.)	Capped—for welders	SH31277.01
6.35 mm (1/4 in.) ID x 1.6 mm (1/16 in.) wall to 12.7 mm (1/2 in.) ID x 3.2 mm (1/8 in.) wall, TPE	2 m (78.7 in.)	Capped—for welders	SH31278.01
6.35 mm (1/4 in.) ID x 2.4 mm (3/32 in.) wall to 9.52 mm (3/8 in.) ID x 3.2 mm (1/8 in.) wall, TPE	0.5 m (19.7 in.)	Capped—for welders	SH31279.01
6.35 mm (1/4 in.) ID x 2.4 mm (3/32 in.) wall to 12.7 mm (1/2 in.) ID x 3.2 mm (1/8 in.) wall, TPE	0.5 m (19.7 in.)	Capped—for welders	SH31280.01
9.52 mm (3/8 in.) ID x 3.2 mm (1/8 in.) wall to 12.7 mm (1/2 in.) ID x 3.2 mm (1/8 in.) wall, TPE	0.5 m (19.7 in.)	Capped—for welders	SH31281.01
3.22 mm (1/8 in.) ID x 6.35 mm (1/4 in.) OD to 9.52 mm (3/8 in.) ID x 15.88 mm (5/8 in.) wall, TPE	2 m (78.7 in.)	Luer to MPC	SH31121.01
3.22 mm (1/8 in.) ID x 6.35 mm (1/4 in.) OD to 9.52 mm (3/8 in.) ID x 15.88 mm (5/8 in.) wall, TPE	2 m (78.7 in.)	Luer to MPC	SH31122.01
6.35 mm (1/4 in.) ID x 11.11 mm (7/16 in.) OD to 12.7 mm (1/2 in.) ID x 19.05 mm (3/4 in.) wall, TPE	2 m (78.7 in.)	MPX to MPC	SH31123.01
6.35 mm (1/4 in.) ID x 11.11 mm (7/16 in.) OD to 12.7 mm (1/2 in.) ID x 19.05 mm (3/4 in.) wall, TPE	2 m (78.7 in.)	MPX to MPC	SH31124.01
6.35 mm (1/4 in.) ID x 11.11 mm (7/16 in.) OD to 12.7 mm (1/2 in.) ID x 19.05 mm (3/4 in.) wall, TPE	2 m (78.7 in.)	MPX to MPC	SH31125.01
6.35 mm (1/4 in.) ID x 11.11 mm (7/16 in.) OD to 12.7 mm (1/2 in.) ID x 19.05 mm (3/4 in.) wall, TPE	2 m (78.7 in.)	MPX to MPC	SH31126.01
9.52 mm (3/8 in.) ID x 15.88 mm (5/8 in.) OD to 12.7 mm (1/2 in.) ID x 19.05 mm (3/4 in.) wall, TPE	2 m (78.7 in.)	MPX to MPC	SH31127.01
9.52 mm (3/8 in.) ID x 15.88 mm (5/8 in.) OD to 12.7 mm (1/2 in.) ID x 19.05 mm (3/4 in.) wall, TPE	2 m (78.7 in.)	MPX to MPC	SH31128.01
9.52 mm (3/8 in.) ID x 15.88 mm (5/8 in.) OD to 12.7 mm (1/2 in.) ID x 19.05 mm (3/4 in.) wall, TPE	2 m (78.7 in.)	MPX to MPC	SH31129.01
9.52 mm (3/8 in.) ID x 15.88 mm (5/8 in.) OD to 12.7 mm (1/2 in.) ID x 19.05 mm (3/4 in.) wall, TPE	2 m (78.7 in.)	MPX to MPC	SH31130.01

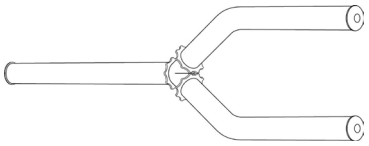
Transfer Assembly Adapters—continued

Description	Cat. No.
3/8 in. ID TPE, MPC body, and AseptiQuik G connector	SH31231.01
3/8 in. ID silicone, MPC body, and AseptiQuik G connector	SH31421.01
3/8 in. ID braided silicone, MPC body, and AseptiQuik G connector	SH31432.01
3/8–1/2 in. ID TPE, MPC insert, and MPX insert	SH31322.01
3/8 in. ID TPE, MPC insert	SH31236.01
3/8 in. ID silicone, MPC insert	SH31427.01
3/8 in. ID braided silicone, MPC insert	SH31439.01
3/8–1/2 in. ID TPE, MPC insert, and MPX insert	SH31322.01
3/8–1/2 in. ID silicone, MPC insert, and MPX insert	SH31424.01
3/8–1/2 in. ID braided silicone, MPC insert, and MPX insert	SH31435.01
1/2 in. ID TPE, 1 1/2 triclamp, and MPX insert	SH31233.01
1/2 in. ID silicone, 1 1/2 triclamp, and MPX insert	SH31243.01
1/2 in. ID braided silicone, 1 1/2 triclamp, and MPX insert	SH31430.01
1/2 in. ID TPE, AseptiQuik G connector, and MPX body	SH31237.01
1/2 in. ID silicone, AseptiQuik G connector, and MPX body	SH31241.01
1/2 in. ID braided silicone, AseptiQuik G connector, and MPX body	SH31444.01
1/2 in. ID TPE, MPX body, and 3/4 triclamp	SH31234.01
1/2 in. ID silicone, MPX body, and 3/4 triclamp	SH31425.01
1/2 in. ID braided silicone, MPX body, and 3/4 triclamp	SH31436.01
1/2 in. ID TPE, MPX insert, and 3/4 triclamp	SH31238.01
1/2 in. ID silicone, MPX insert, and 3/4 triclamp	SH31426.01
1/2 in. ID braided silicone, MPX insert, and 3/4 triclamp	SH31438.01
3/4–1/2 in. ID TPE, AseptiQuik L connector, and MPX body	SH31232.01
3/4–1/2 in. ID silicone, AseptiQuik L connector, and MPX body	SH31423.01

Description	Cat. No.
3/4–1/2 in. ID braided silicone, AseptiQuik L connector, and MPX body	SH31434.01
3/4 in. ID TPE, 3/4 triclamp, and AseptiQuik G connector	SH31235.01
3/4 in. ID silicone, 3/4 triclamp, and AseptiQuik G connector	SH31420.01
3/4 in. ID braided silicone, 3/4 triclamp, and AseptiQuik G connector	SH31431.01
3/4 in. ID TPE, MPU insert, and AseptiQuik G connector	SH31316.01
3/4 in. ID silicone, MPU insert, and AseptiQuik G connector	SH31422.01
3/4 in. ID braided silicone, MPU insert, and AseptiQuik G connector	SH31433.01
3/4 in. ID TPE, AseptiQuik L connector, and MPU body	SH31309.01
3/4 in. ID silicone, AseptiQuik L connector, and MPU body	SH31429.01
3/4 in. ID braided silicone, AseptiQuik L connector, and MPU body	SH31448.01
1–3/4 in. ID braided silicone, AseptiQuik L and G connectors	SH31442.01
1 in. ID TPE, AseptiQuik L and G connectors	SH31375.01
1 in. ID silicone, AseptiQuik L and G connectors	SH31428.01
1 in. ID TPE, AseptiQuik L connector, and MPU body	SH31309.11
1 in. ID silicone, AseptiQuik L connector, and MPU body	SH31226.01
1 in. ID braided silicone, AseptiQuik L connector, and MPU body	SH31446.01
1 in. ID TPE, 1 1/2 triclamp, and MPU insert	SH31240.01
1 in. ID silicone, 1 1/2 triclamp, and MPU insert	SH31228.01
1 in. ID braided silicone, 1 1/2 triclamp, and MPU insert	SH31440.01
1 in. ID TPE, MPU insert, and AseptiQuik L connector	SH31229.01
1 in. ID silicone, MPU insert, and AseptiQuik L connector	SH31242.01
1 in. ID braided silicone, MPU insert, and AseptiQuik L connector	SH31447.01

Transfer assembly manifolds

- Three lengths of TPE tubing joined by a Y-connector
- Enables user to split one connection into two or combine two connections into one
- Join multiple Y sets to create a branching assembly



Tubing size	Tubing length	End connections	Cat. No.
3 x 3.2 mm (1/8 in.) ID x 1.6 mm (1/16 in.) wall, TPE	2 x 0.51 m (20 in.) to 0.51 m (20 in.)	Capped—for welders	SH31282.01
3 x 6.35 mm (1/4 in.) ID x 1.6 mm (1/16 in.) wall, TPE	2 x 0.51 m (20 in.) to 0.51 m (20 in.)	Capped—for welders	SH31283.01
3 x 6.35 mm (1/4 in.) ID x 2.4 mm (3/32 in.) wall, TPE	2 x 0.51 m (20 in.) to 0.51 m (20 in.)	Capped—for welders	SH31284.01
3 x 9.52 mm (3/8 in.) ID x 3.2 mm (1/8 in.) wall, TPE	2 x 0.51 m (20 in.) to 0.51 m (20 in.)	Capped—for welders	SH31285.01
3 x 12.7 mm (1/2 in.) ID x 3.2 mm (1/8 in.) wall, TPE	2 x 0.51 m (20 in.) to 0.51 m (20 in.)	Capped—for welders	SH31286.01
3 x 12.7 mm (1/2 in.) ID x 19.05 mm (3/4 in.) wall, TPE	2 x 0.51 m (20 in.) to 0.51 m (20 in.)	MPX body-insert	SH31104.01
3 x 12.7 mm (1/2 in.) ID x 19.05 mm (3/4 in.) wall, TPE	2 x 0.51 m (20 in.) to 0.51 m (20 in.)	MPX insert-body	SH31105.01
3 x 9.52 mm (3/8 in.) ID x 15.88 mm (5/8 in.) wall, TPE	2 x 0.51 m (20 in.) to 0.51 m (20 in.)	MPX body-insert	SH31106.01
3 x 9.52 mm (3/8 in.) ID x 15.88 mm (5/8 in.) wall, TPE	2 x 0.51 m (20 in.) to 0.51 m (20 in.)	MPX insert-body	SH31107.01
3 x 6.35 mm (1/4 in.) ID x 11.11 mm (7/16 in.) wall, TPE	2 x 0.51 m (20 in.) to 0.51 m (20 in.)	MPX body-insert	SH31108.01
3 x 6.35 mm (1/4 in.) ID x 11.11 mm (7/16 in.) wall, TPE	2 x 0.51 m (20 in.) to 0.51 m (20 in.)	MPX insert-body	SH31109.01
3 x 3.22 mm (1/8 in.) ID x 6.35 mm (1/4 in.) wall, TPE	2 x 0.51 m (20 in.) to 0.51 m (20 in.)	Luer	SH31110.01

Transfer Assembly Y Manifolds

Description	Cat. No.
1/8 in. ID TPE, AseptiQuik S connectors, and Y connector	SH31200.01
1/8 in. ID silicone, AseptiQuik S connectors, and Y connector	SH31461.01
1/4 in. ID TPE, AseptiQuik S connectors, and Y connector	SH31200.10
1/4 in. ID silicone, AseptiQuik S connectors, and Y connector	SH31461.11
1/4 in. ID braided silicone, AseptiQuik S connectors, and Y connector	SH31479.11
1/4 in. ID TPE, AseptiQuik G connectors, and Y connector	SH31202.01
1/4 in. ID silicone, AseptiQuik G connectors, and Y connector	SH31458.01
1/4 in. ID braided silicone, AseptiQuik G connectors, and Y connector	SH31478.01
3/8 in. ID TPE, AseptiQuik S connectors, and Y connector	SH31200.20
3/8 in. ID silicone, AseptiQuik S connectors, and Y connector	SH31461.21
3/8 in. ID braided silicone, AseptiQuik S connectors, and Y connector	SH31479.21
3/8 in. ID TPE, AseptiQuik G connectors, and Y connector	SH31202.11
3/8 in. ID silicone, AseptiQuik G connectors, and Y connector	SH31458.11
3/8 in. ID braided silicone, AseptiQuik G connectors, and Y connector	SH31478.11
3/8 in. ID TPE, MPC body, Y connector, and MPC insert	SH31310.01
3/8 in. ID silicone, MPC body, Y connector, and MPC insert	SH31472.01
3/8 in. ID braided silicone, MPC body, Y connector, and MPC insert	SH31483.01
1/2 in. ID TPE, AseptiQuik G connectors, and Y connector	SH31202.21
1/2 in. ID silicone, AseptiQuik G connectors, and Y connector	SH31458.21
1/2 in. ID braided silicone, AseptiQuik G connectors, and Y connector	SH31478.21
1/2 in. ID TPE, MPX body, Y connector, and MPX insert	SH31244.01

Description	Cat. No.
1/2 in. ID silicone, MPX body, Y connector, and MPX insert	SH31477.01
1/2 in. ID braided silicone, MPX body, Y connector, and MPX insert	SH31487.01
3/4 in. ID TPE, AseptiQuik G connectors, and Y connector	SH31202.31
3/4 in. ID silicone, AseptiQuik G connectors, and Y connector	SH31458.31
3/4 in. ID braided silicone, AseptiQuik G connectors, and Y connector	SH31478.31
3/4 in. ID TPE, AseptiQuik L connectors, and Y connector	SH31203.01
3/4 in. ID silicone, AseptiQuik L connectors, and Y connector	SH31470.01
3/4 in. ID braided silicone, AseptiQuik L connectors, and Y connector	SH31480.01
3/4 in. ID TPE, MPU body, Y connector, and MPU insert	SH31311.01
3/4 in. ID silicone, MPU body, Y connector, and MPU insert	SH31475.01
3/4 in. ID braided silicone, MPU body, Y connector, and MPU insert	SH31485.01
1 in. ID TPE, AseptiQuik L connectors, and Y connector	SH31203.11
1 in. ID braided silicone, AseptiQuik L connectors, and Y connector	SH31481.11
1 in. ID TPE, AseptiQuik L connectors, and Y connectors	SH31246.01
1 in. ID silicone, AseptiQuik L connectors, and Y connectors	SH31471.01
1 in. ID braided silicone, AseptiQuik L connectors, and Y connectors	SH31482.01
1 in. ID TPE, MPU insert, Y connector, and MPU body	SH31247.01
1 in. ID silicone, MPU insert, Y connector, and MPU body	SH31474.01
1 in. ID braided silicone, MPU body, Y connector, and MPU insert	SH31486.01
1 in. ID TPE, MPU body, Y connector, and MPU insert	SH31312.01

Transfer Assembly 4-Way Manifolds

Description	Cat. No.
3/8 in. ID TPE, AseptiQuik G connectors	SH31323.01
3/8 in. ID silicone, AseptiQuik G connectors	SH31437.01
3/8 in. ID braided silicone, AseptiQuik G connectors	SH31450.01
1/2 in. ID TPE, AseptiQuik G connectors	SH31326.01
1/2 in. ID silicone, AseptiQuik G connectors	SH31441.01
1/2 in. ID braided silicone, AseptiQuik G connectors	SH31452.01

Description	Cat. No.
3/4 in. ID silicone, AseptiQuik G connectors, and Y connectors	SH31445.01
3/4 in. ID braided silicone, AseptiQuik G connectors, and Y connectors	SH31455.01
1 in. ID TPE, AseptiQuik L connectors, and Y connectors	SH31329.01
1 in. ID silicone, AseptiQuik L connectors, and Y connectors	SH31443.01
1 in. ID braided silicone, AseptiQuik L connectors, and Y connectors	SH31454.01

Transfer Assembly 5-Way Manifolds

Description	Cat. No.
3/8 in. ID TPE, AseptiQuik G connectors	SH31324.01
3/8 in. ID silicone, AseptiQuik G connectors	SH31449.01
3/8 in. ID braided silicone, AseptiQuik G connectors	SH31457.01
1/2 in. ID TPE, AseptiQuik G connectors	SH31327.01
1/2 in. ID silicone, AseptiQuik G connectors	SH31451.01
1/2 in. ID braided silicone, AseptiQuik G connectors	SH31462.01

Description	Cat. No.
1 in. ID TPE, AseptiQuik L connectors, Y and T connectors	SH31330.01
1 in. ID silicone, AseptiQuik L connectors, Y and T connectors	SH31453.01
1 in. ID braided silicone, AseptiQuik L connectors, Y and T connectors	SH31466.01
3/4 in. ID silicone, AseptiQuik G connectors, Y and T connectors	SH31456.01
3/4 in. ID braided silicone, AseptiQuik G connectors, Y and T connectors	SH31488.01

Transfer Assembly 6-Way Manifolds

Description	Cat. No.
3/8 in. ID TPE, AseptiQuik G connectors	SH31325.01
3/8 in. ID silicone, AseptiQuik G connectors	SH31459.01
3/8 in. ID braided silicone, AseptiQuik G connectors	SH31465.01
1/2 in. ID TPE, AseptiQuik G connectors	SH31328.01
1/2 in. ID silicone, AseptiQuik G connectors	SH31460.01
1/2 in. ID braided silicone, AseptiQuik G connectors	SH31467.01
3/4 in. ID TPE, AseptiQuik G connectors, Y and T connectors	SH31337.01

Description	Cat. No.
3/4 in. ID silicone, AseptiQuik G connectors, Y and T connectors	SH31463.01
3/4 in. ID braided silicone, AseptiQuik G connectors, Y and T connectors	SH31468.01
1 in. ID TPE, AseptiQuik L connectors, Y and T connectors	SH31331.01
1 in. ID silicone, AseptiQuik L connectors, Y and T connectors	SH31464.01
1 in. ID braided silicone, AseptiQuik L connectors, Y and T connectors	SH31469.01

Transfer Assembly Filter Manifolds

Description	Cat. No.
1/2 in. ID TPE, MPX insert, 1 1/2 triclamp, Millipore™ 3 in. Opticap™ XL filter, AseptiQuik G connectors	SH31338.01
1 in. ID TPE, MPU insert, 1 1/2 triclamps, Millipore 5 in. Opticap XL filter, AseptiQuik L connectors	SH31332.01

Transfer assembly pump tubing

- Two lengths of TPE tubing joined by a section of PharMed™ BPT
- Designed to deliver extended performance when used with a peristaltic pump

Tubing size	Tubing length	End connections	Cat. No.
3.2 mm (1/8 in.) ID x 1.6 mm (1/16 in.) wall	0.25 m (10 in.) TPE to 0.5 m (19.7 in.) PharMed BPT to 0.25 m (10 in.), TPE	Capped—for welders	SH31287.01
6.35 mm (1/4 in.) ID x 1.6 mm (1/16 in.) wall	0.25 m (10 in.) TPE to 0.5 m (19.7 in.) PharMed BPT to 0.25 m (10 in.), TPE	Capped—for welders	SH31288.01
6.35 mm (1/4 in.) ID x 2.4 mm (3/32 in.) wall	0.25 m (10 in.) TPE to 0.5 m (19.7 in.) PharMed BPT to 0.25 m (10 in.), TPE	Capped—for welders	SH31289.01
9.52 mm (3/8 in.) ID x 3.2 mm (1/8 in.) wall	0.25 m (10 in.) TPE to 0.5 m (19.7 in.) PharMed BPT to 0.25 m (10 in.), TPE	Capped—for welders	SH31290.01
12.7 mm (1/2 in.) ID x 3.2 mm (1/8 in.) wall	0.25 m (10 in.) TPE to 0.5 m (19.7 in.) PharMed BPT to 0.25 m (10 in.), TPE	Capped—for welders	SH31291.01
3.22 mm (1/8 in.) ID x 6.35 mm (1/4 in.) wall	0.25 m (10 in.) TPE to 0.5 m (19.7 in) PharMed BPT to 0.25 m (10 in.), TPE	Luer	SH31111.01
0.52 mm (3/8 in.) ID x 15.88 mm (5/8 in.) wall	0.25 m (10 in.) TPE to 0.5 m (19.7 in) PharMed BPT to 0.25 m (10 in.), TPE	MPC	SH31112.01
12.7 mm (1/2 in.) ID x 19.05 mm (3/4 in.) wall	0.25 m (10 in.) TPE to 0.5 m (19.7 in) PharMed BPT to 0.25 m (10 in.), TPE	MPX	SH31113.01
6.35 mm (1/4 in.) ID x 9.52 mm (3/8 in.) wall	0.25 m (10 in.) TPE to 0.5 m (19.7 in) PharMed BPT to 0.25 m (10 in.), TPE	MPC	SH31114.01
6.35 mm (1/4 in.) ID x 11.11 mm (7/16 in.) wall	0.25 m (10 in.) TPE to 0.5 m (19.7 in) PharMed BPT to 0.25 m (10 in.), TPE	MPC	SH31115.01

Transfer assembly pump tubing

Description	Cat. No.
1/4 in. ID TPE and Pumpsil silicone, AseptiQuik G connectors	SH31342.01
1/4 in. ID silicone and Pumpsil silicone, AseptiQuik G connectors	SH31406.01
3/8 in. ID TPE and Pumpsil silicone, AseptiQuik G connectors	SH31342.11
3/8 in. ID silicone and Pumpsil silicone, AseptiQuik G connectors	SH31406.11
1/2 in. ID TPE and Pumpsil silicone, AseptiQuik G connectors	SH31342.21
1/2 in. ID silicone and Pumpsil silicone, AseptiQuik G connectors	SH31406.21
1/2 in. ID braided silicone and Pumpsil silicone, AseptiQuik G connectors	SH31412.21
3/4 in. ID TPE and Pumpsil silicone, AseptiQuik G connectors	SH31342.31
3/4 in. ID silicone and Pumpsil silicone, AseptiQuik G connectors	SH31406.31
3/4 in. ID braided silicone and Pumpsil silicone, AseptiQuik G connectors	SH31412.31
3/4 in. ID TPE and Pumpsil silicone, AseptiQuik L connectors	SH31341.01
3/4 in. ID silicone and Pumpsil silicone, AseptiQuik L connectors	SH31407.01
3/4 in. ID braided silicone and Pumpsil silicone, AseptiQuik L connectors	SH31413.01
1 in. ID TPE and Pumpsil silicone, AseptiQuik L connectors	SH31341.11
1 in. ID silicone and Pumpsil silicone, AseptiQuik L connectors	SH31407.11
1 in. ID braided silicone and Pumpsil silicone, AseptiQuik L connectors	SH31413.11

Description	Cat. No.
3/8 in. ID braided silicone and Pumpsil silicone, AseptiQuik G connectors	SH31412.11
3/8 in. ID TPE, 3/8 in. ID Pumpsil silicone, MPC insert, and MPC body	SH31320.01
3/8 in. ID silicone, 3/8 in. ID Pumpsil silicone, MPC insert, and MPC body	SH31408.01
3/8 in. ID braided silicone, 3/8 in. ID Pumpsil silicone, MPC insert, and MPC body	SH31414.01
1/2 in. ID TPE and Pumpsil silicone, MPX insert, and MPX body	SH31318.01
1/2 in. ID silicone and Pumpsil silicone, MPX insert, and MPX body	SH31411.01
1/2 in. ID braided silicone and Pumpsil silicone, MPX insert, and MPX body	SH31417.01
3/4 in. ID TPE and Pumpsil silicone, MPU insert, and MPU body	SH31314.01
3/4 in. ID silicone and Pumpsil silicone, MPU insert, and MPU body	SH31409.01
3/4 in. ID braided silicone and Pumpsil silicone, MPU insert, and MPU body	SH31415.01
1 in. ID TPE and Pumpsil silicone, MPU insert, and MPU body	SH31333.01
1 in. ID silicone and Pumpsil silicone, MPU insert, and MPU body	SH31410.01
1 in. ID braided silicone and Pumpsil silicone, MPU insert, and MPU body	SH31416.01

Standard Single-Use Bottle Assembly Systems

Fluid transfer systems can easily consist of multiple components that all need to be sourced, purchased, inventoried, and assembled. With Thermo Scientific™ Standard Single-Use Bottle Assembly Systems, we can relieve you of the burden of managing individual components and validating the systems in-house. Realize labor savings and mitigate risk by leaving the assembly and processing to us. These easy-to-order configured solutions include rigid support containers with preconfigured cap sets, and are delivered gamma-irradiated for use right out of the package.

Applications

- Media and buffer transfer
- Product sampling
- Harvest collection and bulk storage
- Filtration and purification process connection

Key benefits

- Designed for a broad range of applications, including bioproduction, life science, and general lab use
- Helps eliminate setup and post-use cleaning steps required for reusable containers
- Helps reduce cross-contamination risks
- Allows process-specific flexibility with multiple bottle sizes

Assembly details

- Each bottle is topped with an assembly including a cap, puck, and tubing
- Most assemblies contain two ports with TPE tubing; the 2 L size includes a third port, also with TPE tubing
- One line on each assembly is dedicated to venting
- The second and third lines are for liquid transfer and include 1/8 in. plug fittings, to be used with your preferred welding or sealing equipment
- Fluid path of the finished product has been validated according to AAMI TIR33 with a 10^{-6} sterility assurance level (SAL)

Closure	Tubing connection	Tubing length, in. (cm)	Fluid path ID x OD, in. (mm)	Size	Cat. No.
PC Standard Single-Use Bottle Assembly Systems					
38–430 mm	Port 1: PP tube plug port Port 2: Vent filter	Port 1: 24 (60.96) Port 2: 2 (5.08)	Port 1: 1/8 x 1/4 (3.2 x 6.4) Port 2: 1/8 x 1/4 (3.2 x 6.4)	125 mL	SB00001-I
				250 mL	SB00002-I
				500 mL	SB00003-I
				1 L	SB00004-I
53 B	Port 1: PP tube plug port Port 2: Vent filter port Port 3: PP tube plug	Port 1: 12 (30.48) Port 2: 3 (7.62) Port 3: 12 (30.48)	Port 1: 1/4 x 3/8 (6.4 x 9.6) Port 2: 1/4 x 3/8 (6.4 x 9.6) Port 3: 1/4 x 3/8 (6.4 x 9.6)	2 L	SB00005-I
PETG Standard Single-Use Bottle Assembly Systems					
38–430 mm	Port 1: PP tube plug port Port 2: Vent filter	Port 1: 24 (60.96) Port 2: 2 (5.08)	Port 1: 1/8 x 1/4 (3.2 x 6.4) Port 2: 1/8 x 1/4 (3.2 x 6.4)	125 mL	SB00006-I
				250 mL	SB00007-I
				500 mL	SB00008-I
				1 L	SB00009-I
53 B	Port 1: PP tube plug port Port 2: Vent filter port Port 3: PP tube plug	Port 1: 12 (30.48) Port 2: 3 (7.62) Port 3: 12 (30.48)	Port 1: 1/4 x 3/8 (6.4 x 9.6) Port 2: 1/4 x 3/8 (6.4 x 9.6) Port 3: 1/4 x 3/8 (6.4 x 9.6)	2 L	SB00010-I

Nalgene Top Works fluid transfer systems

Thermo Scientific™ Nalgene™ Top Works™ fluid transfer systems are aseptic handling solutions for pharmaceutical, biotechnology, and laboratory liquid transfer applications.

Customize Thermo Scientific™ Nalgene™ bottles and carboys with closures, including platinum-cured silicone stopper inserts and tubing. Available with various ports, tubing lengths, and closure sizes.

Key features

- Closures are specifically designed to mate with most Nalgene bottles and carboys
- Autoclavable and leakproof* systems for secure, aseptic handling of valued products compared to pouring
- Includes long tubing lengths, both inside and outside the container, to support integration with most Nalgene bottles and carboys
- Ready to accept additional fluid transfer components such as aseptic connectors and air vent filters

Ordering information: One system per case.
Compliance: USP Class VI.

Nalgene Top Works Fluid Transfer Systems

Closure size, mm	Closure material	No. of ports	Port ID size, in. (mm)	No. per case	Cat. No.
38-430	PP	3	1 x 1/4 (6.35), 2 x 1/8 (3.18)	1	2135-3803
53B	PP	None (solid insert)	–	1	2135-5300
53B	PP	2	2 x 1/4 (6.35)	1	2135-5302
53B	PP	3	1 x 1/8 (3.18), 2 x 1/4 (6.35)	1	2135-5303
83B	PP	None (solid insert)	–	1	2135-8300
83B	PP	2	2 x 1/4 (6.35)	1	2135-8302
83B	PP	3	1 x 3/8 (9.52), 2 x 1/4 (6.35)	1	2135-8303
GL45	PSF	3	1 x 1/8 (3.18), 2 x 1/4 (6.35)	1	2132-1003**

* Our guarantee for a leakproof seal is subject to our standard product warranty, as set forth in the Thermo Fisher Scientific Terms and Conditions of Sale. Our products are leakproof at ambient temperature and pressure when used with their corresponding closures. However, to ensure safe usage, customers are advised to test our containers and closures under conditions of their planned applications. Please contact technicalsupport@thermofisher.com if you need additional information about our products.

** GL45 closure system for Schott™, Corning™, and Wheaton™ media bottles.

Tubing selection guide

Although it is not practical to include the complete range of commercially available tubing in the Thermo Scientific™ catalog component library, a list of sizes for the key types used in the biopharmaceutical industry are represented.

Tubing for BPC systems

Type	Description	When to use
TPE 	This is a common choice of tubing for use in catalog and custom BPC systems due to its overall suitability. Three formulations are included: clear, opaque, and ADCF*. Its main advantages over silicone are increased chemical resistance and thermoplastic characteristics.	General-purpose liquid handling is required; with tubing, welding, and sealing equipment.
Platinum-cured silicone 	Silicone-based tubing is recommended to maximize range of sizes, availability, and cost.	General-purpose liquid handling is required.
PVC	Medical-grade PVC tubing is included in the catalog component library for historical reasons and was widely used before other alternatives like TPE tubing became available.	Heat/radio-frequency sealing or very high clarity are required.
PharMed™ 	This tubing has a longer pump life than TPE or silicone tubing. Due to its cost and opacity it is normally used only in small sections of tubing intended to be loaded into a peristaltic pump. The remaining tube length on the BPC would be TPE or silicone tubing.	Long pump life is required.
PharmaPure™	This tubing material has ultra-low particulate spallation.	Long pump life is required.

* Non-animal origin (NAO).

The tables below are intended to outline major features, types, and sizes of tubing available. The tables below also include references to Masterflex™ tubing size numbers. Catalog BPC systems are normally supplied with TPE or platinum-cured silicone tubing because of their suitable technical and economic characteristics.

Available tubing specification details

Product description	Weld and seal capabilities	Animal-derived components	Extractable profile	Gas permeation	Autoclave tolerance	Peristaltic pump life	Binding	Clarity
TPE 374 NAO	Yes	No	Good	Very low	Fair	Good	Low	Clear
TPE clear formulation 082	Yes	No	Good	Very low	Fair	Good	Low	Clear
TPE opaque formulation 072	Yes	No	Good	Very low	Fair	Very good	Low	Opaque
Silicone, Tygon 3350	No	No	Excellent	Moderate	Excellent	Fair	Low	Clear
Silicone, SPT-50	No	No	Very good	Moderate	Excellent	Fair	Low	Clear
PharMed BPT	No	No	Good	Very low	Good	Excellent	Low	Opaque

Inner diameter x outer diameter size available	Pump size*	Default silicone	Clear TPE	Opaque TPE	NAO TPE	PVC	PharMed	PharmaPure
3.2 x 6.4 mm (0.13 x 0.25 in.)	16	X	X	X	X	X	X	X
3.2 x 4.8 mm (0.13 x 0.19 in.)						X		
4.8 x 7.9 mm (0.19 x 0.31 in.)	25	X	X	X	X	X	X	X
4.8 x 9.5 mm (0.19 x 0.38 in.)	15	X	X	X	X	X	X	
6.4 x 9.5 mm (0.25 x 0.38 in.)	17	X	X		X	X	X	X
6.4 x 11.1 mm (0.25 x 0.44 in.)	24	X	X	X	X	X	X	
6.4 x 12.7 mm (0.25 x 0.5 in.)	26	X	X	X	X	X	X	X
7.9 x 11.1 mm (0.31 x 0.44 in.)	18	X	X	X	X	X	X	X
7.9 x 12.7 mm (0.31 x 0.5 in.)		X						X
9.5 x 12.7 mm (0.38 x 0.5 in.)		X	X	X	X	X		X
9.5 x 15.9 mm (0.38 x 0.63 in.)	73	X	X	X	X	X	X	X
9.5 x 14.3 mm (0.38 x 0.56 in.)		X						
12.7 x 15.9 mm (0.5 x 0.63 in.)				X		X		
12.7 x 19 mm (0.5 x 0.75 in.)	82	X	X		X	X	X	X
12.7 x 17.5 mm (0.5 x 0.69 in.)	19	X	X	X	X	X		X
12.7 x 22.2 mm (0.5 x 0.88 in.)		X						
15.9 x 22.2 mm (0.63 x 0.88 in.)			X		X	X		X
19 x 25.4 mm (0.75 x 1 in.)	90	X	X		X	X	X	X
19 x 28.6 mm (0.75 x 1.13 in.)		X	X		X			
19 x 31.8 mm (0.75 x 1.25 in.)			X	X	X			
22.2 x 28.6 mm (0.88 x 1.13 in.)		X	X		X			
22.2 x 31.8 mm (0.88 x 1.25 in.)		X						
25.4 x 31.8 mm (1 x 1.25 in.)		X	X		X	X		
25.4 x 34.9 mm (1 x 1.38 in.)	92	X					X	

* Pump sizes listed are for Masterflex™ tubing pump systems. Internal and outer dimensions may vary from Masterflex brand tubing. Users should test product to determine suitability for specific use.

Nalgene Pharma-Grade Platinum-Cured Silicone Tubing

Thermo Scientific™ Nalgene™ Pharma-Grade Platinum-Cured Silicone Tubing is flexible, durable, and translucent. This high-purity tubing is designed for a variety of pumps and transfer applications, including pharmaceutical, laboratory, and bioprocess manufacturing.

Key features

- Tasteless, odorless, noncytotoxic, and nonhemolytic
- Contains no phthalate plasticizers or peroxides that can leach out into transported fluid
- Low-binding surface minimizes absorption of proteins and food products
- Autoclavable; also can be sterilized by gamma radiation, EtO, and chemical procedures
- Durometer hardness: Shore A, 50

Ordering information: Double bagged in case of 50 ft (15.2 m).

Compliance: Meets USP <87> Cytotoxicity (Agar Diffusion and MEM Elution methods), USP <88> Class VI, USP <661> Physicochemical Tests, ISO10993-3 Bacterial Mutagenicity—Ames Assay, ISO10993-4 Hemolysis Direct Contact, EP 3.1.9 Silicone Elastomer for Closures and Tubing, and FDA CFR 177.2600 Rubber Articles Intended for Repeated Use.

Note: Not intended for invasive use.

Nalgene Pharma-Grade Platinum-Cured Silicone Tubing

ID x OD x wall, in. (mm)	Critical dimensions, in.				Concentricity TIR max, in.	Working PSI	Tubing length, ft (m)	Cat. No.
	ID	Tolerance	Wall	Tolerance				
1/16 x 1/8 x 1/32 (1.59 x 3.18 x 0.79)	0.062	±0.005	0.032	±0.002	0.002	18	50 (15.2)	8600-0020
1/8 x 1/4 x 1/16 (3.18 x 6.35 x 1.59)	0.125	±0.005	0.063	±0.005	0.005	18	50 (15.2)	8600-0030
3/16 x 5/16 x 1/16 (4.76 x 7.94 x 1.59)	0.188	±0.005	0.063	±0.005	0.005	14	50 (15.2)	8600-0040
3/16 x 3/8 x 3/32 (4.76 x 9.53 x 2.38)	0.188	±0.005	0.094	±0.003	0.003	18	50 (15.2)	8600-0050
1/4 x 3/8 x 1/16 (6.35 x 9.53 x 1.59)	0.250	±0.010	0.063	±0.003	0.003	12	50 (15.2)	8600-0060
1/4 x 7/16 x 3/32 (6.35 x 11.11 x 2.38)	0.250	±0.010	0.094	±0.003	0.003	15	50 (15.2)	8600-0070
1/4 x 1/2 x 1/8 (6.35 x 12.7 x 3.18)	0.250	±0.010	0.125	±0.005	0.005	18	50 (15.2)	8600-0080
5/16 x 1/2 x 3/32 (7.94 x 12.7 x 2.38)	0.312	±0.010	0.094	±0.003	0.003	13	50 (15.2)	8600-0100
3/8 x 1/2 x 1/16 (9.53 x 12.7 x 1.59)	0.375	±0.015	0.063	±0.002	0.002	9	50 (15.2)	8600-0120
3/8 x 9/16 x 3/32 (9.53 x 14.29 x 2.38)	0.375	±0.015	0.094	±0.003	0.003	12	50 (15.2)	8600-0130
3/8 x 5/8 x 1/8 (9.53 x 15.88 x 3.18)	0.375	±0.015	0.125	±0.005	0.005	14	50 (15.2)	8600-0140
1/2 x 11/16 x 3/32 (12.7 x 17.46 x 2.38)	0.500	±0.015	0.094	±0.005	0.005	10	50 (15.2)	8600-0190
1/2 x 3/4 x 1/8 (12.7 x 19.05 x 3.18)	0.500	±0.015	0.125	±0.005	0.005	12	50 (15.2)	8600-0200
5/8 x 7/8 x 1/8 (15.88 x 22.23 x 3.18)	0.625	±0.015	0.125	±0.005	0.005	10	50 (15.2)	8600-0260
3/4 x 1 x 1/8 (19.05 x 25.4 x 3.18)	0.750	±0.020	0.125	±0.005	0.005	10	50 (15.2)	8600-0310

Nalgene Pharma-Grade Platinum-Cured Silicone Tubing for Peristaltic Pumps

Thermo Scientific™ Nalgene™ Pharma-Grade Platinum-Cured Silicone Tubing for Peristaltic Pumps is flexible, durable, and translucent. This high-purity tubing is designed for a variety of pumps and transfer applications, including pharmaceutical, laboratory, and bioprocess manufacturing.

Key features

- Tasteless, odorless, noncytotoxic, and nonhemolytic
- Contains no phthalate plasticizers or peroxides that can leach out into transported fluid
- Low-binding surface minimizes absorption of proteins and food products
- Autoclavable; also can be sterilized by gamma irradiation, EtO, and chemical procedures
- Durometer hardness: Shore A, 50

Ordering information: Double bagged in case of 25 ft (7.6 m).

Compliance: Meets USP <87> Cytotoxicity (Agar Diffusion and MEM Elution methods), USP <88> Class VI, USP <661> Physicochemical Tests, ISO10993-3 Bacterial Mutagenicity—Ames Assay, ISO10993-4 Hemolysis Direct Contact, EP 3.1.9 Silicone Elastomer for Closures and Tubing, and FDA CFR 177.2600 Rubber Articles Intended for Repeated Use.

Nalgene Pharma-Grade Platinum-Cured Silicone Tubing for Peristaltic Pumps

Description	ID x OD x wall, in. (mm)	Critical dimensions, in.				Concentricity TIR max, in.	Working PSI	Tubing length, ft (m)	Cat. No.
		ID	Tolerance	Wall	Tolerance				
Silicone pump tubing; pump size #15	1/16 x 1/8 x 1/32 (1.59 x 3.18 x 0.79)	0.188	±0.008	0.100	±0.005	0.005	11	25 (7.6)	8600-3015
Silicone pump tubing; pump size #17	3/16 x 5/16 x 1/16 (4.76 x 7.94 x 1.59)	0.250	±0.005	0.063	±0.005	0.005	7	25 (7.6)	8600-3017
Silicone pump tubing; pump size #18	3/16 x 3/8 x 3/32 (4.76 x 9.53 x 2.38)	0.313	±0.005	0.063	±0.005	0.005	6	25 (7.6)	8600-3018
Silicone pump tubing; pump size #24	1/4 x 3/8 x 1/16 (6.35 x 9.53 x 1.59)	0.250	±0.005	0.100	±0.005	0.005	9	25 (7.6)	8600-3024
Silicone pump tubing; pump size #25	1/4 x 7/16 x 3/32 (6.35 x 11.11 x 2.38)	0.188	±0.005	0.063	±0.003	0.003	9	25 (7.6)	8600-3025
Silicone pump tubing; pump size #73	1/4 x 1/2 x 1/8 (6.35 x 12.7 x 3.18)	0.375	±0.015	0.135	±0.010	0.010	8	25 (7.6)	8600-3173
Silicone pump tubing; pump size #82	5/16 x 1/2 x 3/32 (7.94 x 12.7 x 2.38)	0.500	±0.015	0.135	±0.010	0.010	8	25 (7.6)	8600-3182

Note: Not intended for invasive use.

Nalgene Braided Platinum-Cured Silicone Tubing

Thermo Scientific™ Nalgene™ Braided Platinum-Cured Silicone Tubing is durable, high-purity tubing designed for a variety of pump and transfer applications including pharmaceutical, laboratory, bioprocess manufacturing, and food and beverage applications. Manufactured with interwoven polyester braid for added safety, pressure, and kink resistance.

Key features

- Contains no phthalate plasticizers or peroxides that can leach out into transported fluid
- Low-binding surface minimizes absorption of proteins and food products
- Tasteless, odorless, noncytotoxic, nonpyrogenic, and nonhemolytic
- Autoclavable; also can be sterilized by gamma irradiation, EtO, and chemical procedures
- Durometer hardness: Shore A, 65

Ordering information: Double bagged in 25 ft (7.6 m) cases.

Compliance: Meets FDA, USDA, and US Pharmacopeia Class VI, 24th Edition requirements for plastic materials, and 3A sanitary standards.

Nalgene Braided Platinum-Cured Silicone Tubing

ID x OD x wall, in. (mm)	Max pressure, psig		Length per case, ft (m)	Cat. No.
	at 73°F (23°C)	at 320°F (160°C)		
1/4 x 9/16 x 5/32 (6.35 x 14.29 x 3.97)	156	78	25 (7.6)	8061-3070
3/8 x 21/32 x 5/32 (9.52 x 16.67 x 3.97)	136	68	25 (7.6)	8061-3130
1/2 x 13/16 x 5/32 (12.7 x 20.64 x 3.97)	126	63	25 (7.6)	8061-3190

Nalgene 50 Platinum-Cured Silicone Tubing

Minimize absorption of proteins and food products. Flexible and durable, Thermo Scientific™ Nalgene™ 50 Platinum-Cured Silicone Tubing features a low-binding surface, making it ideal for a variety of pump and transfer applications in pharmaceutical, laboratory, bioprocess manufacturing, and food and beverage industries.

Key features

- High-purity, translucent tubing contains no phthalate plasticizers or peroxides to leach out into transported fluid
- Tasteless, odorless, noncytotoxic, nonpyrogenic, and nonhemolytic
- Autoclavable; also can be sterilized by gamma irradiation, EtO, and chemical procedures
- Durometer hardness: Shore A, 50

Note: Not intended for invasive use.

Ordering information: Double bagged in case of 50 ft (15.2 m).

Compliance: Meets FDA, USDA, and US Pharmacopeia Class VI, 24th Edition requirements for plastic materials, and 3A sanitary standards.

Nalgene 50 Platinum-Cured Silicone Tubing

ID x OD x wall, in. (mm)	Critical dimensions, in.				Concentricity TIR max, in.	Working PSI	Tubing length, ft (m)	Cat. No.
	ID	Tolerance	Wall	Tolerance				
1/16 x 1/8 x 1/32 (1.59 x 3.18 x 0.79)	0.062	±0.005	0.062	±0.005	0.002	18	50 (15.2)	8060-0020
1/8 x 1/4 x 1/16 (3.18 x 6.35 x 1.59)	0.125	±0.005	0.125	±0.005	0.005	18	50 (15.2)	8060-0030
3/16 x 5/16 x 1/16 (4.76 x 7.94 x 1.59)	0.188	±0.005	0.188	±0.005	0.005	14	50 (15.2)	8060-0040
3/16 x 3/8 x 3/32 (4.76 x 9.53 x 2.38)	0.188	±0.005	0.188	±0.005	0.003	18	50 (15.2)	8060-0050
1/4 x 3/8 x 1/16 (6.35 x 9.53 x 1.59)	0.250	±0.010	0.250	±0.010	0.003	15	50 (15.2)	8060-0060
1/4 x 7/16 x 3/32 (6.35 x 11.11 x 2.38)	0.250	±0.010	0.250	±0.010	0.003	15	50 (15.2)	8060-0070
1/4 x 1/2 x 1/8 (6.35 x 12.7 x 3.18)	0.250	±0.010	0.250	±0.010	0.005	18	50 (15.2)	8060-0080
5/16 x 1/2 x 3/32 (7.94 x 12.7 x 2.38)	0.312	±0.010	0.312	±0.010	0.003	13	50 (15.2)	8060-0100
3/8 x 1/2 x 1/16 (9.53 x 12.7 x 1.59)	0.375	±0.015	0.375	±0.015	0.002	9	50 (15.2)	8060-0120
3/8 x 9/16 x 3/32 (9.53 x 14.29 x 2.38)	0.375	±0.015	0.375	±0.015	0.003	12	50 (15.2)	8060-0130
3/8 x 5/8 x 1/8 (9.53 x 15.88 x 3.18)	0.375	±0.015	0.125	±0.005	0.005	14	50 (15.2)	8060-0140
1/2 x 11/16 x 3/32 (12.7 x 17.46 x 2.38)	0.500	±0.015	0.500	±0.015	0.005	10	50 (15.2)	8060-0190
1/2 x 3/4 x 1/8 (12.7 x 19.05 x 3.18)	0.500	±0.015	0.500	±0.015	0.005	12	50 (15.2)	8060-0200
5/8 x 7/8 x 1/8 (15.88 x 22.23 x 3.18)	0.625	±0.015	0.625	±0.015	0.005	10	50 (15.2)	8060-0260
3/4 x 1 x 1/8 (19.05 x 25.4 x 3.18)	0.750	±0.020	0.750	±0.020	0.005	10	50 (15.2)	8060-0310
3/8 x 5/8 x 1/8 (9.53 x 15.88 x 3.18)	0.375	±0.015	0.125	±0.005	0.005	14	50 (15.2)	8060-0140

Nalgene 50 Platinum-Cured Silicone Tubing for Peristaltic Pumps

Minimize absorption of proteins and food products with Thermo Scientific™ Nalgene™ 50 Platinum-Cured Silicone Tubing for Peristaltic Pumps. This flexible and durable tubing features a low-binding surface, making it ideal for a variety of pump and transfer applications in pharmaceutical, laboratory, bioprocess manufacturing, and food and beverage industries.

Key features

- Tasteless, odorless, noncytotoxic, nonpyrogenic, and nonhemolytic
- Contains no phthalate plasticizers or peroxides that can leach out into transported fluid
- Low-binding surface minimizes absorption of proteins and food products
- Autoclavable; also can be sterilized by gamma irradiation, EtO, and chemical procedures
- Durometer hardness: Shore A, 50

Ordering information: Double bagged in case of 25 ft (7.6 m).

Compliance: Meets FDA, USDA, and US Pharmacopeia Class VI, 24th Edition requirements for plastic materials, and 3A sanitary standards.

Nalgene 50 Platinum-Cured Silicone Tubing for Peristaltic Pumps

Description	Critical dimensions, in.				Concentricity TIR max, in.	Working PSI	Tubing length, ft (m)	Cat. No.
	ID	Tolerance	Wall	Tolerance				
Silicone pump tubing; pump size #15	0.188	±0.008	0.100	±0.005	0.005	11	25 (7.6)	8060-3015
Silicone pump tubing; pump size #16	0.125	±0.008	0.063	±0.005	0.005	11	25 (7.6)	8060-3016
Silicone pump tubing; pump size #17	0.250	±0.005	0.063	±0.005	0.005	7	25 (7.6)	8060-3017
Silicone pump tubing; pump size #18	0.313	±0.005	0.063	±0.005	0.005	6	25 (7.6)	8060-3018
Silicone pump tubing; pump size #24	0.250	±0.005	0.100	±0.005	0.005	9	25 (7.6)	8060-3024
Silicone pump tubing; pump size #25	0.188	±0.005	0.063	±0.003	0.003	9	25 (7.6)	8060-3025
Silicone pump tubing; pump size #73	0.375	±0.015	0.135	±0.010	0.010	8	25 (7.6)	8060-3173
Silicone pump tubing; pump size #82	0.500	±0.015	0.135	±0.010	0.010	7	25 (7.6)	8060-3182

Nalgene closures

Nalgene quick-filling/venting closures

Thermo Scientific™ Nalgene™ quick-filling/venting closures feature quick-disconnect fittings with tubulation for attachment to the tubing of choice. Customizable, ported 83B closure features panel-mounted, quick-disconnect fittings and inside/outside barbed fittings. Designed as a ready-made alternative to cumbersome in-house filling and dispensing procedures.

- Available in 2- or 3-port styles for 6.35 mm or 9.53 mm (1/4 or 3/8 in.) tubing, offering an ideal platform for customization of your Nalgene bottle or carboy
- Container integrity is assured with internal valve-style quick-disconnect fittings
- Ideal for use in vacuum systems with Thermo Scientific™ Nalgene™ heavy-duty vacuum carboys and bottles (Cat. No. 2226 and 2126)
- Use with Thermo Scientific™ Nalgene™ 180 heavy-wall tubing (Cat. No. 8000-0145 or 8000-0065)
- Alternative and replacement fittings are available for further customization options (Cat. No. 2159)

Nalgene quick-filling/venting closures

Hose barb ID, in. (mm)	No. of ports/ per case	Cat. No.
1/4 (6.35)	2/1	2158-0021
3/8 (9.53)	2/1	2158-0022
1/4 (6.35)	3/1	2158-0031
3/8 (9.53)	3/1	2158-0032

Nalgene PP Replacement Coupling Inserts for quick-filling/venting closures

Thermo Scientific™ Nalgene™ PP Replacement Coupling Inserts support one-handed connection and disconnection when applied to mating coupling bodies. These male, barbed quick-disconnect replacement coupling inserts are for use with Nalgene quick-filling/venting closures.

- For use with Nalgene quick-filling/venting closures (Cat. No. 2158)
- Promotes fewer leak points and faster installations

Nalgene PP Replacement Coupling Inserts for quick-filling/venting closures

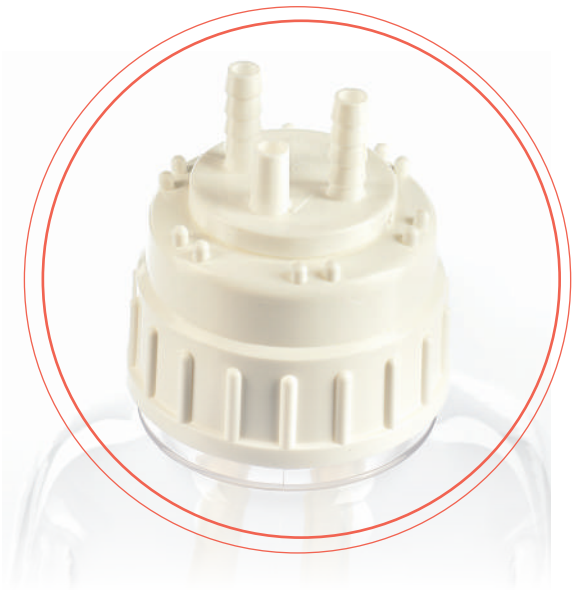
Tubing ID, in. (mm)	No. per case	Cat. No.
Straight		
1/4 (6.35)	6	2159-0001
3/8 (9.53)	6	2159-0002
Elbow		
1/4 (6.35)	6	2159-0011
3/8 (9.53)	6	2159-0012

Disclaimer: Use with heavy-wall or vacuum tubing. Not recommended for vacuum use with lighter-weight containers. EPDM gaskets will not hold vacuum after multiple autoclavings.
Note: 1/4 and 3/8 in. coupling inserts are not interchangeable.

Nalgene closures

Nalgene Filling/Venting Closures

Thermo Scientific™ Nalgene™ Filling/Venting Closures are aseptic handling solutions for pharmaceutical, biotechnology, and laboratory liquid transfer applications. Available for use with Nalgene bottles and carboys with either 53B or 83B closures, including premounted lengths of platinum-cured silicone tubing for easy customization of bottles and carboys.



Key features

- White polypropylene closure with thermoplastic elastomer gasket, thermoplastic elastomer port caps, and platinum-cured silicone tubing
- Ready to accept additional fluid transfer components such as aseptic connectors and air vent filters
- Closures are specifically designed to mate with most Nalgene bottles and carboys
- Leakproof systems for secure, aseptic handling of valued products compared to pouring
- Autoclavable

Includes: Nalgene platinum-cured silicone tubing and thermoplastic elastomer port caps.

Nalgene Filling/Venting PP Closures

Tubing ID, in. (mm)	Closure size, mm	No. per case	Cat. No.
1/4 (6.35)	53	6	2162-0531
1/4 (6.35)	83	6	2162-0831
1/2 (12.7)	83	6	2162-0830

Nalgene Barbed Bulkhead PP Fittings

Thermo Scientific™ Nalgene™ Barbed Bulkhead PP Fittings promote the customization of most Nalgene bottle and carboy closures for aseptic transfer of liquids.

Key features

- Polypropylene fittings, acetal nuts, silicone gaskets, thermoplastic elastomer port caps
- 53B closures will accept two 1/4-inch fittings
- Fittings are barbed at both ends to accept tubing inside and outside the container
- Autoclavable

Includes: Instructions, drilling template, and a set of two panel-mount barbed fittings, acetal nuts, and silicone gaskets.

Nalgene Barbed Bulkhead PP Fittings

Tubing ID, in. (mm)	Closure size, mm	No. per case	Cat. No.
1/2 (13)	2	24	6149-0001
1/4 (6.35)	2	24	6149-0002

Nalgene HDPE Vacuum Check Valve

The Thermo Scientific™ Nalgene™ HDPE Vacuum Check Valve prevents back pressure with aspirator-type vacuum pumps.

The valve works best between 10 in.-Hg and 28 in.-Hg and was designed for use with 1/4 in. to 5/16 in. (6.35 mm to 7.94 mm) ID tubing.

Key features

- 2-piece design, easy to disassemble for cleaning
- Includes silicone diaphragm for prevention of back pressure

Note: Not for use with liquids.

Nalgene HDPE Vacuum Check Valve

Description	No. per pack	No. per case	Cat. No.
Vacuum check valve for 1/4 in. to 5/16 in. (6.4 mm to 7.9 mm) ID tubing	6	72	6120-0010

Nalgene T- and Y-Type Tubing Connectors

Thermo Scientific™ Nalgene™ T-Type and Y-Type Tubing Connectors are molded of polypropylene resin and free of animal-derived components. Non-tapered hose barbs maximize liquid flow.

Key features

- Double bagged to maintain cleanliness
- Autoclavable

Nalgene tubing connectors

Fits tubing ID, in. (mm)	No. per pack	No. per case	T-Type Cat. No.	Y-Type Cat. No.
1/8 (3.18)	12	72	6151-0125	6152-0125
3/16 (4.76)	12	72	6151-0187	6152-0187
1/4 (6.35)	12	72	6151-0250	6152-0250
5/16 (7.94)	12	72	6151-0312	6152-0312
3/8 (9.53)	12	48	6151-0375	6152-0375
1/2 (12.7)	12	48	6151-0500	6152-0500

Nalgene PP Pinch Clamp

The Thermo Scientific™ Nalgene™ PP Pinch Clamp allows precise, one-handed regulation of fluid flow.

The molded one-piece design is ideal for use with Nalgene tubing.

Key features

- Polypropylene construction will not corrode or deform like metal clamps
- Pinch clamp for 1/4 in. to 7/16 in. (6.35 mm to 11.11 mm) OD tubing
- One-piece design contains no sharp edges
- Autoclavable

Nalgene PP Pinch Clamp

Material	Fits tubing ID, in. (mm)	No. per pack	No. per case	Cat. No.
Polypropylene	1/4 to 7/16 (6.35 to 11.11)	12	72	6165-0002

Nalgene PP stopcocks

Nalgene One-Way PP Stopcocks

Thermo Scientific™ Nalgene™ One-Way PP Stopcocks promote accurate liquid flow control in liquid-handling systems. Ideal for use in developing in-house fluid transfer systems.

- Polypropylene stopcock with TFE plug
- Accepts 1/4 in. to 7/16 in. (6.35 mm to 11.11 mm) ID tubing
- One-way fluid path for accurate filling or dispensing
- Autoclavable

Nalgene Three-Way PP Stopcocks

Thermo Scientific™ Nalgene™ Three-Way Stopcocks feature three tabulated ports arranged in a T shape. Ideal for use in developing in-house fluid transfer systems.

- Polypropylene stopcock with TFE plug
- Accepts 1/4 in. to 7/16 in. (6.35 mm to 11.11 mm) ID tubing
- Use with any combination of two ports or all three ports
- Autoclavable

Ordering information

Plug bore, mm	Fits tubing ID, in. (mm)	No. per pack	No. per case	Cat. No.
Nalgene One-Way PP Stopcocks				
2	1/4 to 5/16 (6.35 to 7.94)	1	6	6460-0002
4	1/4 to 5/16 (6.35 to 7.94)	1	6	6460-0004
Nalgene Three-Way PP Stopcocks				
2	1/4 to 5/16 (6.35 to 7.94)	1	4	6470-0002
4	1/4 to 5/16 (6.35 to 7.94)	1	4	6470-0004

Nalgene disconnects

Nalgene Valved Barbed Quick Disconnects

Thermo Scientific™ Nalgene™ Valved Barbed Quick Disconnects are ideal for use in developing in-house fluid transfer systems. The couplings feature tubulation for attachment of tubing and an internal valve that seals when the fittings are removed, maintaining the integrity of your transfer liquids.

- Chemically resistant polypropylene and EPMD O-ring can be gamma irradiated
- PP acetal sleeve with stainless steel spring and EPR seal
- Leakproof termination of fluid paths when uncoupled
- Design promotes one-handed operation

Nalgene HDPE Quick Disconnects

Thermo Scientific™ Nalgene™ HDPE Quick Disconnects provide a solution for rapid, smooth connections between two fluid paths. Tubulations slide together snugly with a twist providing a fast, smooth connection.

- Two tapered tubulations that fit tightly together with male/female connection, allowing for rapid joining or separation of fluid paths
- Available in sizes ranging from 1/4 in. to 5/16 in. (6.35 mm to 7.94 mm) and 3/8 in. to 7/16 in. (9.53 mm to 11.11 mm) to accommodate many types of fluid transfer needs

Ordering information

Fits tubing ID, in. (mm)	No. per pack	No. per case	Cat. No.
Nalgene Valved Barbed Quick Disconnects			
1/4 (6.35)	2	12	6177-0250
3/8 (9.53)	2	12	6177-0375
Nalgene HDPE Quick Disconnects			
1/4 to 5/16 (6.35 to 7.94)	12	72	6150-0010
3/8 to 7/16 (9.53 to 11.11)	12	72	6150-0020

Nalgene PP Hose Barb Connectors

Nalgene 3/4 in. Mini PP Hose Barb Connectors
The Thermo Scientific™ Nalgene™ 3/4 in. Mini Hose PP Barb Connector allows easy connections of 3/4 in. sanitary fittings to flexible tubing. Ideal for use in developing in-house fluid transfer systems requiring sanitary-style connections.

- May be used in combination with 3/4 in. Thermo Scientific™ Nalgene™ Silicone Sanitary Gaskets and true-union clamps
- Autoclavable

Nalgene 1 in. Sanitary PP Hose Barb Connectors
The Thermo Scientific™ Nalgene™ 1 in. Sanitary PP Hose Barb Connector supports connections between 1 in. sanitary fittings to flexible tubing. Ideal for use in developing in-house fluid transfer systems requiring sanitary-style connections.

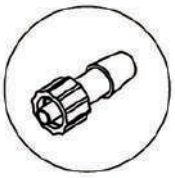
- May be used in combination with 1 in. Thermo Scientific™ Nalgene™ Silicone Sanitary Gaskets and true-union clamps
- Autoclavable

Ordering information

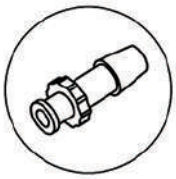
Fits tubing ID, in. (mm)	No. per pack	No. per case	Cat. No.
Nalgene 3/4 in. Mini PP Hose Barb Connectors			
1/2 (12.7)	1	2	7210-0500
Nalgene 1 in. Sanitary PP Hose Barb Connector			
1/2 (12.7)	1	2	7211-0500

Connection system selection guide

Luer connectors



Luer lock insert connection

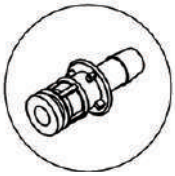


Luer lock body connection

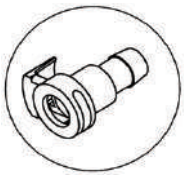
- **Method of connection**—push insert and body connectors together and twist to secure
- **Options**—Luer connectors are available in different materials and barb sizes
- **Advantages**—simple to use
- **Limitations**—limited to 6.4 mm (0.25 in.) barb sizes
- **Use when**—small-volume aseptic connections are required; can be made in a ISO 5 clean area

Type	Material	Hose barb size available
Luer lock	Kynar	3.18 mm (0.13 in.), 6.35 mm (0.25 in.)
Luer lock	Polypropylene	3.18 mm (0.13 in.), 6.35 mm (0.25 in.)

CPC quick connects



Male (insert)

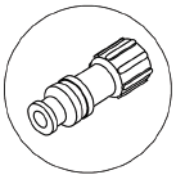


Female (body)

- **Method of connection**—push male (insert) and female (body) connectors together until they click
- **Options**—available in different materials and sizes; includes HFC series with integral shutoff valve
- **Advantages**—quick, easy, and secure to use
- **Limitations**—ISO 5 clean area or better required for an aseptic connection
- **Use when**—secure aseptic connections are required; can be made in an ISO 5 clean area

Type	Material	Hose barb size available
MPC series	Polycarbonate	9.53 mm (0.38 in.), 12.67 mm (0.5 in.)
MPX series	Polysulfone	12.7 mm (0.5 in.)
MPU series	Polysulfone	19 mm (0.75 in.)
HFC39	Polysulfone	6.35 mm (0.25 in.), 9.52 mm (0.38 in.)

Sample ports

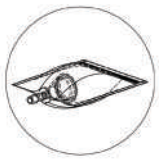


SmartSite connection

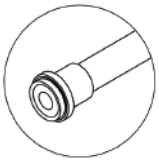
- **Method of connection**—inset syringe into port to remove sample
- **Options**—similar devices are available: SmartSite™ and Clave™ connectors
- **Advantages**—no needle required
- **Limitations**—flow rate
- **Use when**—samples of 50 mL or less are required

Type	Material	Hose barb size available
SmartSite	Acrylic/polyurethane/silicone	NA
Clave	NA	NA

Triclamps



SterilEnz fitting



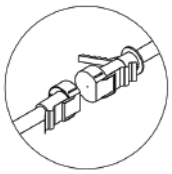
Mini triclamp

Triclamp

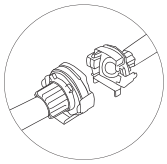
- **Method of connection**—place flanges together with gasket between them; secure using a clamp
- **Options**—available in 12.7 mm (1.5 in.) and 19 mm (0.75 in.) (Also known as mini triclamps) triclamp (TC) flange sizes in a range of different materials. SterilEnz™ fittings have the advantage that the triclamp connection is protected by an integral bag
- **Advantages**—largest barb size of all available connectors on BPCs; very secure connection
- **Limitations**—not suitable for making aseptic connections
- **Use when**—BPC has to be connected to a vessel/equipment with a triclamp port and sterility is not required; normally used in downstream applications

Type	Material	Hose barb size available
SterilEnz mini TC	Polyethylene	12.7 mm (0.5 in.)
SterilEnz TC	Polyethylene	12.7 mm (0.5 in.), 19 mm (0.75 in.)
Mini TC	Polypropylene	3.18 mm (0.13 in.), 6.35 mm (0.25 in.), 9.52 mm (0.38 in.), 12.7 mm (0.5 in.)
Mini TC	Kynar	3.18 mm (0.13 in.), 6.35 mm (0.25 in.), 9.52 mm (0.38 in.), 12.7 mm (0.5 in.)
TC	Polypropylene	3.18 mm (0.13 in.), 6.35 mm (0.25 in.), 9.52 mm (0.38 in.), 12.7 mm (0.5 in.), 25.4 mm (1 in.)
TC	Kynar	3.18 mm (0.13 in.), 6.35 mm (0.25 in.), 9.52 mm (0.38 in.), 12.7 mm (0.5 in.), 25.4 mm (1 in.)

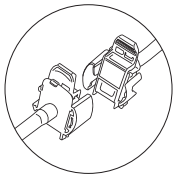
Aseptic connection devices (ACD)



Pall Kleenpak connection



CPC AseptiQuik connection (X)

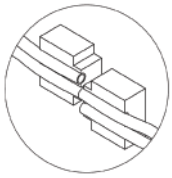


CPC AseptiQuik connection (S)

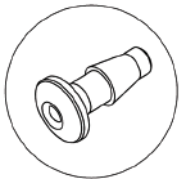
- **Method of connection**—similar to triclamp; connection faces vary by model
- **Options**—Pall™ Kleenpak™, GE™ ReadyMate™ Disposable Aseptic Connector (DAC), and Colder Products Company™ AseptiQuik™ connectors
- **Advantages**—allow aseptic connections to be made anywhere without dependence on an instrument
- **Limitations**—not the most economical option
- **Use when**—aseptic connections are required and an ISO 5 clean area is not available

Type	Material	Hose barb size available
Pall Kleenpak	Polycarbonate	6.35 mm (0.25 in.), 9.52 mm (0.38 in.), 12.7 mm (0.5 in.)
ReadyMate DAC	Polycarbonate/ Silicone	6.35 mm (0.25 in.), 9.52 mm (0.38 in.), 12.7 mm (0.5 in.), 19 mm (0.75 in.)
CPC AseptiQuik	Polycarbonate/ Silicone	3.18 mm (0.13 in.), 6.35 mm (0.25 in.), 12.7 mm (0.5 in.), 9.5 mm (0.38 in.), 19 mm (0.75 in.)

Tubing welder



Tubing in welder jaws

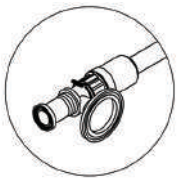


End plug

- **Method of connection**—automatic instrument cuts and joins two tubes aseptically
- **Options**—requires either TPE or PharMed tubing attached to the BPC. Since a terminal connector is not required the normal end treatment is an end plug
- **Advantages**—flexibility
- **Limitations**—requires an instrument to make the connection
- **Use when**—aseptic connections are required and an ISO 5 clean area is not available

Type	Material	Hose barb size available
End plug	Polypropylene	3.18 mm (0.13 in.), 6.35 mm (0.25 in.), 9.52 mm (0.38 in.), 12.7 mm (0.5 in.), 19 mm (0.75 in.)
End plug	Kynar	3.18 mm (0.13 in.), 6.35 mm (0.25 in.), 9.52 mm (0.38 in.), 12.7 mm (0.5 in.)

Steam in place



CPC steam-thru connection

- **Method of connection**—same as triclamps where the mating flange will be part of the SIP supply assembly
- **Options**—see the SIP connectors data sheet for available options
- **Advantages**—validated aseptic connection is possible
- **Limitations**—flow rate
- **Use when**—an aseptic connection of a BPC to a stainless steel vessel with a triclamp port is required

Type	Material	Hose barb size available
Unitized mini TC	Silicone	9.52 mm (0.38 in.), 12.7 mm (0.5 in.)
Unitized TC	Silicone	9.52 mm (0.38 in.), 12.7 mm (0.5 in.), 19 mm (0.75 in.)
CPC™ steam-thru (TC and mini TC)	Polysulfone	9.52 mm (0.38 in.), 12.7 mm (0.5 in.)
CPC steam-thru II	Polysulfone	9.52 mm (0.38 in.), 12.7 mm (0.5 in.)
Millipore Lynx ST connectors (TC and mini TC)	Polyetherimide/ silicone	6.35 mm (0.25 in.), 12.7 mm (0.5 in.)

Filter selection guide

Filtration is an important step in bioprocessing, and a variety of filters are available through the Thermo Scientific catalog component library to meet your needs. Our open-architecture approach enables us to provide customers a broad choice of both filters and manufacturers, including opportunities for dual sourcing.

Some major characteristics relevant to filter selection:

- **Membrane material**—the major types of filter material used in bioprocessing today are polyethersulfone (PES) and polyvinylidene fluoride (PVDF)
- **Membrane size**—required filter pore size will be influenced by the size of the materials being filtered, as well as the level of filtration the process necessitates
- **Affinity to water**—the presence of aqueous solution impacts the type of filter that may be most advantageous to your process
- **Application**—sequence within your process where filtration takes place and the type of material being filtered have implications for filter selection

A sample of the filters available through our comprehensive catalog component library include:

Supplier	Type	Material	Final filter pore sizes (µm)
Domnick Hunter	PROPOR™ SG, DEMICAP capsule	PES	0.1, 0.2
	PROPOR™ SG, MURUS capsule	PES	0.1, 0.2
Meissner	SteriLUX™, UltraCap™ capsule	PVDF	0.1, 0.2
	SteriLUX™, capsule	PVDF	0.2
	STyLUX™, UltraCap capsule	PES	0.1, 0.2
	STyLUX, capsule	PES	0.1, 0.2
Pall	Fluorodyne™ II DJL, Kleenpak capsule	PVDF	0.1
	Fluorodyne™ II DFL, Kleenpak capsule	PVDF	0.2
	Supor EKV, Kleenpak capsule	PES	0.2
Millipore	Millipak™ filter unit	PVDF	0.1, 0.2
	Opticap™ XL capsule	PVDF	0.1, 0.2
	Opticap XL capsule	PES	0.1, 0.2
Sartorius	Sartopore™ 2 capsule	PES	0.1, 0.2

A variety of factors unique to your process may influence your choice of filter, in addition to those considerations listed. Contact your Thermo Fisher Scientific BioProduction sales representative to address any questions or for assistance with identifying the best filter for your process needs.

Rigid containment solutions

Designed specifically for the storage and transport of active pharmaceutical ingredients and bulk intermediates, Thermo Scientific™ Nalgene™ production bottles and carboys offer leakproof* storage for sensitive liquids, buffers, media, and more. They are available in PC, PETG, PP, LDPE, HDPE, FEP, PFA, and in volumes ranging from 5 mL to 50 L. Extensive regulatory documentation assures that the products meet your demanding biotechnology requirements and reduces the time and cost to implement them in your process.

Clean containers that meet the demands of your workflow and the regulatory bodies that govern it

Making sure the equipment and materials used in critical environments meet the demanding standards of cleanliness can be a challenging process. Reduce the risk of failing to meet USP <788> requirements by using the cleanest validated containers on the market.

Find out more at
thermofisher.com/rigidcontainment

Packaging in the right configuration

The Thermo Scientific™ Nalgene™ multitiered portfolio provides bioproduction facilities with a variety of high-quality, sterile storage and transport solutions. This enables you to choose the appropriate product necessary to suit your application—through the step-down process and into your clean room.

Key features

- Multiple tiers
  - Platinum Certified Clean containers are certified to contain less than 1/3 of the allowable particulate limits specified in USP <788> (available in PETG, PC, and HDPE)
  - Certified clean containers meet USP <788> low particulate requirements (available in PETG and PC)
- Ready-to-use products with dual sterile barriers
  - Triple-layer packaging (2 heat-sealed bags + 1 carton liner) and double-walled cartons
- Produced in clean room (ISO class 7)
- Certified leakproof* to protect valuable contents

* Our guarantee for a leakproof seal is subject to our standard product warranty, as set forth in the Thermo Fisher Scientific Terms and Conditions of Sale. Our products are leakproof at ambient temperature and pressure when used with their corresponding closures. However, to ensure safe usage, customers are advised to test our containers and closures under conditions of their planned applications. Please contact technicalsupport@thermofisher.com if you need additional information about our products.

Nalgene PETG Square Media Bottles

Thermo Scientific™ Nalgene™ PETG Square Media Bottles are heavy-walled and durable, ideal for storage and sampling of active pharmaceutical ingredients and bulk intermediates and well suited for the preparation and containment of buffers, culture media, and general laboratory solutions. PETG features low permeability to CO_2 and O_2 and may provide a longer-term storage solution for pH-sensitive contents.

Key features

- Made from durable, damage-resistant PETG with white HDPE closures
- Suitable for frozen storage down to –40°C
- Leakproof* bottles and closures are provided sterile and nonpyrogenic; eliminates costly washing, depyrogenation, and autoclaving steps
- Available in low-particulate format
- Supported by extensive validation documentation
- Ordering information: Packed in shrink-wrapped trays
- Compliance: USP Class VI, noncytotoxic, USP <661>, nonpyrogenic, FDA 21 CFR 177.1315

Nalgene PETG Certified Clean Square Media Bottles

- SAL of 10^{-6} inside and outside of the container
- Compliant with USP <788>
- <0.5 EU/mL endotoxin
- Produced in clean room
- Improved labeling
- Ready-to-use products with dual sterile barriers for your step-down process
  - – Triple-layer packaging (2 heat-sealed bags + 1 carton liner) and double-walled cartons

Nalgene PETG Platinum Certified Clean Square Media Bottles

- SAL of 10^{-6} inside and outside of the container
- Below one-third of the allowable USP <788> particulate limits
- <0.25 EU/mL endotoxin
- Improved labeling
- Washed with WFI (water for injection) and inspected, assembled, and packaged in Class 5 (100) clean rooms with Class 4 (10) hoods and full gowning for operators**
- Ready-to-use products with dual sterile barriers for your step-down process
  - – Triple-layer packaging (2 heat-sealed bags + 1 carton liner) and double-walled cartons

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** PETG platinum clean certified products (30 mL to 2,000 mL) do not go through WFI water rinsing but are manufactured and assembled in a Class 7 clean room environment by fully gowned operators to meet one-third of the allowable USP <788> particulate limits.

Nalgene PETG Square Media Bottles

Ordering information

Nominal capacity	Closure size	Outer diameter (OD)	Height with closure	No. per pack/case	Cat. No.
Nalgene PETG Square Media Bottles					
30 mL (1 oz)	20 mm	38 mm	64 mm	24/96	2019-0030
60 mL (2 oz)	24 mm	41 mm	82 mm	24/96	2019-0060
125 mL (4 oz)	38–430 mm	52 mm	108 mm	24/48	2019-0125
250 mL (8 oz)	38–430 mm	59 mm	144 mm	24/48	2019-0250
500 mL (16 oz)	38–430 mm	73 mm	178 mm	12/24	2019-0500
1,000 mL (32 oz)	38–430 mm	92 mm	219 mm	12/24	2019-1000
2,000 mL (64 oz)	53B	116 mm	271 mm	6/12	2019-2000
Nalgene PETG Certified Clean Square Media Bottles					
30 mL (1 oz)	20 mm	38 mm	64 mm	6/72	382019-0030
60 mL (2 oz)	24 mm	41 mm	82 mm	6/72	382019-0060
125 mL (4 oz)	38–430 mm	52 mm	108 mm	6/48	382019-0125
250 mL (8 oz)	38–430 mm	59 mm	144 mm	6/48	382019-0250
500 mL (16 oz)	38–430 mm	73 mm	178 mm	4/24	382019-0500
1,000 mL (32 oz)	38–430 mm	92 mm	219 mm	4/24	382019-1000
2,000 mL (64 oz)	53B	116 mm	271 mm	1/12	382019-2000
Nalgene PETG Platinum Certified Clean Square Media Bottles					
5 mL	20 mm	22 mm	46 mm	52/416	CE-N2035-0005
20 mL	20 mm	30 mm	65 mm	84/504	CE-N2035-0020
30 mL	20 mm	38 mm	64 mm	7/70	CE-N2019-0030
60 mL	24 mm	41 mm	82 mm	6/72	CE-N2019-0060
125 mL	38–430 mm	54 mm	110 mm	5/50	CE-N2019-0125
250 mL	38–430 mm	59 mm	144 mm	12/48	CE-N2019-0250
500 mL	38–430 mm	74 mm	177 mm	5/70	CE-N2019-0500
1,000 mL	38–430 mm	92 mm	219 mm	5/35	CE-N2019-1000
2,000 mL	53B	116 mm	271 mm	5/20	CE-N2019-2000

Heat-Shrink Bands for Nalgene PETG Media Bottles

Polyvinyl chloride bands that provide a tamper-resistant seal to ensure the integrity of the bottle contents.

Description	Closure size	No. per pack/case	Cat. No.
Fits 30 mL square PETG media bottles	20–415 mm	500/1,000	312160-0200
Fits 60 mL square PETG media bottles	24–415 mm	500/1,000	312160-0240
Fits 125–1,000 mL square PETG media bottles	38–430 mm	500/1,000	312160-0384
Fits 2,000 mL square PETG media bottles	53B	500/1,000	312160-0530

Nalgene PETG Biotainer Bottles

Thermo Scientific™ Nalgene™ Biotainer™ Bottles are molded of crystal-clear PETG. These square bottles are ideal for prolonged storage of pH-sensitive materials such as culture media. Nalgene Biotainer bottles are supplied sterile and ready to use. They eliminate the cost of cleaning, sterilizing, and associated validations compared to bottles designed for reuse.

Key features

- Constructed of durable, crystal-clear PETG, ensuring sample integrity
- PP closures feature a PE foam core liner for leakproof* assurance
- Customization options are available for fluid transfer applications
- Supported by extensive validation documentation
- Suitable for storage in conditions from –40°C to 70°C
- Compliance: USP Class VI, noncytotoxic, USP <661>, nonpyrogenic, FDA 21 CFR 177.1315

Nalgene PETG Certified Clean Biotainer Bottles

- SAL of 10^{-6} inside and outside of the container
- Compliant with USP <788>
- <0.5 EU/mL endotoxin
- Produced in clean room
- Improved labeling
- Ready-to-use products with dual sterile barriers for your step-down process
  - – Triple-layer packaging (2 heat-sealed bags + 1 carton liner) and double-walled cartons

Nalgene PETG Platinum Certified Clean Biotainer Bottles

- SAL of 10^{-6} inside and outside of the container
- Below one-third of the allowable USP <788> particulate limits
- <0.25 EU/mL endotoxin
- Improved labeling
- Manufactured and assembled in Class 7 clean room environment by fully gowned operations to meet one-third of the allowable USP <788> particulate limits
- Ready-to-use products with dual sterile barriers for your step-down process
  - – Triple-layer packaging (2 heat-sealed bags + 1 carton liner) and double-walled cartons

* Our guarantee for a leakproof seal is subject to our standard product warranty, as set forth in the Thermo Fisher Scientific Terms and Conditions of Sale. Our products are leakproof at ambient temperature and pressure when used with their corresponding closures. However, to ensure safe usage, customers are advised to test our containers and closures under conditions of their planned applications. Please contact technicalsupport@thermofisher.com if you need additional information about our products.

Nalgene PETG Biotainer Bottles

Ordering information

Nominal capacity	Closure size	Outer diameter (OD)	Height with closure	No. per pack/case	Cat. No.
Nalgene PETG Biotainer Bottles					
125 mL	38 mm	52 mm	105 mm	5/100	3025-42
500 mL	38 mm	77 mm	176 mm	5/70	3005-42
500 mL	38 mm	77 mm	176 mm	35/70	3005-70
1,000 mL	48 mm	98 mm	201 mm	5/35	3110-42*
1,000 mL	48 mm	98 mm	201 mm	35/35	3110-35*
2,000 mL	48 mm	116 mm	265 mm	20/20	3230-20
2,000 mL	48 mm	116 mm	265 mm	5/20	3230-42
5,000 mL	48 mm	166 mm	299 mm	1/6	3415-16**
5,000 mL	48 mm	166 mm	299 mm	6/6	3415-42**
Nalgene PETG Certified Clean Biotainer Bottles					
125 mL	38 mm	52 mm	105 mm	5/100	383025-42
500 mL	38 mm	77 mm	176 mm	5/70	383005-42
1,000 mL	48 mm	98 mm	201 mm	5/35	383110-42
2,000 mL	48 mm	116 mm	265 mm	20/20	383230-20
2,000 mL	48 mm	116 mm	265 mm	5/20	383230-42
5,000 mL	48 mm	166 mm	299 mm	1/6	383415-16**
5,000 mL	48 mm	166 mm	299 mm	1/6	383415-42
Nalgene PETG Platinum Certified Clean Biotainer Bottles					
125 mL	38 mm	52 mm	105 mm	100	CE-N3025-42
500 mL	38 mm	77 mm	176 mm	70	CE-N3005-42
1,000 mL	48 mm	98 mm	201 mm	35	CE-N3110-42
2,000 mL	48 mm	116 mm	265 mm	20	CE-N3230-42

* Fits 3-ported 48 mm closure for attachment of tubing.
** With polyethylene handle.

Nalgene HDPE Biotainer bottles

Thermo Scientific™ Nalgene™ HDPE Biotainer™ Bottles are well suited for storage and transport of biological solutions.

These square bottles offer excellent chemical resistance and are supplied certified sterile and ready to use. They eliminate the cost of cleaning, sterilizing, and associated validations compared to bottles designed for reuse.

Key features

- PP closures feature a silicone liner for leakproof* assurance
- Supported by extensive validation documentation
- Suitable for storage in conditions from –100°C to 120°C

Compliance: USP Class VI, noncytotoxic, USP <661>, nonpyrogenic, FDA 21 CFR 177.1520.

Nalgene HDPE Biotainer Bottles

Nominal capacity	Closure size	Outer diameter (OD)	Height with closure	No. per pack/case	Cat. No.
4 L	38 mm	143 mm	299 mm	8/24	3750-24
4 L	38 mm	143 mm	299 mm	24/24	3751-24
4 L	38 mm	143 mm	299 mm	8/24	3751-42

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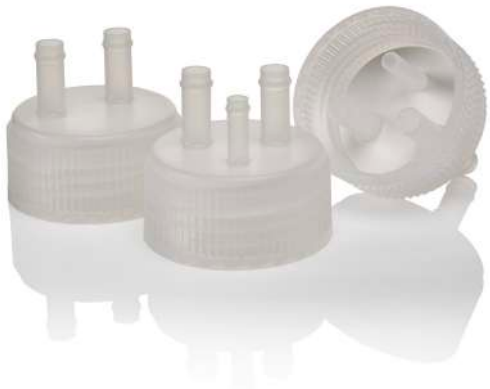
Nalgene closures for Biotainer bottles



Nalgene 2- and 3-ported closures for Biotainer bottles

Thermo Scientific™ Nalgene™ 48 mm filling/venting closures are designed for aseptic handling in pharmaceutical, biotechnology, and laboratory liquid transfer applications. Specifically designed to mate with Nalgene Biotainer bottles with 48 mm closure.

- Ready to accept additional fluid transfer components such as aseptic connectors and vent filters
- PP closures with silicone liners are available in 2- and 3-ported versions
- Stable to gamma irradiation
- Ports have tubulations on inside and outside of the closure for attachment of tubing

Nalgene Biotainer Replacement Closures

Thermo Scientific™ Nalgene™ Biotainer™ Replacement Closures are designed for 1, 2, 5, 10, and 20 L PC Nalgene Biotainer bottles and carboys.

- PP with silicone liner
- Closure size: 48 mm
- Sterile

Nalgene closures for Biotainer bottles

Description	Neck finish	Port ID	No. per case	Cat. No.
3-ported closure	48 mm	6.35 mm (2.25 in.), 4.76 mm (1.19 in.)	4	2560-0489
2-ported closure	48 mm	6.35 mm (2.25 in.)	4	2560-0490

Nalgene Biotainer Replacement Closures

Description	Closure size	No. per pack/case	Cat. No.
Polypropylene, silicone-lined replacement closures, sterile	48 mm	1/300	362515-0480

Nalgene HDPE Carboys

Nalgene HDPE Fluorinated Carboys

Thermo Scientific™ Nalgene™ HDPE Fluorinated Carboys enhance long-term container performance, prevent permeation loss, and yield lower extractables. Fluorination improves barrier properties and reduces solvent absorption and penetration.

- Heavy-duty walls are safe, durable, and resistant to splitting and punctures
- Fluorocarbon surfaces inside and out
- White polypropylene closure
- Graduated and leakproof*

Nalgene HDPE Amber Carboys

Thermo Scientific™ Nalgene™ HDPE Amber Carboys are an ideal choice for storing and mixing photosensitive chemicals, reagents, buffers, and standards. Meets requirements of the US Pharmacopeia Light Transmission Test (USP latest edition) for storage of light-sensitive materials.

Key features

- Molded of opaque amber HDPE, offering excellent chemical resistance
- Amber polypropylene closure
- Convenient wide shoulder handles
- Leakproof*

Ordering information

Nominal capacity	Nominal brim capacity	Closure size	Outer diameter (OD)	Height with closure	No. per pack/case	Cat. No.
Nalgene HDPE Fluorinated Carboys						
10 L (2.5 gal)	12 L (3 gal)	83B	250 mm	389 mm	1/6	2097-0020
20 L (5 gal)	22.5 L (5.5 gal)	83B	282 mm	526 mm	1/4	2097-0050
Nalgene HDPE Amber Carboys						
10 L (2.5 gal)	12 L (3 gal)	83B	250 mm	389 mm	1/6	2256-7020

* Our guarantee for a leakproof seal is subject to our standard product warranty, as set forth in the Thermo Fisher Scientific Terms and Conditions of Sale. Our products are leakproof at ambient temperature and pressure when used with their corresponding closures. However, to ensure safe usage, customers are advised to test our containers and closures under conditions of their planned applications. Please contact technicalsupport@thermofisher.com if you need additional information about our products.

Nalgene HDPE Single-Use Carboys

Thermo Scientific™ Nalgene™ HDPE Single-Use Carboys are safer than glass and are the ideal containers to economically maintain and transfer sterile fluids and reagents.

Key features

- Sterile and ready for one-time use
- Wide-mouth design for easy filling and dispensing of liquids
- Suitable for use in storage conditions of –100°C to 120°C
- Molded of HDPE, offering excellent chemical resistance and impact resistance
- White polypropylene closure
- Customization options available for fluid transfer applications
- Supported by extensive validation documentation
- Leakproof*
- Ordering information: Optional stainless steel handle available (Cat. No. 2229-0001)
- Compliance: USP Class VI, noncytotoxic

Nalgene Handle for Single-Use Carboy

The Thermo Scientific™ Nalgene™ Handle for Single-Use Carboy is made of stainless steel and attaches to 20 L carboys for easy handling.

Key features

- For use with Nalgene Single-Use HDPE Carboy (Cat. No. 342889-0050)

Nalgene HDPE Single-Use Carboy

Nominal capacity	Nominal brim capacity	Closure size	Outer diameter (OD)	Height with closure	No. per pack/case	Cat. No.
20 L (5 gal)	23 L (6 gal)	83B	284 mm	502 mm	1/6	342289-0050
33 L (9 gal)	41 L (11 gal)	83B	381 mm	546 mm	1/1	342289-0075

Nalgene Handle for Single-Use Carboy

Description	Material	No. per case	Cat. No.
Handle for 20 L single-use carboy	Stainless steel	1	2229-0001

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Nalgene HDPE Platinum Certified Clean Bottles and Carboys

Low particulates, sterility, and low endotoxins help maintain product integrity

Thermo Scientific™ Nalgene™ Platinum Certified Clean HDPE containers are certified to contain less than one-third of the allowable particulate limits specified in USP <788>. The bottles and carboys are washed in specially designed automated washers using only water purified to USP standards, including USP WFI for the final rinse, so there are no added detergents or chemicals. Class 100 (ISO Class 5) clean room handling follows washing and drying, including Class 10 (ISO Class 4) hoods for packaging.

All container-closure systems are guaranteed leakproof* to protect precious contents.

Key features

- Sterile products are ready to use with robust triple-layer packaging for clean room use
- Robust HDPE can be used from –100°C to 120°C, allowing for both heated mixing and frozen storage or shipment; it is recommended to always test in conditions of actual use, as results may vary depending upon application
- Certified low endotoxin (0.25 EU/mL) according to USP <85> to limit pyrogens
- Products can be supplied with forced extraction studies, validation binders, and certificates

Compliance: USP Class VI, noncytotoxic, USP <661>, nonpyrogenic, FDA 21 CFR 177.1520.

Nalgene HDPE Platinum Certified Clean Bottles and Carboys

Description	Volume	Closure size	Outer diameter (OD)	Height with closure	No. per pack/case	Cat. No.
Narrow-mouth bottle	30 mL	20–415 mm	34.3 mm	61 mm	12/72	CE-E2099-0001
	250 mL	24–415 mm	61 mm	133 mm	12/72	CE-N2099-0008
	500 mL	28–415 mm	72.6 mm	170.4 mm	12/48	CE-N2099-0016
	1 L	38–430 mm	91.4 mm	215.9 mm	6/24	CE-N2099-0032
Wide-mouth bottle	250 mL	43–415 mm	61 mm	99.3 mm	12/72	CE-N2199-0008
	500 mL	53–415 mm	72.6 mm	168.2 mm	12/48	CE-N2199-0016
	1 L	63–415 mm	91.44 mm	199.2 mm	6/24	CE-N2199-0032
Carboy with integrated handles	10 L	83B	250.2 mm	389 mm	1/6	CE-N2289-0020
	20 L		284.2 mm	501.7 mm	1/4	CE-N2289-0050
	33 L		381 mm	546 mm	1/1	CE-N2289-0075

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Nalgene HDPE Carboys

Nalgene HDPE Rectangular Carboys without spigots

Thermo Scientific™ Nalgene™ HDPE Rectangular Carboys have a sturdy, space-saving design. These carboys are ideal for storing solutions and handling large volumes of powders and other solid samples.

Key features

- Graduated in liters and gallons
- Wide-mouth opening permits easy filling, transferring, and cleaning
- White polypropylene closure
- Includes sturdy stainless steel handle attached to molded-in shoulder loops
- Autoclavable and leakproof*

Nalgene HDPE Heavy-Duty Rectangular Carboys

Thermo Scientific™ Nalgene™ HDPE Heavy-Duty Rectangular Carboys provide a space-saving option for storing and transporting reagents and other liquids.

Key features

- Heavy-walled construction for durability and chemical resistance
- Graduated in liters and gallons
- Design includes integral handle for easy transport and pouring
- White polypropylene closure
- Leakproof*

Ordering information

Capacity	Nominal brim capacity	Closure size, mm	Dimensions (L x W x H)	No. per pack/case	Cat. No.
Nalgene HDPE Rectangular Carboys without spigots					
9 L (2 gal)	9 L (2 gal)	100–415	220 x 153 x 360 mm (9 x 6 x 14 in.)	1/6	2211-0020
20 L (5 gal)	21 L (5.5 gal)	100–415	320 x 229 x 399 mm (13 x 9 x 16 in.)	1/4	2211-0050
Nalgene HDPE Heavy-Duty Rectangular Carboys					
20 L (5 gal)	20 L (5 gal)	70	330 x 228 x 406 mm (13 x 9 x 16 in.)	1/4	2214-0050

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Nalgene HDPE Jugs and Jerricans

Nalgene HDPE Heavy-Duty Wide-Mouth Jug

The Thermo Scientific™ Nalgene™ HDPE Heavy-Duty Wide-Mouth Jug features a large 120 mm opening. Molded-in handle and recessed bottom provide a sturdy grip when lifting and pouring. Wide stance and low center of gravity assure stability.

- Wide-mouth 120 mm opening permits easy filling, transferring, and cleaning of jugs
- Ideal for storing powders
- Graduated in liters and gallons as a convenient guide
- White polypropylene closure
- Space-saving rectangular shape

Nalgene HDPE Jerricans

- Integral spout is angled for easy, accurate pouring
- Includes white, tethered polypropylene closure to prevent loss
- Graduated in liters and gallons as a convenient guide
- Molded-in handle and recessed bottom provides a sturdy grip when lifting and pouring
- Space-saving rectangular shape optimizes limited storage space
- Leakproof*

Nominal capacity	Nominal brim capacity	Closure size	Dimensions (L x W x H)	No. per pack/case	Cat. No.
Nalgene HDPE Heavy-Duty Wide-Mouth Jug					
20 L (5 gal)	25 L (6.6 gal)	120 mm	305 x 203 x 457 mm (12 x 8 x 18 in.)	1/4	2241-0050
Nalgene HDPE Jerricans					
6 L (1.5 gal)	8 L (2 gal)	53B	213 x 176 x 335 mm (8 x 7 x 13 in.)	1/6	2240-0015
10 L (2.5 gal)	12 L (3 gal)	53B	246 x 199 x 376 mm (10 x 8 x 15 in.)	1/6	2240-0025
20 L (5 gal)	24 L (6 gal)	53B	320 x 245 x 452 mm (13 x 10 x 18 in.)	1/4	2240-0050

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Nalgene HDPE 13 L Jerricans

Thermo Scientific™ Nalgene™ HDPE 13 L Jerricans have a unique double-spout design, ideal as a reservoir in automated systems. The rugged design with wide stance and low center of gravity provides stability.

- 53B white polypropylene closure can be customized with input or output tubing, while the 38 mm closure can be used for refilling and emptying
- Molded-in handle provides a sturdy grip when carrying heavy contents
- Integral shoulder handle and molded bottom grip offers added assistance with lifting
- Molded of HDPE, offering good chemical resistance for a wide variety of solutions
- Rectangular shape optimizes limited storage space

Compliance: USP Class VI, FDA 21 CFR 177.1520.

Nalgene HDPE Fluorinated Jerricans

Thermo Scientific™ Nalgene™ HDPE Fluorinated Jerricans have a rugged design with wide stance and low center of gravity that provide greater stability.

Fluorinated surface inside and out improves barrier properties and reduces solvent absorption while enhancing long-term container performance and preventing loss due to permeation.

- Includes tethered white polypropylene closure to prevent loss
- Graduated in liters and gallons as a convenient guide
- Molded-in handle and recessed bottom provides a sturdy grip when carrying heavy contents
- Space-saving rectangular shape
- Leakproof*

Nominal capacity	Nominal brim capacity	Closure size	Dimensions (L x W x H)	No. per pack/case	Cat. No.
Nalgene HDPE 13 L Jerricans					
13 L (3.5 gal)	14 L (3.7 gal)	53B	290 x 189 x 378 mm (11 x 7 x 15 in.)	1/4	2243-0013
13 L (3.5 gal)	14 L (3.7 gal)	53B; 38–430 mm	290 x 189 x 378 mm (11 x 7 x 15 in.)	1/4	2243-9013
Nalgene HDPE Fluorinated Jerricans					
10 L (2.5 gal)	14 L (3.7 gal)	53B	246 x 199 x 376 mm (10 x 8 x 15 in.)	1/6	2242-0025
20 L (5 gal)	24 L (6 gal)	53B	320 x 245 x 452 mm (13 x 10 x 18 in.)	1/4	2242-0050

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Nalgene PC Biotainer Bottles and Carboys

Thermo Scientific™ Nalgene™ PC Biotainer™ Bottles and Carboys are excellent for freezing applications.

Nalgene PC Biotainer Bottles and Carboys are designed specifically for pharmaceutical and biological manufacturers. Supplied sterile and ready to use, they reduce the risk of carryover contamination and eliminate the cost of cleaning, sterilization, and associated validations.

Key features

- Constructed of durable, translucent PC, ensuring the integrity of your sample
- PP closures feature a silicone liner for leakproof* assurance
- Customization options available for fluid transfer applications
- Supported by extensive validation documentation
- Suitable for use in storage conditions of –100°C to 100°C

Compliance: USP Class VI, noncytotoxic, USP <661>, nonpyrogenic, FDA 21 CFR 177.1315 for 5 to 5,000 mL, and FDA 21 CFR 177.1520 for 10 to 20 L.

Nalgene PC Biotainer Bottles and Carboys

Nominal capacity	Closure size	Outer diameter (OD)/shape	Height with closure	No. per pack/case	Cat. No.
5 mL	20 mm	22.4 mm/round	46.7 mm	100/500	3500-05[1]
20 mL	20 mm	29.7 mm/round	65.3 mm	500/500	3500-20[1]
125 mL	38 mm	52.1 mm/square	104.6 mm	5/50	3030-42
1,000 mL	48 mm	98 mm/square	201 mm	5/35	3120-42[2]
2,000 mL	48 mm	116 mm/square	265 mm	5/20	3233-42[2]
5,000 mL	48 mm	166 mm/square	299 mm	1/6	3405-16[2,3]
5,000 mL	48 mm	166 mm/square	299 mm	6/6	3405-42[2]
10 L	48 mm	255 mm/square	337 mm	1/2	3410-42[2]
10 L	48 mm	255 mm/square	337 mm	1/2	3410-08[2,3]
20 L	48 mm	255 mm/square	493 mm	1/3	3423-42[2]

1. Validation vial.
2. Fits 3-ported 48 mm closure for attachment of tubing.
3. With polyethylene handle.

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Nalgene PC Certified Clean Biotainer Bottles and Carboys

Sterile containers, free from added interfering chemicals and low in particulates, are required to maintain both clean room and product integrity. Thermo Scientific™ Nalgene™ PC Certified Clean Biotainer™ Bottles and Carboys reduce the risk of carryover contamination. These square containers are certified and lot-to-lot tested to meet USP <788> low-particulate requirements to limit potential particulate contamination.

Inspection procedures throughout manufacturing include leak testing, dimensional testing, visual inspection for particulates, and release testing to ensure the carboy meets all specifications. The leakproof* containers are free from added interfering chemicals and low in particulates to maintain both clean room and product integrity. The square carboys are available in three different sizes with volumes of 5, 10, or 20 L either with or without attached handle.

Key features

- Constructed of light blue, durable, translucent PC with silicone-lined polypropylene closures
- Produced in ISO Class 7 clean room to limit particulates during molding
- Certified low endotoxin (0.50 EU/mL) according to USP <85> to reduce pyrogens
- Sterile, ready-to-use products with robust triple-layer packaging for clean room use
- Products can be supplied with forced extraction studies**, validation binders**, and certificates

Nalgene PC Certified Clean Biotainer Containers

Nominal capacity	Closure size	Outer diameter (OD)/shape	Height with closure	No. per pack/case	Cat. No.
125 mL	38 mm	52.1 mm/square	104.6 mm	5/50	383030-42
1,000 mL	48 mm	98 mm/square	201 mm	5/35	383120-42[1]
2,000 mL	48 mm	116 mm/square	265 mm	5/20	383233-42[1]
5,000 mL	48 mm	166 mm/square	299 mm	1/6	383405-16[1,2]
5,000 mL	48 mm	166 mm/square	299 mm	6/6	383405-42[1]
10 L	48 mm	255 mm/square	337 mm	1/2	383410-42[1]
10 L	48 mm	255 mm/square	337 mm	1/2	383410-08[1,2]
20 L	48 mm	255 mm/square	495 mm	1/3	383423-42[1]

1. Fits 3-ported 48 mm closure for attachment of tubing.
2. With polyethylene handle.

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** Forced extraction studies and validation binders from Thermo Fisher Scientific, where available, are provided under a confidentiality agreement to assist customers in product selection. Customers are responsible for determining what studies are recommended for their specific applications. Forced extraction studies and validation binders may be requested by contacting us at **rocregsupport@thermofisher.com**

Nalgene PC Platinum Certified Clean Biotainer Bottles and Carboys

Key features

- SAL of 10^{-6} inside and outside of the container
- Below one-third of the allowable USP <788> particulate limits
- <0.25 EU/mL endotoxin
- Washed with WFI and inspected, assembled, and packaged in Class 5 (100) clean rooms with Class 4 (10) hoods and full gowning for operators
- Ready-to-use products with dual sterile barriers for your step-down process
  - – Triple-layer packaging (2 heat-sealed bags + 1 carton liner)
  - – Double-walled cartons

Thermo Scientific™ Nalgene™ PC Platinum Certified Clean Biotainer™ Bottles and Carboys

Volume	Closure size	Outer diameter (OD)	Height with closure	No. per pack/case	Cat. No.
5 mL	20 mm	22 mm	46 mm	52/416	CE-N3500-05
20 mL	20 mm	30 mm	69 mm	84/504	CE-N3500-20
125 mL	38 mm	52 mm	105 mm	5/50	CE-N3030-42
1,000 mL	48 mm	98 mm	201 mm	5/35	CE-N3120-42
2,000 mL	38 mm	116 mm	265 mm	5/20	CE-N3233-42
5,000 mL	48 mm	166 mm	299 mm	1/6	CE-N3405-42
10,000 mL	48 mm	255 mm	337 mm	1/2	CE-N3410-42

* With attached handle.

Nalgene PC Clearboy Carboys

Nalgene PC Round Clearboy Carboys

Thermo Scientific™ Nalgene™ PC Round Clearboy™ Carboys offer durability and are lighter and safer than glass. These transparent carboys are useful for large-volume media and culture preparation, especially where visual inspection of contents for quality is important. Ideal for refrigerated or frozen storage of aqueous solutions such as sterile water, reagents, and media.

- Available in 10 L and 20 L sizes
- Graduated in liters and gallons
- Molded of transparent, durable polycarbonate with white polypropylene closure and thermoplastic elastomer gasket
- Customization options available for fluid transfer applications
- Autoclavable and leakproof*

Nalgene PC Rectangular Clearboy Carboys

- Wide-mouth opening permits easy filling, transferring, and cleaning
- Graduated in liters and gallons as a convenient guide
- Stainless steel handle for ease of use
- Molded of transparent PC, making this carboy ideal when visual inspection of contents is required
- White polypropylene closure
- Autoclavable and leakproof*

Nalgene PC Round Clearboy Carboys

Capacity	Nominal brim capacity	Closure size	Outer diameter (OD)	Height with closure	No. per pack/case	Cat. No.
10 L (2.5 gal)	12.5 L (3.3 gal)	83B	253 mm	394 mm	1/4	2251-0020
20 L (5 gal)	24 L (6 gal)	83B	287 mm	536 mm	1/4	2251-0050

Nalgene PC Rectangular Clearboy Carboys

Capacity	Nominal brim capacity	Closure size	Dimensions (L x W x H)	No. per pack/case	Cat. No.
9 L (2 gal)	9 L (2 gal)	100–415 mm	220 x 153 x 360 mm (9 x 6 x 14 in.)	1/1	DS2213-0020
20 L (5 gal)	21 L (5.5 gal)	100–415 mm	320 x 229 x 399 mm (13 x 9 x 16 in.)	1/1	DS2213-0050

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Nalgene PC and PETG Validation Bottles

Thermo Scientific™ Nalgene™ PC Validation Bottles are the ideal size to perform material compatibility validation studies for Nalgene PC carboys.

Key features

- Molded of durable translucent polycarbonate, ensuring the integrity of your samples
- White polypropylene closure includes thermoplastic elastomer gasket
- Manufactured with the same materials and molding processes as Nalgene PC carboys (Cat. No. 2251)
- Accommodates convenient material compatibility validation, requiring lower amounts of expensive reagents
- Autoclavable

Nalgene PC Validation Bottles

Nominal capacity	Closure size	Outer diameter (OD)	Height with closure	No. per pack/case	Cat. No.
30 mL (1 oz)	20–415 mm	32 mm	75 mm	1/30	DS2127-0030
250 mL (8 oz)	53B	74 mm	135 mm	1/6	DS2127-0250
2,000 mL (64 oz)	53B	123 mm	296 mm	1/12	DS2127-2000

Nalgene PC Certified Clean Validation Bottles

Nominal capacity	Closure size	Outer diameter (OD)	Height with closure	No. per pack/case	Cat. No.
5 mL (0.2 oz)	20–400 mm	22.4 mm	46.7 mm	52/416	383500-05
20 mL (0.7 oz)	20–400 mm	29.7 mm	65.3 mm	84/504	383500-20

Nalgene PETG Certified Clean Validation Bottles

Nominal capacity	Closure size	Outer diameter (OD)	Height with closure	No. per pack/case	Cat. No.
5 mL (0.2 oz)	20–415 mm	22.25 mm	45.9 mm	52/416	382035-0005
20 mL (0.7 oz)	20–415 mm	29.72 mm	64.5 mm	84/504	382035-0020

Nalgene PP Autoclavable Carboys

Nalgene PP Autoclavable Carboys with Handles

Thermo Scientific™ Nalgene™ PP Autoclavable Carboys with Handles are ideal for the containment of media, bulk pharmaceutical ingredients, and other solutions.

- Constructed of polypropylene with white polypropylene closure and thermoplastic elastomer gasket
- Convenient shoulder handles allow easy carrying and pouring
- Available in 10, 20, and 50 L sizes for a variety of biopharmaceutical applications
- Graduated in liters and gallons
- Autoclavable and leakproof*

Nalgene PP Autoclavable Wide-Mouth Carboys with Handles

Thermo Scientific™ Nalgene™ PP Autoclavable Wide-Mouth Carboys with Handles have a convenient, large opening for storage and transport of solids and powders.

- Convenient, wide shoulder handles; allows easy carrying and pouring, even with gloved hands
- Graduated in liters and gallons
- White polypropylene closure
- Wide-mouth opening promotes ease of cleaning and dispensing
- Autoclavable and leakproof*

Ordering information

Capacity	Nominal brim capacity	Closure size	Outer diameter (OD)	Height with closure	No. per pack/case	Cat. No.
Nalgene PP Autoclavable Carboys with Handles						
10 L (2.5 gal)	12 L (3 gal)	83B	250 mm	389 mm	1/6	2250-0020
20 L (5 gal)	22.5 L (5.5 gal)	83B	282 mm	526 mm	1/4	2250-0050
50 L (13 gal)	54 L (14 gal)	83B	379 mm	678 mm	1/1	2250-0130
Nalgene PP Autoclavable Wide-Mouth Carboys with Handles						
10 L (2.5 gal)	12 L (3 gal)	100–415 mm	250 mm	343 mm	1/6	2235-0020
20 L (5 gal)	22.5 L (5.5 gal)	100–415 mm	282 mm	483 mm	1/4	2235-0050

* Our guarantee for a leakproof seal is subject to our standard product warranty, as set forth in the Thermo Fisher Scientific Terms and Conditions of Sale. Our products are leakproof at ambient temperature and pressure when used with their corresponding closures. However, to ensure safe usage, customers are advised to test our containers and closures under conditions of their planned applications. Please contact technicalsupport@thermofisher.com if you need additional information about our products.

Nalgene PP Heavy-Duty Vacuum Carboys

Thermo Scientific™ Nalgene™ PP Heavy-Duty Vacuum Carboys are ideal when service conditions are most extreme. Useful as a vacuum trap; will hold a vacuum for 8 hours.

Key features

- Constructed of polypropylene with white polypropylene closure and thermoplastic elastomer gasket
- Customization options are available for fluid transfer applications
- Autoclavable and leakproof*

Ordering information: For 1–5 L sizes, please refer to Nalgene Heavy-Duty Vacuum Bottles (Cat. No. 2126).

Disclaimer: Not rated for pressure use.

Nalgene PP Heavy-Duty Vacuum Carboys

Nominal capacity	Nominal brim capacity	Closure size	Outer diameter (OD)	No. per pack/case	Cat. No.
10 L (2.5 gal)	12 L (3 gal)	83B	250 mm	1/6	2226-0020
20 L (5 gal)	22.5 L (5.5 gal)	83B	282 mm	1/4	2226-0050

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Nalgene Sanitary Carboys

Nalgene PP Sanitary Carboys

The Thermo Scientific™ Nalgene™ PP Sanitary Carboys with 3-inch sanitary neck have a nonthreaded design. The 3-inch flange accepts standard triclover fittings. A clamping-closure system securely seals the carboy, requiring no torque while eliminating back-off issues.

- Sanitary design is easier to clean than threaded alternatives
- To seal closure, use a combination of gasket, end cap, and sealing clamp
- Available in 10, 20, and 50 L sizes, supporting a variety of containment needs

Nalgene PC Sanitary Carboys

The Thermo Scientific™ Nalgene™ PC Sanitary Carboy has a one-piece molded, nonthreaded design for use as a receiver or dispensing vessel in biopharmaceutical applications. The 3-inch flange accepts standard triclover fittings. A clamping-closure system securely seals the carboy, requiring no torque while eliminating back-off issues.

- Sanitary design is easier to clean than threaded alternatives
- Molded of the same PC resin as Nalgene PC Clearboy carboys and bottles, supporting a switch to sanitary PC carboys without material validation issues
- To seal closure, use a combination of gasket, end cap, and sealing clamp
- Sanitary carboy also available in PP (Cat. No. 2630)
- Graduated and autoclavable

Nalgene PP Sanitary Carboys

Nominal capacity	Nominal brim capacity	Neck finish	Outer diameter (OD)	Height with closure	No. per pack/case	Cat. No.
10 L (2.5 gal)	12 L (3 gal)	3 in. triclover	250 mm	353 mm	1/1	2630-0010
20 L (5 gal)	22.5 L (5.5 gal)	3 in. triclover	282 mm	353 mm	1/1	2630-0020
50 L (13 gal)	50 L (13 gal)	3 in. triclover	379 mm	545 mm	1/1	2630-0050

Nalgene PC Sanitary Carboy

Nominal capacity	Neck finish	Outer diameter (OD)	Height with closure	No. per pack/case	Cat. No.
20 L (5 gal)	3 in. triclover	287 mm	498 mm	1/4	2261-0050

Nalgene PP Autoclavable Carboys with Sanitary Flange

Thermo Scientific™ Nalgene™ PP Autoclavable Carboys feature a 1.5-inch secure, nonthreaded sanitary dispensing port. They are ideal for use as a supply reservoir.

Key features

- Convenient molded-in handles for easy handling
- Graduated in liters and gallons as a convenient guide
- White polypropylene closure with thermoplastic elastomer gasket
- Dispensing port used in combination with 1.5-inch gasket and true-union clamp
- Autoclavable and leakproof*

Compliance: USP Class VI, noncytotoxic.

Nalgene PP Autoclavable Carboys with Sanitary Flange

Nominal capacity	Approximate brim capacity	Closure size	Outer diameter (OD)	Height with closure	No. per pack/case	Cat. No.
10 L (2.5 gal)	12 L (3 gal)	83B, 1.5 in. triclover	250 mm	353 mm	1/1	2640-0020
20 L (5 gal)	22.5 L (5.5 gal)	83B, 1.5 in. triclover	282 mm	353 mm	1/1	2640-0050
50 L (13 gal)	54 L (14 gal)	83B, 1.5 in. triclover	379 mm	678 mm	1/1	2640-0130

Nalgene Silicone Sanitary Gaskets for Nalgene Carboys

Thermo Scientific™ Nalgene™ Silicone Sanitary Gaskets offer a reliable, leakproof seal when used with Nalgene end caps and true-union clamps. Constructed of platinum-cured silicone, the gaskets ensure the highest degree of purity for biopharmaceutical applications.

- For use with Nalgene carboys (Cat. No. 2261, 2630, and 2640)
- Autoclavable

Compliance: Meets USP Class VI requirements.

Nalgene Silicone Sanitary Gaskets for Nalgene Carboys

Description	No. per pack/case	Cat. No.
Gasket for 3/4 in. mini	1/6	2672-0075
Gasket for 1 1/2 in. triclover	1/6	2672-0150
Gasket for 3 in. triclover	1/6	2672-0300

* Our guarantee for a leakproof seal is subject to our standard product warranty, as set forth in the Thermo Fisher Scientific Terms and Conditions of Sale. Our products are leakproof at ambient temperature and pressure when used with their corresponding closures. However, to ensure safe usage, customers are advised to test our containers and closures under conditions of their planned applications. Please contact technicalsupport@thermofisher.com if you need additional information about our products.

Nalgene end caps

Nalgene PP End Caps

Thermo Scientific™ Nalgene™ PP End Caps are used to securely close off 3/4-inch mini and 3-inch sanitary ports on Nalgene Sanitary Carboys.

Groove on underside of the end cap accepts standard sanitary gasket for sealing the systems.

- Offers reliable, repeatable seals when used in combination with silicone gasket (Cat. No. 2672) and true-union clamp (Cat. No. 2670)
- Autoclavable

Compliance: USP Class VI.

Nalgene Ported End Caps

Thermo Scientific™ Nalgene™ Ported End Caps in PC or PP provide sanitary ports, which offer easy filling and dispensing. Securely mounts to 3-inch sanitary flange for applications used with Nalgene Sanitary Carboys.

- Available in PC and PP
- Autoclavable
- Offers a reliable, reproducible seal when used in combination with silicone gasket and true-union clamps
- Customized options available when used with 3/4 in. mini hose barb fitting

Nalgene PP End Caps

Description	No. per case	Cat. No.
End cap for 3/4 in. mini	1	2665-0075
End cap for 3 in. triclover	1	2665-0300

Related products	Cat. No.
PP sanitary carboy	2630
PC sanitary carboy	2261
Silicone gaskets	2672
True-union clamp	2670
Heavy-duty clamp	2685

Nalgene Ported End Caps

Description	Port size	No. per pack/case	Cat. No.
PC ported end cap for 3 in. triclover	3/4 in. mini x 2	1/4	2688-2075
PP ported end cap for 3 in. triclover	3/4 in. mini x 2	1/4	2689-2075

Related products	Cat. No.
PP sanitary carboy	2630
PC sanitary carboy	2261
Silicone gaskets	2672
True-union clamp	2670
Heavy-duty clamp	2685
3/4 in. mini hose barb fitting	7210

Nalgene clamps

Nalgene True-Union Clamps

Thermo Scientific™ Nalgene™ True-Union Clamps offer reliable, repeatable seals when used in combination with silicone gaskets and end caps.

- Constructed of PVDF
- Autoclavable

Nalgene Heavy-Duty Stainless Steel Clamps

Thermo Scientific™ Nalgene™ Heavy-Duty Stainless Steel Clamps assure leakproof fluid seals when used with Nalgene Sanitary Carboys.

- Strong, spring-loaded clamp
- For use with Nalgene Sanitary PC Carboy (Cat. No. 2261)
- Autoclavable

Ordering information

Description	No. per case	Cat. No.
Nalgene True-Union Clamps		
True-union clamp for 3/4 in. mini	1	2670-0075
True-union clamp for 1 1/2 in. triclover	1	2670-0150
True-union clamp for 3 in. triclover	1	2670-0300
Nalgene Heavy-Duty Stainless Steel Clamps		
Stainless steel clamp for 3 in. triclover	1	2685-0300

Related products	Cat. No.
PP end caps	2630
Ported end caps	2688-2075
	2689-2075
Gaskets	2672-0300

Nalgene PP Rectangular Carboys

Thermo Scientific™ Nalgene™ PP Rectangular Carboys are molded of tough, translucent, and autoclavable polypropylene. Ideal for storing solutions and handling large volumes of powders and other solid samples.

Key features

- Large-neck opening for easy filling and cleaning
- Includes sturdy stainless steel handle attached to molded-in shoulder loops
- Graduated in liters and gallons as a convenient guide
- Autoclavable and leakproof*

Nalgene PP Rectangular Carboys

Nominal capacity	Nominal brim capacity	Closure size	Dimensions (L x W x H)	No. per pack/case	Cat. No.
9 L (2 gal)	9 L (2 gal)	100–415 mm	220 x 153 x 360 mm (9 x 6 x 14 in.)	1/6	2212-0020
20 L (5 gal)	21 L (5.5 gal)	100–415 mm	320 x 229 x 399 mm (13 x 9 x 16 in.)	1/4	2212-0050

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Nalgene Narrow-Mouth and Wide-Mouth Bottle Replacement Closures

Thermo Scientific™ Nalgene™ Narrow-Mouth and Wide-Mouth Bottle Replacement Closures are designed to fit Nalgene carboys and bottles to provide a guaranteed leakproof* system.

Key features

- Fits Nalgene large carboys and bottles with 53B and 83B neck finishes

Nalgene replacement closures

Description	No. per pack/case	Cat. No.
Nalgene closures for large carboys and bottles; white, polypropylene, autoclavable		
38-430 replacement closure for large Nalgene bottles	12/12	712160-0384
53B replacement closure for large Nalgene bottles or carboys	12/12	712160-0530
83B replacement closure for large Nalgene bottles or carboys	2/2	712160-0830
83B replacement closure with silicone grommet	1/1	712227-1020
Thermoplastic elastomer gasket for 53B closure	12/12	712160-0053
Thermoplastic elastomer gasket for 83B closure	5/5	712162-1830
Nalgene replacement closure; white high-density polyethylene		
53B replacement cap with thermoplastic elastomer gasket for large Nalgene bottles or carboys	12/12	712151-0053
Nalgene replacement closure with strap; white polypropylene		
53B replacement closure and strap for Nalgene jerricans	10/10	712240-1053
Nalgene replacement closure, high-density polyethylene		
83B replacement cap with thermoplastic elastomer gasket for large Nalgene bottles or carboys	2/2	712151-0083

Nalgene LDPE Carboys

Nalgene LDPE Round Carboys

Thermo Scientific™ Nalgene™ Round LDPE Carboys are an ideal choice for storage and transport of reagents.

- Wide shoulder handles allow for easy pouring and carrying
- Graduated in liters and gallons
- White polypropylene closure
- Accepts 13.5 rubber stopper for alternative sealing method
- Leakproof*

Nalgene LDPE Wide-Mouth Carboys

Thermo Scientific™ Nalgene™ LDPE Wide-Mouth Carboys with Handles have a convenient, large opening for storage and transport of solids and powders.

- Convenient, wide shoulder handles allow easy carrying and pouring, even with gloved hands
- Graduated in liters and gallons
- Wide-mouth opening promotes ease of cleaning and dispensing, and can accommodate overhead mixers
- White polypropylene closure
- Leakproof*, not autoclavable

Ordering information

Nominal capacity	Nominal brim capacity	Closure size	Outer diameter (OD)	Height with closure	No. per pack/case	Cat. No.
Nalgene LDPE Round Carboys						
10 L (2.5 gal)	12 L (3 gal)	83B	250 mm	389 mm	1/6	2210-0020
15 L (3.75 gal)	17 L (4.5 gal)	83B	285 mm	429 mm	1/4	2210-0040
20 L (5 gal)	22.5 L (5.5 gal)	83B	282 mm	526 mm	1/4	2210-0050
25 L (6.5 gal)	27.5 L (7.3 gal)	83B	287 mm	594 mm	1/4	2210-0065
50 L (13 gal)	54 L (14 gal)	83B	379 mm	668 mm	1/1	2210-0130
Nalgene LDPE Wide-Mouth Carboys						
10 L (2.5 gal)	12 L (3 gal)	100–415 mm	250 mm	343 mm	1/6	2234-0020
15 L (4 gal)	17 L (4.5 gal)	100–415 mm	286 mm	389 mm	1/6	2234-0030
20 L (5 gal)	22.5 L (5.5 gal)	100–415 mm	282 mm	483 mm	1/4	2234-0050

For autoclavable wide-mouth carboys, please refer to Cat. No. 2235.

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Nalgene FEP Low Particulate/Low Metals Bottles with Closure

Thermo Scientific™ Nalgene™ Low Particulate/Low Metals Bottles made of Teflon™ FEP with Closure feature a narrow mouth and certification to contain less than 20 particles per mL at 0.3 µm and greater.

Each bottle is double bagged under Class 10 laminar flow hoods inside a Class 100 clean room. Composed of FEP, these bottles are excellent for storing high-purity chemicals. Product includes a Certificate of Quality that assures the product has been tested and accepted in accordance with specifications.

Key features

- Certified to particulate and trace metal levels
- Linerless caps provide the ultimate in leakproof* protection without the use of liner that can wrinkle, cause leaks, or contaminate your reagents
- Exhibits flexibility, impact resistance, and excellent visibility of contents for a wide variety of uses in the lab or production environment
- Excellent resistance to chemicals found in laboratories and production environments
- Nonsterile

- Metals certified to microliter (ppb) levels of <0.20 Hg, <0.5 Be, <1.0 As, Cd, Pb, <2.0 Sb, Se, <5.0 Ag, Co, Cr, Cu, Mn, Ti, V, <10 Ba, Ni, Zn, <50 Mg, <75 Al, <100 Ca, Fe, K, Na
- Autoclavable and translucent

Includes: ETFE screw closure.

Note: Completely disengage threads or remove cap before autoclaving.

Nalgene FEP Low Particulate/Low Metals Bottles

Nominal capacity	Closure size	Neck ID	Outer diameter (OD)	Height with closure	No. per pack/case	Cat. No.
125 mL (4 oz)	24 mm	17 mm	46 mm	115 mm	1/6	381600-0004
250 mL (8 oz)	24 mm	17 mm	60 mm	134 mm	1/4	381600-0008
500 mL (16 oz)	28 mm	20 mm	73 mm	166 mm	1/4	381600-0016
1,000 mL (32 oz)	38 mm	26 mm	90 mm	203 mm	1/4	381600-0032

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Nalgene FEP Narrow-Mouth Bottles with Closure

Thermo Scientific™ Nalgene™ Narrow-Mouth Bottles made of Teflon™ FEP with Closure are among the most inert, chemical-resistant, corrosion-resistant containers available.

With outstanding resistance to extreme temperatures and virtually all chemicals, these bottles are ideal for trace metal analysis and applications involving organic solvents. The bottles can be vigorously cleaned in boiling nitric acid and are guaranteed leakproof*.

Key features

- The most inert, chemical-resistant, and corrosion-resistant containers available; ideal for trace metal analysis and applications involving organic solvents
- Withstands rigorous cleaning in boiling nitric acid; temperature range from –105°C to 150°C (–157°F to 302°F) for a wide range of uses including high-purity storage
- Can be autoclaved for sterilization
- Autoclavable, leakproof*, and transparent

Includes: ETFE screw closure.

Note: These bottles cannot withstand gamma irradiation. Completely disengage threads or remove cap before autoclaving.

Nalgene FEP Narrow-Mouth Bottles

Capacity	Closure size	Neck ID	Outer diameter (OD)	Height with closure	No. per pack/case	Cat. No.
30 mL (1 oz)	20 mm	14 mm	32 mm	75 mm	1/8	1600-0001
60 mL (2 oz)	20 mm	14 mm	39 mm	84 mm	1/8	1600-0002
125 mL (4 oz)	24 mm	17 mm	46 mm	115 mm	1/6	1600-0004
250 mL (8 oz)	24 mm	17 mm	60 mm	134 mm	1/4	1600-0008
500 mL (16 oz)	28 mm	20 mm	73 mm	166 mm	1/4	1600-0016
1,000 mL (32 oz)	38 mm	26 mm	90 mm	203 mm	1/4	1600-0032
2,000 mL (64 oz)	38–430 mm	24 mm	121 mm	245 mm	1/2	1600-0064

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Nalgene PFA Narrow-Mouth Bottles with Closure

Thermo Scientific™ Nalgene™ Narrow-Mouth Bottles made of Teflon™ PFA with Closure are among the most temperature-resistant, inert, chemical-resistant, corrosion-resistant containers available.

With outstanding resistance to extreme temperatures and virtually all chemicals, these bottles are ideal for trace metal analysis and applications involving organic solvents. The bottles can be rigorously cleaned in boiling nitric acid and are guaranteed leakproof*.

Key features

- Withstands –270°C to 250°C (–454°F to 482°F)
- Inert to virtually all chemicals except molten alkali metals, fluorine at high temperatures, and complex halogenated compounds at high temperatures and pressures
- Packaged individually
- Autoclavable

Includes: Leakproof*, linerless PFA screw closures.

Note: These bottles cannot withstand gamma irradiation. Completely disengage threads or remove cap before autoclaving.

Nalgene PFA Narrow-Mouth Bottles

Capacity	Closure size	Neck ID	Outer diameter (OD)	Height with closure	No. per pack/case	Cat. No.
30 mL (1 oz)	20 mm	14 mm	32 mm	75 mm	1/8	DS1630-0001
60 mL (2 oz)	20 mm	14 mm	39 mm	84 mm	1/8	DS1630-0002
125 mL (4 oz)	38–430 mm	24 mm	46 mm	127 mm	1/6	1630-0004
250 mL (8 oz)	38–430 mm	24 mm	59 mm	146 mm	1/4	1630-0008
500 mL (16 oz)	38–430 mm	24 mm	72 mm	181 mm	1/4	1630-0016
1,000 mL (32 oz)	38–430 mm	24 mm	90 mm	216 mm	1/4	1630-0032

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Nalgene FEP Wide-Mouth Bottles with Closure

Thermo Scientific™ Nalgene™ Wide-Mouth Bottles made of Teflon™ FEP with ETFE Closures provide excellent temperature and chemical resistance.

With outstanding resistance to extreme temperatures and virtually all chemicals, these bottles are ideal for trace metal analysis and applications involving organic solvents. The bottles can be rigorously cleaned in boiling nitric acid and are guaranteed leakproof*.

Key features

- The most inert, chemical-resistant, and corrosion-resistant containers available; ideal for trace metal analysis and applications involving organic solvents
- Withstands rigorous cleaning in boiling nitric acid; temperature range from –105°C to 150°C (–157°F to 302°F) for a wide range of uses including high-purity storage
- Can be autoclaved for sterilization
- Wide mouth for easy filling
- Autoclavable, leakproof*, and transparent

Includes: ETFE screw closure.

Note: These bottles cannot withstand gamma irradiation. Completely disengage threads or remove cap before autoclaving.

Nalgene FEP Wide-Mouth Bottles

Capacity	Closure size	Neck ID	Outer diameter (OD)	Height with closure	No. per pack/case	Cat. No.
125 mL (4 oz)	33 mm	25 mm	46 mm	117 mm	1/6	2100-0004
250 mL (8 oz)	43 mm	33 mm	59 mm	128 mm	1/4	2100-0008
500 mL (16 oz)	48 mm	38 mm	71 mm	165 mm	1/4	2100-0016
1,000 mL (32 oz)	53 mm	43 mm	91 mm	209 mm	1/4	2100-0032

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Nalgene Wide-Mouth EP Tox/TCLP Bottle with Closure

Thermo Scientific™ Nalgene™ Wide-Mouth EP Tox/TCLP Bottles made with Teflon™ FEP with PFA-lined Closures are ideal to use at high and low temperatures for trace metal analysis and applications with organic solvents.

Offers laboratories a safer alternative to glass.

Key features

- 2.2 L temperature-resistant FEP bottle has wide mouth for large-sized samples
- PTFE resin–lined polypropylene caps included
- Specially designed for US EPA Method 1311: Toxicity Characteristic Leaching Program (TCLP)
- Autoclavable and leakproof*

Includes: Polypropylene screw closure with PFA lining.

Note: This bottle cannot withstand gamma irradiation. Completely disengage threads before autoclaving.

Nalgene Wide-Mouth EP Tox/TCLP Bottle

Capacity	Closure size	Neck ID	Outer diameter (OD)	Height with closure	No. per pack/case	Cat. No.
2.2 L	100 mm	89 mm	119 mm	241 mm	1/2	2101-2200

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Critical environment products

Clean process products and services are ideal for critical environments—the only thing in your container is what you add

Working within a critical environment such as a clean room necessitates high-quality materials and equipment since contamination can quickly spell disaster for what are typically exceedingly sensitive applications. It is therefore essential that products used in your critical environments, such as plastic bottles, vials, carboys, caps, and other materials, conform to the necessary standards of cleanliness.

Leave the cleaning of your containers for critical applications to us

In addition to our manufacturing capabilities, which meet the needs of different cleanliness and validation options, we offer specialty service capabilities for delivering you the right level of clean for your process. We have the capability to clean glass or plastic containers, stoppers, closures, or other component parts up to 115 L in size. It has never been easier for you to:

- Choose from our wide range of Thermo Scientific™ products
- Send us your materials
- Ask us to order other products for you

With the clean processing service capabilities to offer a broad combination of cleanliness parameters and certifications, coupled with custom packaging options, we can meet your precise specifications and requirements.

All services and packaging are performed in our ISO 9001–registered facility using certified Class 100 clean rooms with documented traceability.

Certificate definitions	
Certificate of Conformance	Certificates provided for base products (vials, bottles, carboys, components) from the original manufacturer
Certificate of Processing	Certifies that a product was processed according to indicated methods
Certificate of Analysis	Certifies that a product was processed and tested according to laboratory procedures or validated protocols such as USP <788>

Particle-Certified Glass Containers

Containers are assembled to contain as few as 5 particles/mL at ≥0.5 microns. Assembled with low-shedding polypropylene closures with chemically inert PTFE-faced liners that do not contain adhesives. Both clear and amber glass products are available.

Key features

- Containers and closures cleaned in proprietary HEPA-filtered washing and drying equipment
- Clean packaged in Class 10 HEPA-filtered workstations inside our Class 100 clean room
- Containers and components to meet USP <788> and other container sizes and materials available as custom options by contacting your sales specialist

Applications

- Sampling for QC
- Pharmaceutical and biotech use

Description	Capacity, oz (mL)	Closure size, mm	Closure liner	OD x H, in.	OD x H, mm	Quantity	Cat. No.
Amber glass wide-mouth bottle with closed-top polypropylene closure (≤20 particles/mL at 0.5 µm)	0.5 (15)	28–400	PTFE	1.218 x 1.984	30.93	57	130-005/LP
Clear glass vial with open-top closure, particulate cleaned (≤10 particles/mL at 0.5 µm)	1.35 (40)	24–414	PTFE/silicone septa	1.08 x 3.74	27.5 x 95.0	90	140-40C/LP
Amber glass Boston round bottle with open-top closure (≤10 particles/mL at 0.5 µm)	2 (60)	20–400	PTFE/silicone septa	1.516 x 3.688	38.50 x 93.66	24	114-060A/LP
Amber glass packer bottle with lined closure (≤10 particles/mL at 0.5 µm)	2 (60)	33–400	PTFE	1.75 x 3.00	44.45 x 76.20	24	120-02A/LP
Clear glass Boston round bottle with closed-top closure (≤5 particles/mL at 0.5 µm)	4 (125)	24–414	PTFE/silicone	1.875 x 4.375	47.63 x 111.13	12	114-125CT/LP
Amber glass Boston round bottle with closed-top closure (≤5 particles/mL at 0.5 µm)	4 (125)	22–400	PTFE/silicone	1.875 x 4.375	47.63 x 111.13	12	114-125A/LP
Amber glass packer bottle with PTFE-lined closure (≤10 particles/mL at 0.5 µm)	4 (125)	38–400	PTFE	2.125 x 3.75	53.975 x 95.25	12	120-04A/LP
Clear glass Boston round bottle with closed-top closure (≤5 particles/mL at 0.5 µm)	8 (250)	24–414	PTFE/silicone	2.375 x 5.375	60.33 x 136.53	24	114-250C/LP
Amber glass Boston round bottle with closed-top closure (≤5 particles/mL at 0.5 µm)	8 (250)	24–400	PTFE/silicone	2.375 x 5.443	60.33 x 138.25	12	114-250A/LP
Amber glass wide-mouth packer bottle with closure (≤5 particles/mL at 0.5 µm)	8 (250)	45–400	PTFE	2.563 x 4.688	65.10 x 119.075	12	121-08A/LP
Clear glass jar, wide mouth, with closure (≤5 particles/mL at 0.5 µm)	16 (500)	89–400	PTFE	3.578 x 3.781	90.88 x 96.04	12	132-16C/LP
Amber glass Boston round bottle with closure (≤5 particles/mL at 0.5 µm)	16 (500)	28–400	PTFE	3.00 x 6.625	76.20 x 168.28	12	113-500A/LP
Amber glass wide-mouth packer bottle with closure (≤5 particles/mL at 0.5 µm)	16 (500)	53–400	PTFE	3.172 x 5.75	80.57 x 146.05	12	122-16A/LP
Amber glass Boston round bottle with closure (≤5 particles/mL at 0.5 µm)	32 (1,000)	33–430	PTFE/silicone	3.75 x 8.50	95.25 x 215.90	12	112-01A/LP
Clear glass jar, wide mouth, with closure (≤5 particles/mL at 0.5 µm)	32 (1,000)	89–400	PTFE	3.75 x 6.69	95.25 x 169.85	12	133-32C/LP
Amber fluorinated glass jug with closure (≤10 particles/mL at 0.5 µm)	80 (2,500)	38–439	PTFE/silicone	5.25 x 12.00	133.4 x 305.0	6	110-80A/LP
Amber glass wide-mouth packer bottle with closure (≤5 particles/mL at 0.5 µm)	84 (2,500)	70–400	PTFE	5.50 x 9.375	139.70 x 238.13	4	123-80A/LP
Amber glass jug with closure (≤5 particles/mL at 0.5 µm)	128 (4,000)	38–439	PTFE/silicone	6.25 x 13.25	158.75 x 336.55	4	111-04A/LP

Dimensions are approximate and may vary slightly.

Class 100/10 Particle-Certified HDPE Bottles

Thermo Scientific™ Particle-Certified HDPE Bottles protect the quality of products or laboratory samples.

HDPE bottles with polypropylene closures are leakproof* and suitable for use in sampling packaging, and may be used with combination packaging for hazardous shipping. The bottles are double-bagged; low-metal certification includes aluminum, calcium, copper, iron, potassium, magnesium, manganese, sodium, and zinc at <10 ppb each.

Key features

- Produced in our Class 10/100 clean room
- Optional QC documentation available for several trace metals
- Certificate of Analysis provided
- Supplied with polypropylene closure

Applications

- Sampling for stability studies
- Pharmaceutical and biotech use
- Plastic certified to contain as few as 20 particles/mL at ≥0.5 µm

Class 100/10 Particle–Certified HDPE Bottles

Description	Capacity, oz (mL)	Closure size, mm	Liner	OD x H, in. (mm)	No. per case	Cat. No.
HDPE narrow-mouth Nalgene bottle with closure	4 (125)	24–415	NA	2.00 x 4.00 (50.80 x 101.60)	24	156-125W/N/LP
HDPE narrow-mouth Nalgene bottle with closure, low metals	4 (125)	24–415	NA	2.00 x 4.00 (50.80 x 101.60)	24	156-125W/N/LPM
HDPE narrow-mouth Nalgene bottle with closure	8 (250)	24–415	NA	2.50 x 5.25 (63.50 x 133.35)	24	157-250W/N/LP
HDPE narrow-mouth Nalgene bottle with closure	32 (1,000)	38–430	NA	3.625 x 8.50 (92.08 x 215.90)	12	150-01W/N/LP
HDPE narrow-mouth Nalgene bottle with closure, low metals	32 (1,000)	38–430	NA	3.625 x 8.50 (92.08 x 215.90)	12	150-01W/N/LPM

Dimensions are approximate and may vary slightly.

* Our guarantee for a leakproof seal is subject to our standard product warranty, as set forth in the Thermo Fisher Scientific Terms and Conditions of Sale. Our products are leakproof at ambient temperature and pressure when used with their corresponding closures. However, to ensure safe usage, customers are advised to test our containers and closures under conditions of their planned applications. Please contact technicalsupport@thermofisher.com if you need additional information about our products.

Total Organic Carbon–Certified Vials

These low-level certified vials are intended for total organic carbon (TOC) testing and sampling. Several sizes of containers are available, including the popular 40 mL autosampler vials that are cleaned, certified, and ready to use. Use these vials to simplify and reduce the cost of cleaning validations.

Key features

- Low background perfect for preparation and storage of standards
- Each lot tested and certified to contribute <10 or <20 parts per billion (ppb) TOC background

Applications

- USP Method <643> testing
- Offline and grab sampling of high-purity water

40 mL vials fit most automated TOC instruments

Total Organic Carbon–Certified Vials

Description	Capacity, oz (mL)	Closure size, mm	Liner	OD x H, in.	OD x H, mm	Quantity	Cat. No.
Screw thread glass tube (round bottom) silanized 16 x 125 (certified for <20 ppb for TOC)	0.6 (18)	15–425	PTFE/silicone septa	0.563 x 5.00	14.30 x 127.0	255	CT18-TOC
Screw thread glass tube (round bottom) silanized with closure 16 x 125 (certified for <10 ppb for TOC)	0.6 (18)	15–425	PTFE/silicone septa	0.563 x 5.00	14.30 x 127.0	255	CT18-TOC/LL
Clear glass flat-bottom tube with closure 18 x 100 (<20 ppb for TOC)	0.58 (17)	15–425	PTFE/silicone septa	0.699 x 3.937	17.75 x 100.0	200	SCT-18100/TOC
30 mL polysulphone tube with closure, TOC cleaned only, no Certificate of Analysis (COA)	1 (30)	20–400	PTFE/silicone septa	1.02 x 3.74	26 x 95	100	3115-OTWS-2
24-414 polypropylene cap, Thin Septa, TOC cleaned only, no COA	NA	24–414	PTFE/silicone septa	NA	NA	72	24-414/TS/WS-2
Clear glass vial with closure, dust covers (certified for <20 ppb for TOC)	1.35 (40)	24–414	PTFE/silicone septa	1.083 x 3.740	27.50 x 95.00	72	40C-TOC
Amber glass vial with closure, dust covers (certified for <10 ppb for TOC)	1.35 (40)	24–414	PTFE/silicone septa	1.083 x 3.740	27.50 x 95.00	144	40A-TOC/DB/LL
Clear glass vial with closure, dust covers (certified for <20 ppb for TOC)	1.35 (40)	24–414	PTFE/silicone septa	1.083 x 3.740	27.50 x 95.00	144	40C-TOC/DB
Clear glass vial with closure, dust covers (certified for <10 ppb for TOC)	1.35 (40)	24–414	PTFE/silicone septa	1.083 x 3.740	27.50 x 95.00	144	40C-TOC/DB/LL
Clear glass vial (certified for <10 ppb for TOC)	1.35 (40)	24–414	PTFE/silicone septa	1.125 x 3.75	28.58 x 95.25	72	40C-TOC/LL
Amber glass Boston round bottle with closed-top closure (certified for <20 ppb TOC)	4 (125)	22–400	PTFE/silicone	1.875 x 4.375	47.63 x 111.13	12	S114-125A/TOC
Amber glass Boston round bottle with open-top polypropylene closure (certified for <20 ppb TOC)	8 (250)	24–414	PTFE/silicone septa	2.359 x 5.368	59.92 x 136.35	12	S114-250A/TOC
Clear glass Boston round bottle with open-top polypropylene closure (certified for <20 ppb TOC)	8 (250)	24–414	PTFE/silicone septa	2.359 x 5.368	59.92 x 136.35	24	S114-250C/TOC
Clear glass Boston round bottle with closed-top closure (certified for <20 ppb TOC)	32 (1,000)	33–400	PTFE	3.797 x 8.531	96.44 x 216.69	12	1000C/TOC
Amber glass Boston round bottle with closed-top closure (certified for <20 ppb TOC)	32 (1,000)	38–439	PTFE	3.797 x 8.531	96.44 x 216.69	12	1000A/TOC

Dimensions are approximate and may vary slightly.

Total Organic Carbon Water

Thermo Scientific™ high-purity specialty water is low in organic and inorganic impurities at the time of packaging.

Processing includes reverse osmosis, activated carbon, and ultraviolet TOC reduction. Certified to down to 50 ppb. Use for sample and standard dilutions, lab blank determination, and equipment rinsing.

Key features

- Exceeds 17 megaohm resistivity
- Filtered through 0.1 µm hydrophobic membrane filters

Applications

- Sample and standards dilution
- Lab blank determination
- Equipment rinsing

Total Organic Carbon Water

Description	Capacity, oz (mL)	Closure size, mm	Liner	OD x H, in. (mm)	No. per case	Cat. No.
Amber glass bottle with closure (filled)	32 (1,000)	33–430	PTFE/ silicone	3.70 x 8.10 (93.98 x 205.74)	12	112-01A/CTOC
Amber jug with closure (filled)	128 (4,000)	38–430	PTFE/ silicone	6.25 x 13.25 (158.75 x 336.55)	4	111-04A/C-TOC

Depyrogenated Glass Containers

Save the need to invest in expensive capital equipment with ready-to-use depyrogenated glassware in a wide variety of sizes and configurations. The containers have been specially prepared to meet endotoxin levels of <0.06 EU/mL.

- Designed to meet low-endotoxin container needs for terminal sterilization or endotoxin-limited environments
- Testing performed according to USP <85>
- Containers and closures cleaned in proprietary HEPA-filtered washing equipment with low endotoxin water. Glass to be followed by a 250°C depyrogenation cycle
- Clean-packaged in Class 10 (ISO Class 4) HEPA-filter–equipped workstations inside our Class 100 (ISO Class 5) clean room

Applications

- Packaging and storage of articles that will be terminally sterilized
- Storage of laboratory reagents and medias
- Sample storage
- Water sampling

Depyrogenated Glass Containers

Description	Capacity, oz (mL)	Closure size, mm	Liner	OD x H (in.)	OD x H (mm)	Qty	Cat. No.
Clear glass vial with urea closure	0.12 (4)	13–425	PTFE	0.583 x 1.772	14.8 x 45.00	72	23-CTP4/PF
Clear glass vial with closed-top black polypropylene closure	0.68 (20)	24–400	PTFE/silicone	1.083 x 2.244	27.50 x 57.00	72	139-20C/CT/LP/PF
Clear glass wide-mouth straight-side jar with closure	2 (60)	53–400	PTFE	2.2 x 1.9	55.88 x 48.26	24	130-02C/PF
Amber glass wide-mouth jar with closure	2 (60)	33–400	PTFE	1.75 x 2.968	44.45 x 75.39	24	C20-02A/PF
Amber glass wide-mouth straight-side short jar with closure	4 (125)	58–400	PTFE	2.25 x 2.75	57.15 x 69.85	24	130-04A/PF
Clear glass wide-mouth straight-side short jar with closure	4 (125)	58–400	PTFE	2.359 x 2.702	59.92 x 68.63	24	130-04C/PF
Clear glass wide-mouth tall jar with closure	4 (125)	48–400	PTFE	2.00 x 4.00	50.80 x 101.60	24	130-04C/TL/PF
Amber glass wide-mouth packer bottle with closure	4 (125)	38–400	PTFE	2.125 x 3.75	53.98 x 95.25	24	C20-04A/PF
Amber glass wide-mouth packer bottle with closure	8 (250)	45–400	PTFE	2.563 x 4.688	65.100 x 119.075	12	121-08A/PF
Amber glass wide-mouth straight-side jar	8 (250)	70–400	PTFE	2.875 x 3.5	73.03 x 88.90	24	131-08A/PF
Clear glass wide-mouth straight-side jar	8 (250)	70–400	PTFE	2.875 x 3.5	73.03 x 88.90	24	131-08C/PF
Amber glass wide-mouth packer bottle with closure	16 (500)	53–400	PTFE	3.172 x 5.75	80.57 x 146.05	12	122-16A/PF
Clear glass wide-mouth straight-side jar	16 (500)	89–400	PTFE	3.578 x 3.781	98.87 x 90.88	12	132-16C/PF
Amber glass wide-mouth packer bottle with closure	32 (1,000)	53–400	PTFE	3.89 x 7.00	98.81 x 177.8	12	123-32A/PF
Clear glass wide-mouth bottle with closure	32 (1,000)	89–400	PTFE	3.75 x 6.687	95.25 x 169.85	12	133-32C/PF
Amber glass wide-mouth packer bottle with closure	40 (1,200)	70–400	PTFE	7.500 x 4.125	190.50 x 104.78	24	123-40A/PF
Clear glass wide-mouth bottle	64 (2,000)	83–400	PTFE	5.00 x 8.50	127.00 x 215.90	6	117-2L/PF
Amber glass wide-mouth packer bottle with closure	84 (2,500)	70–400	PTFE	5.50 x 9.375	139.70 x 238.13	4	123-80A/PF
Clear glass wide-mouth bottle	128 (4,000)	110–400	PTFE	6.145 x 9.953	156.08 x 252.81	4	117-4L/PF

Dimensions are approximate and may vary slightly.

Depyrogenated Sterile Vials

Thermo Scientific™ Depyrogenated Sterile Vials are certified both depyrogenated and sterile and available in sizes from 1 mL to 100 mL. Sterile vials are Type 1 borosilicate, assembled with butyl stoppers and aluminum seals.

Applications

- Suitable for packaging and storage of articles that will be terminally sterilized, storage of laboratory media and reagents, sample storage, water sampling—but where an aseptic protocol is required

Depyrogenated Sterile Vials

Description	Capacity, oz (mL)	Closure size, mm	Closure liner	OD x H (in.)	OD x H (mm)	Qty	Cat. No.
Clear glass vial preassembled with stopper and aluminum crimp seal	0.068 (2)	13	Butyl rubber stopper	0.63 x 1.378	16 x 35	100	ST2-13
Amber glass vial preassembled with stopper and aluminum crimp seal	0.068 (2)	13	Butyl rubber stopper	0.63 x 1.378	16 x 35	100	ST2-13A
Clear glass vial preassembled with stopper and aluminum crimp seal	0.17 (5)	20	Butyl rubber stopper	0.781 x 1.50	19.84 x 38.10	50	ST5-20
Amber glass vial preassembled with stopper and aluminum crimp seal	0.17 (5)	20	Butyl rubber stopper	0.781 x 1.50	19.84 x 38.10	50	ST5-20A
Clear glass vial preassembled with stopper and aluminum crimp seal	0.34 (10)	20	Butyl rubber stopper	0.813 x 2.00	20.65 x 50.80	50	ST10-20
Amber glass vial preassembled with stopper and aluminum crimp seal	0.34 (10)	20	Butyl rubber stopper	0.813 x 2.00	20.65 x 50.80	50	ST10-20A
Clear glass vial preassembled with stopper and aluminum crimp seal	0.68 (20)	20	Butyl rubber stopper	0.969 x 2.313	24.61 x 58.75	50	ST20-20
Clear glass vial preassembled with stopper and aluminum crimp seal	1.014 (30)	20	Butyl rubber stopper	1.313 x 2.50	33.35 x 63.50	50	ST30-20
Amber glass vial preassembled with stopper and aluminum crimp seal	1.014 (30)	20	Butyl rubber stopper	1.313 x 2.50	33.35 x 63.50	50	ST30-20A
Clear glass vial preassembled with stopper and aluminum crimp seal	1.7 (50)	20	Butyl rubber stopper	1.50 x 2.688	38.1 x 68.28	50	ST50-20
Amber glass vial preassembled with stopper and aluminum crimp seal	1.7 (50)	20	Butyl rubber stopper	1.50 x 2.688	38.1 x 68.28	50	ST50-20A
Clear glass vial preassembled with stopper and aluminum crimp seal	3.4 (100)	20	Butyl rubber stopper	1.75 x 3.75	44.45 x 95.25	50	ST100-20
Amber glass vial preassembled with stopper and aluminum crimp seal	3.4 (100)	20	Butyl rubber stopper	1.75 x 3.75	44.45 x 95.25	50	ST100-20A

Dimensions are approximate and may vary slightly.

Silanized Glassware Products

Deactivated sites on the surface of the glass allow for maximum recovery of trace analytes. The Thermo Scientific™ line of ready-to-use silanized vials and culture tubes save valuable time and minimize costs when performing quantitative analysis or storing materials. Use for trace organic analysis, processing of materials prone to glass adhesion, or extraction glassware needs.

Key features

- Barrier coating provides protection against alkalinization of stored materials
- Save valuable personnel time and minimize waste costs
- Certificate of conformance included

Silanized Glassware Products

Description	Capacity, oz (mL)	Closure size, mm	Liner	OD x H (in.)	OD x H (mm)	Qty	Cat. No.
Amber glass vial with screw-thread closure	0.068 (2)	8–425	PTFE/foam	0.472 x 1.26	11.99 x 32.00	100	SAA-SV2-2
Clear glass vial with closed-top closure	0.068 (2)	8–425	PTFE/foam	0.472 x 1.26	11.99 x 32.00	100	SCA-SV2-2
Amber glass vial with closed-top closure	0.068 (2)	8–425	PTFE/foam	0.472 x 1.26	11.99 x 32.00	100	SCA-SV2-CT
Amber glass vial with closure	0.12 (4)	13–425	PTFE/foam	0.583 x 1.772	14.80 x 45.00	100	EP608154-S
Amber glass vial with closed-top closure	0.12 (4)	13–425	PTFE/foam	0.583 x 1.772	14.80 x 45.00	100	SAA-SV4-2
Clear glass vial with closed-top closure	0.12 (4)	13–425	PTFE/foam	0.583 x 1.772	14.80 x 45.00	100	SCA-SV4-2
Amber glass vial with closure	0.27 (8)	15–425	PTFE/foam	0.669 x 2.362	16.99 x 59.99	100	EP608158-S
Amber glass vial with solid closed-top septa closure	0.68 (20)	24–414	PTFE/silicone	1.083 x 2.244	27.50 x 57.00	72	C39-20A/CT-S
Clear glass vial with solid closed-top septa closure	0.68 (20)	24–414	PTFE/silicone	1.083 x 2.244	27.50 x 57.00	72	C39-20C/CT-S
Amber glass Boston round bottle with black closure	32 (1,000)	33–430	PTFE	3.797 x 8.531	96.44 x 216.69	12	212-01A-S
Silanized Disposable Culture Tubes, Type 1 borosilicate glass*							
Clear glass culture tubes 12 x 75 (closures are not included)	0.20 (6)	NA	NA	0.47 x 2.95	12 x 75	1,000	CTS-1275
Screw-thread glass tube 13 x 100 (closures are not included)	0.27 (8)	13–415	NA	0.51 x 3.94	13 x 100	1,000	STT-13100-S
Clear glass culture tubes 13 x 100 (closures are not included)	0.34 (10)	NA	NA	0.51 x 3.94	13 x 100	1,000	CTS-13100
Screw-thread glass tube 16 x 100 (closures are not included)	0.41 (12)	15–415	NA	0.63 x 3.94	16 x 100	1,000	STT-16100-S
Clear glass culture tubes 16 x 100 (closures are not included)	0.51 (15)	NA	NA	0.63 x 3.94	16 x 100	1,000	CTS-16100
Screw-thread glass tube 16 x 125 (closures are not included)	0.54 (16)	15–415	NA	0.63 x 4.92	16 x 125	1,000	STT-16125-S
Clear glass culture tubes 16 x 125 (closures are not included)	0.64 (19)	NA	NA	0.63 x 4.92	16 x 125	1,000	CTS-16125-2

Dimensions are approximate and may vary slightly.

* Type 1 borosilicate glass tubes sold 1,000 per case, 250 per inner pack.

Adherent cell culture systems

When it comes to producing consistent-quality vaccines and biologics designed to improve and save lives, nobody can do it alone. We have the hands-on technical experience to help you accelerate productivity and ease the burden of regulatory compliance. With a comprehensive range of adherent cell production and storage solutions, a global supply chain, and commitment to service and support, we're with you every step of the way.

Perfect your cell culture processes at every stage, from research and process development to large-scale biomanufacturing. The quality of our Thermo Scientific™ Nunc™ production cell culture platforms, including Nunc™ Cell Factory™ systems and Nunc™ roller bottles, reflects the rigorous standards that have made us the world's leading provider of cell culture products.

Cell Factory systems and accessories

Scale up production of vaccines, monoclonal antibodies, or pharmaceuticals. Nunc Cell Factory systems are compact, multilayer, single-use adherent cell culture systems designed to meet the needs of scale-up and production of your products.

Cell Factory automation equipment

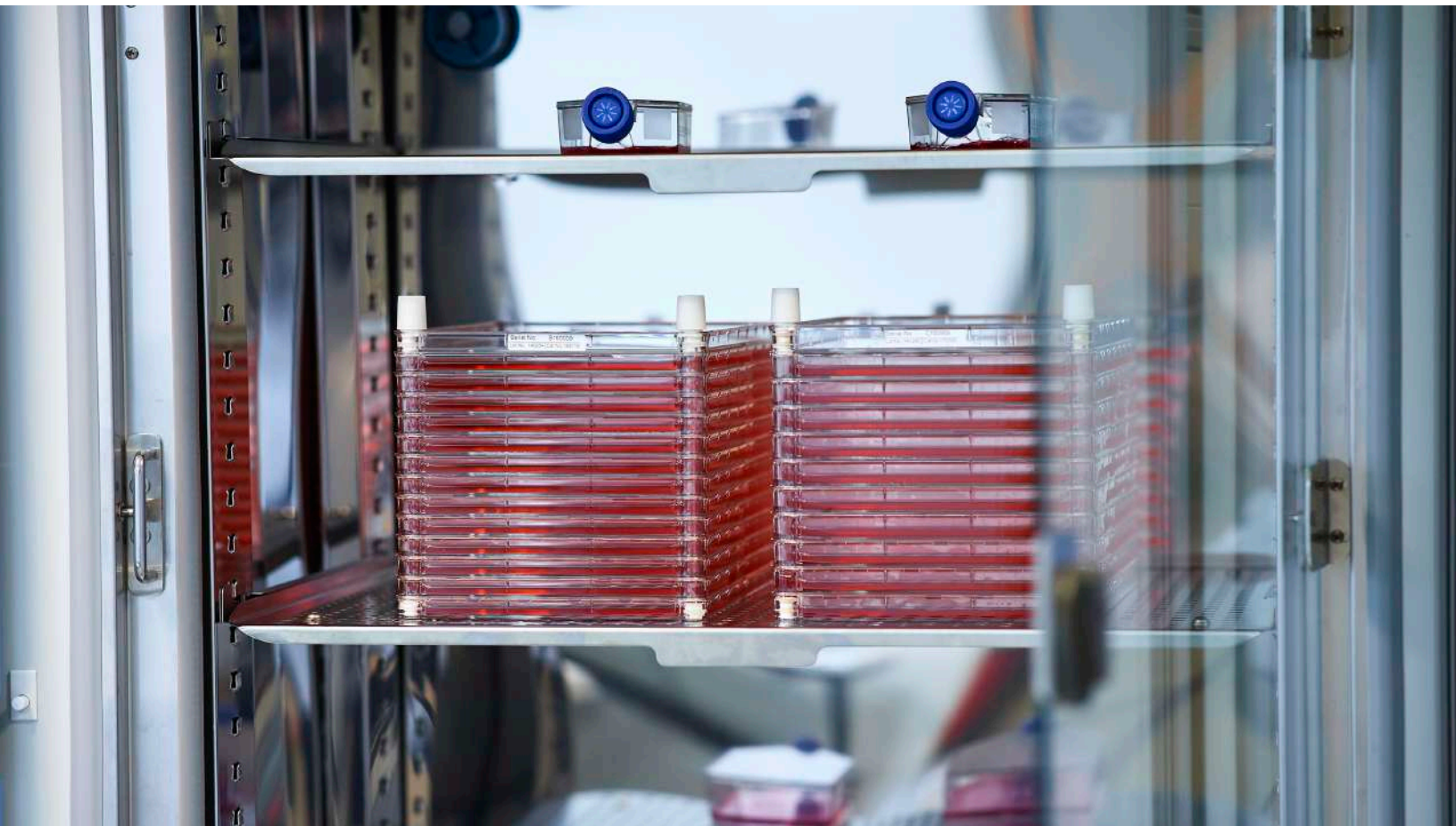
Supports the use of aseptic methods for fluid handling relating to filling, inoculation, feeding, and harvesting of the Nunc Cell Factory system. These accessories enable the further development of applications requiring a more closed cell culture system, reducing the number of open interventions.

Roller bottles

Developed for applications such as industrial-scale production of vaccines, monoclonal antibodies, and biotherapeutics, Nunc roller bottles provide the reliability that you demand for all your cell growth needs.

We offer an unmatched portfolio of Nunc roller bottles. The choice is yours with options available in both polystyrene (PS) and polyethylene terephthalate (PETG) with smooth and expanded surface formats, enabling you to find the optimal substrate for your cell culture.

Find out more at
thermofisher.com/cellfactory



Standard Nunc Cell Factory systems

Nunc Cell Factory systems help enable faster results and lot to lot consistency. A proven solution for large-scale production of cells, vaccines, and therapeutic proteins, these systems have the same growth kinetics as laboratory-scale cell culture products. The ports of the system make it easy to customize and close, with custom tubing assemblies that facilitate venting, filling, and harvesting; available in 1-, 2-, 4-, 10-, and 40-tray versions.

Standard Cell Factory systems

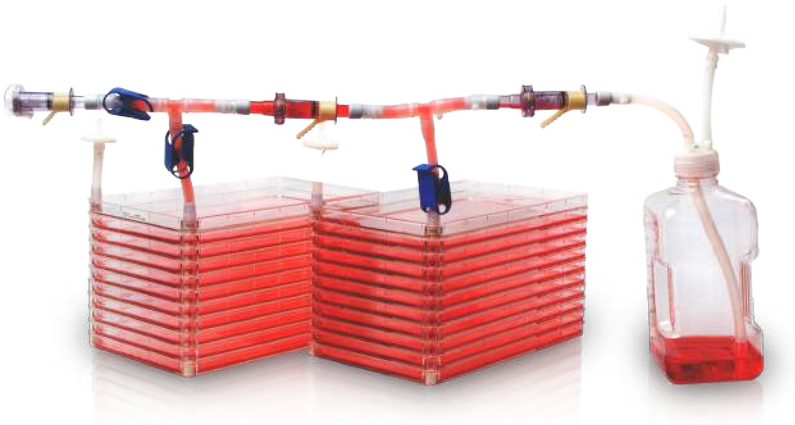
Sterile polystyrene chambers with Thermo Scientific™ Nunclon™ Delta surface.

No. of layers	Cell culture area	Nominal dimensions (L x W x H)	Quantity	Cat. No.
1	632 cm^2	335 x 205 x 35 mm (13.2 x 8.1 x 1.4 in.)	Case of 8	165250
2	1,264 cm^2	335 x 205 x 53 mm (13.2 x 8.1 x 2.1 in.)	Case of 6	167695
4	2,528 cm^2	335 x 205 x 87 mm (13.2 x 8.1 x 3.4 in.)	Case of 10	140004
10	6,320 cm^2	335 x 205 x 190 mm (13.2 x 8.1 x 7.5 in.)	Case of 2	164327
10	6,320 cm^2	335 x 205 x 190 mm (13.2 x 8.1 x 7.5 in.)	Case of 6	170009
40	25,280 cm^2	335 x 205 x 698 mm (13.2 x 8.1 x 27.5 in.)	Case of 2	139446

True configured Cell Factory systems

Attaching tube sets onto Nunc Cell Factory systems for closed system processes can cause difficulties in sourcing, purchasing, inventory, contamination risk, and assembly. With true configured custom Nunc Cell Factory systems, we take the burden of managing components and validating the systems in-house. Our commercial team will work with you to design a custom closed system that fits your specific process.

- **Closed system**—fit cGMP needs and reduce your risk of contamination with a sterilized full assembly that is ready to use straight out of the box
- **Designed specifically for your process**—work with our team to create a system that increases your process efficiency
- **Simplify your supply chain**—reduce complications from sourcing and purchasing from multiple vendors by leveraging our global capabilities



Standard Closed Cell Factory systems

Having a clean and closed system that helps provide consistent and high-quality results should be a standard among your adherent cell culture processes. The Thermo Scientific™ Nunc™ Standard Closed Cell Factory™ systems are built with standard components to help ensure quality and assurance of supply:

- 2- or 10-layer systems
- Sartopore™ 0.2 µm filter
- AseptiQuik G connector
- Silicone tubing

Standard Closed Cell Factory systems

No. of layers	Cell culture area	Nominal dimensions (L x W x H)	Quantity per pack/case	Cat. No.
 2-layer system	1,264 cm^2	335 x 205 x 53 mm (13.2 x 8.1 x 2.1 in.)	1/4	140471
 10-layer system	6,320 cm^2	335 x 205 x 190 mm (13.2 x 8.1 x 7.5 in.)	1/2	140472

Nunc High Density Cell Factory systems

Thermo Scientific™ Nunc™ High Density Cell Factory™ systems offer 30% more surface area and yield* than the standard Cell Factory system or similar multitray systems for adherent cell culture. The economic benefits of these high-density systems are immediate with impacts across many functions of an organization, as they enable end users to optimize their manufacturing footprint, reduce labor and material usage, and increase cell culture yield.

Key features

- **Increase yield**—30% more surface area and yield* all within the standard Cell Factory system footprint
- **Enhance productivity**—increase labor and handling efficiencies by achieving more output in a single process
- **Improve process economics**—increase manufacturing capacity without capital investment
- **Seize environmental opportunities**—consume less and reduce your decontamination and waste disposal costs
- **Maintain current protocols**—constructed of polystyrene chambers and assembled without use of adhesives or solvents

* The increase in yield may vary depending on the type of cells cultured.

Nunc High Density Cell Factory systems

Sterile polystyrene chambers with Nunclon Delta surface.

No. of layers	Cell culture area	Nominal dimensions (L x W x H)	Quantity	Cat. No.
3	1,896 cm^2	333 x 204 x 54 mm (13.1 x 8.0 x 2.1 in.)	Case of 4	169160
13	8,216 cm^2	333 x 204 x 186 mm (13.1 x 8.0 x 7.3 in.)	Case of 3	169118
52	32,864 cm^2	333 x 204 x 698 mm (13.1 x 8.0 x 27.5 in.)	Case of 1	169102

Nunc EasyFill Cell Factory systems

The Thermo Scientific™ Nunc™ EasyFill™ Cell Factory™ system is a single-use system with a large, vented screw closure and versatile port design for pouring and aseptic filling.

To get started, simply pour the media directly into the large opening of the EasyFill Cell Factory system. The linear, multilayer format promotes easy scalability and is ideal for both research and commercial-scale cell culture applications.

Key features

- Constructed of polystyrene and assembled without use of adhesives or solvents
- Save valuable space; each 10-layer system holds the equivalent of 36 T-175 flasks
- Enhance productivity with 5x faster fill and empty times compared to T-175 flasks
- Achieve fast start-up; no accessories required with Nunc EasyFill Cell Factory systems
- Certified Nunclon Delta surface helps ensure consistent growth layer to layer and lot to lot

Nunc EasyFill Cell Factory systems

Sterile polystyrene chambers with Nunclon Delta surface.

No. of trays	Cell culture area	Nominal dimensions (L x W x H)	Quantity	Cat. No.
1	632 cm^2	335 x 205 x 35 mm (13.2 x 8.1 x 1.4 in.)	Case of 6	140000
2	1,264 cm^2	335 x 205 x 53 mm (13.2 x 8.1 x 2.1 in.)	Case of 6	140250
4	2,528 cm^2	335 x 205 x 87 mm (13.2 x 8.1 x 3.4 in.)	Case of 4	140360
10	6,320 cm^2	335 x 205 x 190 mm (13.2 x 8.1 x 7.5 in.)	Case of 2	140400
10	6,320 cm^2	335 x 205 x 190 mm (13.2 x 8.1 x 7.5 in.)	Case of 6	140410
40	25,280 cm^2	335 x 205 x 698 mm (13.2 x 8.1 x 27.5 in.)	Case of 2	140440

Nunc Cell Factory accessories

Thermo Scientific™ Nunc™ Cell Factory™ accessories support the use of aseptic methods for fluid handling relating to filling, inoculation, feeding, and harvesting procedures of the Nunc Cell Factory system. These accessories enable the further development of applications requiring a more closed cell culture system, reducing the number of open interventions.

Key features

- Connect media bag or tubing set to any Nunc Cell Factory system for enhanced aseptic connectivity for filling and harvesting
- Prevent buildup of back pressure during filling
- Venting options provide additional air venting when filling and harvesting by gravity or with a peristaltic pump

Cat. No.	146008	147074	140067	140080	140815	140817
Description	Nunc EasyFill replacement vent caps	Nunc EasyFill vent/close cap	1.0 µm air vent filter assembly	0.22 µm air vent filter assembly	Tubing set with female MPC connector	Feed tubing set with male MPC connector
Material	HDPE	HDPE	HDPE closure	HDPE closure	–	–
Gamma irradiated	Yes	Yes	Yes	Yes	Yes	Yes
Quantity	Case of 10	Case of 100	Case of 2	Case of 2	Case of 2	Case of 2
System compatibility	Nunc EasyFill	Nunc EasyFill	Nunc EasyFill	Nunc EasyFill	All	All

Cat. No.	140099	173250	167525	170615	179553
Description	Nunc Cell Factory connector	Nunc Cell Factory connector (autoclavable)	White Tyvek filter adaptor cap	Port cover cap, blue	Individual 1.0 µm air vent filter
Material	PC	FEP	HDPE	HDPE	–
Gamma irradiated	No	No	Yes	Yes	Yes
Quantity	10 cases of 10	Case of 2	Case of 20	2 cases of 40	Case of 10
System compatibility	All	All	All	All	All

Nunc Automated Cell Factory Manipulator

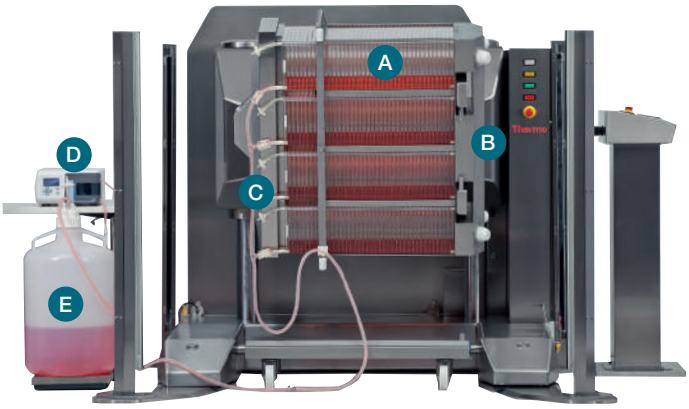
The Thermo Scientific™ Nunc™ Automated Cell Factory™ Manipulator is a high-quality, fully programmable system that automates the handling of Nunc Cell Factory systems. Keep your proven adherent cell culture practices and simplify your scale-up to achieve consistent and reliable results. Designed for use in clean room environments and compatible with closed system workflows, all functions can be activated by the touch of a button.

Features

- Can handle twelve 10-layer or four 40-layer standard Nunc Cell Factory systems (twelve 13-layer or four 52-layer Nunc High Density Cell Factory systems)*
- Standard safety light curtain
- All visible components made of 316L stainless steel for easy cleaning
- Comes with a total of 29 programs; 11 fixed basic programs and 18 preinstalled modifiable wash programs
- Programs to help automate filling, washing, emptying, trypsinizing, and harvesting steps of Nunc Cell Factory systems
- Optional Process Field Bus (PROFIBUS) data interface
- Can be part of a closed system workflow
- Compatible with many “sensitive” cell lines

Consumables customization

Nunc Cell Factory systems can be configured with tubing sets/manifolds to enable a closed system workflow that works seamlessly with the Nunc Automated Cell Factory Manipulator. These tubing sets are customized to your specific needs through our configuration service.



Required accessories

A. Nunc Cell Factory systems (CF10/40 or HDCF13/52)

B. Thermo Scientific™ Nunc™ Cell Factory™ racks and carts

C. Tube sets and filter assemblies

D. Peristaltic pump

E. Nalgene carboys, BPEs, or other containers

Specifications	
Footprint (W x D x H)	206.8 x 179 x 194.4 cm (max) 81.4 x 70.47 x 76.54 in. (max)
Construction	1.4404 (AISI 316L) stainless steel
Unit weight	1,050 kg (2,314.9 lb)
Load capacity	>200 kg (>440.9 lb)
Rated voltage	208–400 V, triple phase, 50/60 Hz**
Current draw	6.5–15.5 A (each phase)
Connected load	4.5–5.6 kVA
Declaration of conformity	
Machinery directive	2006/42/EC
Electromagnetic compatibility directive	2014/30/EC

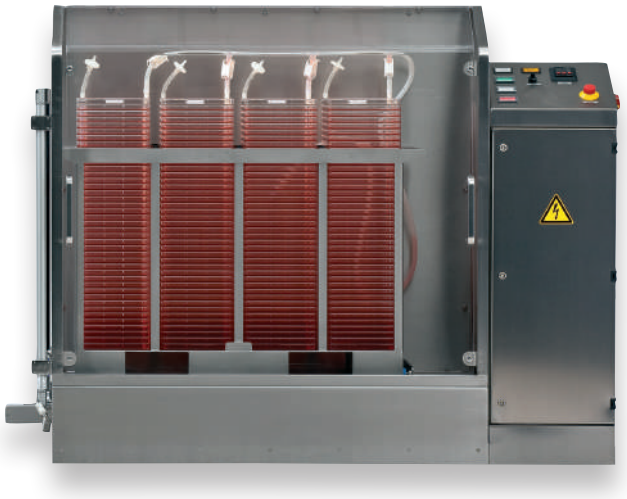
Nunc Automated Cell Factory Manipulator

Description	Cat. No.
Nunc Automated Cell Factory Manipulator Gen 10, with safety light curtain and membrane foil keypad, 3N/PE, 400 V, 50/60 Hz	120288
Nunc Automated Cell Factory Manipulator Gen 10, with safety light curtain and membrane foil keypad, 3N/PE, 208 V, 50/60 Hz	120405

* A simple component adjustment is needed for use with Nunc High Density Cell Factory systems.
** Other voltages on request.

Nunc Cell Factory Shaker System

The Thermo Scientific™ Nunc™ Cell Factory™ Shaker System offers a high-quality, automated solution for the consistent detachment of especially adherent cells from Nunc Cell Factory systems. It eliminates the need for shaking and pounding, supporting workflow dependability and efficiency.



Features

- Can handle twelve 10-layer or four 40-layer standard Nunc Cell Factory systems (twelve 13-layer or four 52-layer Nunc High Density Cell Factory systems)
- Performs a continuous, horizontal accelerated and decelerated movement
- Programmable shaking time
- Shaking frequency can be adjusted between 0 and 2 Hz
- All visible components made of 304L stainless steel for easy cleaning
- Standard safety light curtain
- Can be part of a closed system workflow

Specifications	
Footprint (W x D x H)	170.6 x 59 x 128.2 cm 67.2 x 23.2 x 50.5 in.
Construction	1.4301 (AISI 304L) stainless steel
Unit weight	650 kg (1,433.0 lb)
Load capacity	>125 kg (275.6 lb)
Rated voltage	208–240 V, single phase, 50/60 Hz
Rated power	1 kVA
Current draw	4.3 A
Connected load	1.0 kVA
Declaration of conformity	
Machinery directive	2006/42/EC
Electromagnetic compatibility directive	2104/30/EC

Nunc Cell Factory Shaker System

Description	Cat. No.
Nunc Cell Factory Shaker, Gen 2, 208–240 V, 50/60 Hz, single phase	132849
Nunc Cell Factory Shaker, Gen 3, 208–240 V, 50/60 Hz, with data logging	132854
Nunc Cell Factory racks and carts	
Side Loading Rack with Cart for 40-layer Nunc Cell Factory systems and 52-layer Nunc High Density Cell Factory systems	140503
Side Loading Rack with Cart for 10-layer Nunc Cell Factory systems and 13-layer Nunc High Density Cell Factory systems	140504
Retrofit Clamping Kit for Racks for Use with Shaker	120289

Nunc Cell Factory Incubator

Achieve process consistency with Thermo Scientific™ Nunc™ Cell Factory™ Incubators. Mitigate the risk of spillage from moving full cell factories. The convenient floor-level height of the shelves makes it easy to load and unload carts. Designed to seamlessly accommodate four racks of 10-layer or 40-layer Nunc Cell Factory systems.

Features

- Can handle forty-eight 10-layer or sixteen 40-layer standard Nunc Cell Factory systems (forty-eight 13-layer or sixteen 52-layer Nunc High Density Cell Factory systems)
- Available with and without CO_2 control (0–20% CO_2)
- Optional CO_2 sensor with infrared technology
- Equipped with warning and alarm systems
- Temperature control from 7°C to 50°C
- Incubator cabinet and interior made of stainless-steel grade 316L for easy cleaning
- Can be part of a closed system workflow

Specifications	
Footprint (W x D x H)	186 x 118.5 x 148.9 cm 73.23 x 46.65 x 58.62 in.
Construction	1.4404 (AISI 316L) stainless steel
Unit weight	600 kg (1,322.8 lb)
Load capacity	600 kg (1,322.8 lb)
Rated voltage	208–240 V, single phase, 50/60 Hz
Rated power	1.25 kVA at 230 V
Current draw	5.4 A at 230 V
Range	7°C above ambient to 50°C
Uniformity	±0.6°C at 37°C
Power consumption	320 Wh/h at 37°C operation
Declaration of conformity	
Machinery directive	2014/35/EC
Electromagnetic compatibility directive	2014/30/EC

Nunc Cell Factory Incubators

Description	Cat. No.
Nunc Cell Factory Incubator, Gen 5, 208–240 V, 50/60 Hz, single phase	120100
Nunc Cell Factory Incubator, with CO_2 control, Gen 5, 208–240 V, 50/60 Hz, single phase	120300
Related products	
Side Loading Rack with Cart for 40-layer Nunc Cell Factory systems and 52-layer Nunc High Density Cell Factory systems	140503
Side Loading Rack with Cart for 10-layer Nunc Cell Factory systems and 13-layer Nunc High Density Cell Factory systems	140504

Nunc Cell Factory racks and carts

Easily store and transport Nunc Cell Factory systems safely and efficiently using Nunc Cell Factory racks and carts. Each rack can hold up to four Nunc Cell Factory 40-layer systems or twelve Nunc Cell Factory 10-layer systems. Racks and carts are designed to integrate perfectly with all Nunc Cell Factory equipment, adding consistency to and streamlining your process.

Features

- Can handle twelve 10-layer or four 40-layer standard Nunc Cell Factory systems (twelve 13-layer or four 52-layer Nunc High Density Cell Factory systems)
- Optional tubing clamp for 13.5 mm or 16 mm OD tubing
- Designed for use in clean room environments
- Side-loading design for easy loading and unloading
- Made of 316L stainless steel for easy cleaning
- Movable rack designed to come off from cart and interact seamlessly with other Nunc Cell Factory equipment
- Nunc Cell Factory 40-layer carts can accommodate other layered adherent cell culture systems
- Nunc Cell Factory 10-layer carts can be customized to accommodate other layered adherent cell culture systems

Specifications	
Footprint (W x D x H)	103.5 x 36 x 96.6 cm 40.7 x 14.2 x 38 in.
Construction	1.4404 (AISI 316L) stainless steel
Unit weight	65 kg (143.3 lb)
Load capacity	60 kg (12 10-layer Cell Factory systems) 80 kg (4 10-layer Cell Factory systems)

Integrates with:

- Nunc Cell Factory Incubator
- Nunc Automated Cell Factory Manipulator
- Nunc Cell Factory Shaker System
- Thermo Scientific™ Nunc™ Cell Factory™ hand manipulators
- Fluid transfer assemblies

Nunc Cell Factory racks and carts

Description	Cat. No.
Side Loading Rack with Cart for 40-layer Nunc Cell Factory systems and 52-layer Nunc High Density Cell Factory systems	140503
Side Loading Rack with Cart for 10-layer Nunc Cell Factory systems and 13-layer Nunc High Density Cell Factory systems	140504
Retrofit Clamping Kit for Racks for Use with Shaker	120289

Nunc Cell Factory hand manipulator systems

Nunc Cell Factory hand manipulators are designed for the safe and efficient handling of individual 10- and 40-layer Cell Factory systems. Constructed of quality stainless steel, they are ideal for clean room environments. The Thermo Scientific™ Nunc™ Cell Factory™ 40 hand manipulator is mobile and includes a foot brake for safe placement. The Thermo Scientific™ Nunc™ Cell Factory™ 10 hand manipulator is compact and ideal for use within in a biosafety cabinet.

Specifications	
10-layer	
Footprint (W x D x H)	30.3 x 55.7 x 36.6 cm 11.9 x 21.9 x 14.4 in.
Construction	1.4301 (AISI 304L) stainless steel
Unit weight	9.5 kg (20.9 lb)
40-layer	
Footprint (W x D x H)	76.5 x 67 x 135.2 cm (max) 30.1 x 26.4 x 53.2 in. (max)
Construction	1.4301 (AISI 304L) stainless steel
Unit weight	27 kg (59.5 lb)

40-layer Nunc Cell Factory hand manipulator system

Nunc Cell Factory hand manipulator system

Description	Cat. No.
Nunc 10-layer Cell Factory Hand Manipulator System	132752
Nunc 40-layer Cell Factory Hand Manipulator System	176953

Nunc PS Roller Bottles

Thermo Scientific™ Nunc™ PS Roller Bottles provide reliability and reproducibility necessary for laboratory- and industrial-scale applications, including vaccines, cell culture expansion, and the production of other biologics. Minimize validation of cell culture scale-up processes from plates to flasks to roller bottles by choosing a family of products that utilize polystyrene materials.

Key features

- Constructed of polystyrene with high-density polyethylene closures
- One-piece seamless design reduces possibility of leaking through a seam
- Shallow and deep indents at bottom make the roller bottle excellent for both manual and automated handling
- Noncytotoxic; USP <87>, USP Class VI, and USP <85> endotoxin compliance
- Vertical pleat orientation facilitates emptying and reduces retention of product
- Roller bottles are cell culture treated for consistent, reliable cell attachment
- Gamma sterilized to 10^{-6} SAL

Nunc PS Roller Bottles

Description	Surface area, cm^2	No. per pack	No. per case	Cat. No.
Roller bottle, smooth surface, vented	850	2	20	181702
Roller bottle, smooth surface	850	2	20	182702
		20	20	182720
		20	20, double bagged	182744
EZ roller bottle, smooth surface, shallow indent, vented	850	2	20	183302
EZ roller bottle, smooth surface, deep indent, vented	850	2	20	183902
EZ roller bottle, smooth surface, shallow indent	850	2	20	184302
		20	20, double bagged	184344
EZ roller bottle, smooth surface, deep indent	850	2	20, double bagged	184902
		20	20	184920
		20	20, double bagged	184944
Roller bottle, pleated surface, vented	1,450	20	20, double bagged	141744
Roller bottle, pleated surface	1,450	20	20	142720
		20	20, double bagged	142744

Nunc PETG Roller Bottles

Thermo Scientific™ Nunc™ PETG Roller Bottles increase cell expansion and product yield without the need to purchase additional production equipment or increase labor.

For laboratory- and industrial-scale applications including vaccines, cell culture expansion, and the production of other biologics.

Key features

- Molded of durable, virtually unbreakable PETG, offering the safest roller bottle solution on the market today
- Can be frozen down to –40°C; supports freeze/thaw cell release methods, reducing reliance on trypsin
- Gamma sterilized to 10^{-6} SAL
- Quick-action HDPE ergonomic closure reduces wrist strain and increases productivity
- Noncytotoxic; USP <87>, USP Class VI, and USP <85> endotoxin compliance

Nunc PETG Roller Bottles

Description	Surface area, cm^2	No. per pack	No. per case	Cat. No.
Roller bottle, smooth surface	1,050	5	20	1060-05
		20	20	1060-20
Roller bottle, smooth surface, vented	1,050	5	20	1060-85
Roller bottle, pleated surface	1,700	20	20	1760-20
Roller bottle, smooth surface	1,800	22	22	1860-22
Roller bottle, pleated surface	2,100	5	20	2160-05
		20	20	2160-20
Roller bottle, pleated surface	4,200	22	22	4260-22

Nalgene PC Culture Vessel with Ports

The Thermo Scientific™ Nalgene™ Culture Vessel features four ports supporting easy access to your suspension cultures. Economical, lightweight, and break-resistant.

Key features

- Molded of transparent PC for easy viewing of cultures
- White polypropylene closures
- Graduated in 0.5 L increments from 3 to 12 L
- Use with overhead drive mixers and lower assemblies for top-to-bottom mixing
- Port accessories are available; ports accept any Thermo Scientific™ Nalgene™ 38-430 size closure
- Noncytotoxic, autoclavable, and USP Class VI–compliant

Nalgene PC Culture Vessel with Ports

Working capacity	No. of ports	No. per case	Cat. No.
12 L	4 x 38-430	1	2600-0012

Nalgene PP Probe Adapter Closure

Thermo Scientific™ Nalgene™ Probe Adapter Closures allow for insertion of 7 to 14 mm diameter probes into Nalgene culture vessels and bottles with 38-430 neck finishes.

Provides controlled access to the interior of culture vessels.

Key features

- Molded of autoclavable PP; ready for in-house sterilization
- Includes a silicone gasket to ensure a leakproof seal
- Allows insertion of 7 mm to 14 mm diameter probes into 1 L and 12 L culture vessels
- Ideal for use with any Nalgene bottle or culture vessel with a 38-430 neck finish

Nalgene PP Probe Adapter Closure

Description	No. per case	Cat. No.
38-430 probe adapter closure	2	2145-0384

Nalgene PP Closures with Barbed Bulkhead Fittings

Thermo Scientific™ Nalgene™ PP Closures with Barbed Bulkhead Fittings support the integration of tubing sets with Nalgene culture vessels. Promotes the customization of Nalgene culture vessels for aseptic transfer of liquids.

Key features

- Size 38-430 closures are predrilled, allowing for easy, safe in-house assembly
- Barbed bulkhead fittings also sold separately (Cat. No. 6149-0001 and 6149-0002)
- Molded of autoclavable PP, ready for in-house sterilization

Nalgene PP Closures with Barbed Bulkhead Fittings

Description	No. per case	Cat. No.
38-430 closure with 1/2 in. OD barbed fitting	4	DS2167-0001
38-430 closure with 1/4 in. OD barbed fitting	4	DS2167-0002

Nalgene Magnetic Carboy Stirrer

Thermo Scientific™ Nalgene™ Magnetic Carboy Stirrer is used with Nalgene 10 L and 20 L carboys for low-speed mixing of high volumes of media and buffer solution.

Adjusts easily to fit either a 10 L or 20 L Nalgene carboy with an 83B closure. Supplied with a closure and two impellers. Eliminates the need to retrieve magnets from your solution.

Key features

- Polyvinylidene fluoride with stainless steel–reinforced shaft, TFE stir bar, impeller, and polypropylene screw closure
- Provides low-speed mixing of high volumes of media and buffer solution
- Fits 10 L or 20 L Nalgene carboys with 83B closure
- For use with a magnetic stir plate (not included)
- Autoclavable

Specifications	
Closure size, mm	83B
Shaft OD	13 mm
Shaft length	588 mm
Stir bar diameter	13 mm
Stir bar length	75 mm

Nalgene Magnetic Carboy Stirrer

Length	No. per case	Cat. No.
588 mm	1	DS2227-0020

Nalgene Autoclavable Septum Closures

Thermo Scientific™ Nalgene™ Autoclavable Septum Closures allow aseptic injection of reagent or sample withdrawal without compromising sterility or integrity of contents. Suitable for use with any bottle or container with 38-430 neck, including Nalgene culture vessels.

Key features

- Use with 18-gauge or smaller needles for aseptic injection of reagent or sample withdrawal without compromising sterility or integrity of contents
- Thermoplastic elastomer
- Autoclavable

Note: For laboratory use only; not for in vitro diagnosis or parenterals.

Nalgene Autoclavable Septum Closures

Description	No. per case	Cat. No.
38-430 autoclavable septum closures	12	DS2168-0384

Single-use bioprocessing equipment and automation

Speed to market and risk mitigation are top customer concerns, and Thermo Fisher Scientific offers technical experience and solutions to address these concerns seamlessly. We manufacture single-use equipment to facilitate easy integration and customization across upstream and downstream bioprocessing workflows. Our control and hardware, utilizing Emerson™ DeltaV™ data management solutions, create flexible operating systems with the integration of modular hardware, novel single-use sensors, and state-of-the-art bioreactors for strategic and streamlined bioprocess control.

Find out more at
thermofisher.com/sutequipment

You can now easily configure and standardize processes that employ Thermo Scientific™ S.U.B.s, S.U.F.s, S.U.M.s, Integrity Testing Systems, Heat Exchangers, BPCs, automation platforms, and other accessories for rapid scale-up—from process development to commercial manufacturing.

Intuitive, customized data management

The foundation of efficient data management is the usage of a robust platform that is consistent from R&D to production, easy-to-use, intuitive, and configurable. We have developed the Thermo Scientific™ TruBio™ software, G3 and GX bioprocess controllers, and sensing technologies to enable users to optimize data acquisition, while maintaining full compliance with 21 CFR Part 11.

TruBio automation and control software solutions

The technology and data transfer during the lifecycle of drug development, from bench scale laboratory applications to large-scale production, is often challenging, time consuming, and involves many different user requirements. The Thermo Scientific™ TruBio™ software and automation platform improves tech transfer time and validation costs by running on a consistent data model from R&D to commercial production. With Thermo Scientific™ TruBio™ Bioprocess Control Software being powered by both Emerson™ DeltaV™ Discovery Platform at lab scale and Emerson™ DeltaV™ Distributed Control platform (for pilot, clinical and production scale), savings have been found in risk mitigation including reduced training and validation costs. Standardizing with open architecture controllers simplifies data transfer and storage resulting in introducing new products faster to market.

For research and process development solutions

The Thermo Scientific™ TruBio™ Discovery software platform provides a simplified solution to meet the needs of research and process development labs. This platform supports research and discovery applications with automation technology that easily translates to commercial operations. A single, workstation-based controller is utilized to execute process control strategies.

- Transferability of software and speed to scale-up conversions when using TruBio software from research to clinical to commercial production processes
- Ability to integrate with most existing vessels (including third-party) currently in place
- Enables easy integration of process measurements and data sources powered by the DeltaV Discovery platform
- Reduced footprint
- Lower cost entry into the DeltaV control platform

For production scale solutions

TruBio software with the DeltaV platform and the Thermo Scientific™ TruLogic™ Controller provides all the capabilities of TruBio Discovery software and adds flexible and reliable state-of-the art control capability. With multiple sensor loops as well as gas and liquid addition capabilities, this software can be used with both Thermo Scientific™ HyPerforma™ and DynaDrive™ Single-Use Bioreactors (S.U.B.s), Single-Use Mixers (S.U.M.s) and other third-party bioreactors to provide a process control platform from research through commercial manufacturing.

- Conforms to regulatory requirements for use in cGMP-compliant processes
- Enables building of sophisticated and advanced process control strategies without knowledge of DeltaV platform programming
- Intelligent alarm management
- Multifeed dosing functionality available to scale from small to large doses with high precision
- Ability to create batch recipes for media mixing and buffer preparation
- Redundant controller configurations can be accommodated

Bioprocess controllers

HyPerforma GXCore Bioprocess Controller

The Thermo Scientific™ HyPerforma™ GXCore™ Bioprocess Controller is an innovative, open-architecture, cost-effective controller offering a compact design while providing customers with access to our TruBio software on the DeltaV platform—enabling users to easily scale up and adapt to suit-specific process and application goals.

The HyPerforma GXCore Bioprocess Controller can control most bench-scale, single-use bioreactors and fermentors up to a 20 L total volume, regardless of manufacturer. With a small footprint to allow for more room on the bench, the HyPerforma GXCore Bioprocess Controller is equipped with all functionalities required by most research and process development applications.

True to the Thermo Scientific™ bioprocess controller portfolio, the HyPerforma GXCore Bioprocess Controller operates with Thermo Scientific™ TruBio™ Bioprocess Control Software. This provides the research and process development scientist an easy and intuitive user interface to control the culture process, on a robust platform that maintains data integrity for process characterization and scalability from bench to pilot scale and commercial manufacturing.

Key features

- Open-architecture capabilities to integrate with vessels from other suppliers
- Reduced footprint and stackable system for saving space on the bench
- Suitable for both beginner and experienced researchers
- Auxiliary connections to allow future expansion and additional capabilities*
- User-defined LED strip lighting for status and alarm state

- Thermo Scientific™ TruBio™ Bioprocess Control Software powered by the Emerson DeltaV platform, a common control platform that can be used from R&D to manufacturing; capable of taking non-GMP research and process development applications to GMP commercial scale with ease
  - For non-GMP research and process development applications: Thermo Scientific™ TruBio™ Discovery Bioprocess Control Software powered by the DeltaV Discovery platform
  - For GMP and typical scale-up to manufacturing applications: TruBio Bioprocess Control Software powered by the conventional DeltaV platform

Ordering information

Description	Cat. No.
HyPerforma GXCore Bioprocess Controller* (suitable for glass and bench-scale single-use bioreactors)	F100-7000-000

* Control solution must be ordered. Contact your sales representative for details.

* Future options available for control of up to 30 L S.U.F., and 50 L S.U.B.

Bioprocess controllers

HyPerforma G3Lab Bioprocess Controller

The Thermo Scientific™ HyPerforma™ G3Lab Bioprocess Controller can control most brands of single-use or autoclavable bioreactors or fermentors that are ≤50 L, including stirred-tank and rocking models. The controller operates using TruBio automation platforms, which make a scale-up or scale-down process easy and feature the configurability to modify your control strategy along with your process. The enclosure contains state-of-the-art transmitters along with power supplies, pumps, I/O modules, and the hardware required to connect to the control network, providing maximum control capability.

Key features

- Open architecture capabilities to integrate with vessels from other suppliers
- Coupled with TruBio software and DeltaV control platform allow for data transfer and scalability from R&D, to production, to manufacturing
- The ability to build and manage complex, multifeed dosing strategies
- Allows for third-party peripheral integration as needed

Ordering information

HyPerforma G3Lab Bioprocess Controller*	Cat. No.
HyPerforma G3Lab Bioprocess Controller for the use with DeltaV or DeltaV Discovery and TruBio software licenses with 4 Watson-Marlow 114 series pumps, suitable for glass and benchtop single-use bioreactors	ATO-G3Lab-Std
HyPerforma G3Lab Bioprocess Controller for the use with DeltaV or DeltaV Discovery and TruBio software licenses, with 4 Watson-Marlow 114 series pumps, suitable for glass and benchtop single-use and rocker bioreactors	G3Lab-Full-Config

* Each HyPerforma G3Lab Controller needs to be operated using the Thermo Scientific™ TruFlow™ gas mass flow controller (MFC) and appropriate automation platform. Please contact your Thermo Fisher Scientific sales representative for more information on standard package options suitable for your requirements.

Bioprocess controllers

HyPerforma G3Lite and G3Pro Bioprocess Controllers

The Thermo Scientific™ HyPerforma™ G3Lite Bioprocess Controller is an open architecture control system that can be integrated with most S.U.B.s and S.U.F.s. The system consists of a control tower that leverages intelligent transmitters, mass flow controllers (MFCs), pumps, sensors, and TruBio software that facilitates easy, reliable, and repeatable process development and commercial cell culture processes. HyPerforma G3Lite Bioprocess Controllers are fully self-contained, movable units that can be operated alone (for one vessel) or networked for multiple vessels. They are engineered to optimize capital cost for use in non-GMP and cGMP-certified production facilities.

Features

- Scalability—transfer any process from 30 L to 2,000 L
- Modularity—predefined configurations available for 50, 100, 250, 500, 1,000, and 2,000 L bioreactors and 30 and 300 L fermentors
- Touchscreen interface for easy data entry and control
- Stand-alone or networked–enabled (for multiple vessels) by a distribution control system (DCS)
- Flexible upstream TruBio software powered by the Emerson DeltaV system
- Includes up to six MFCs with air, O_2, N_2, and CO_2 for drilled-hole spargers (DHS); air for direct sparge, cross flow, and overlay

The Thermo Scientific™ HyPerforma™ G3Pro Bioprocess Controller is a universal controller used to control S.U.B.s (50 L to 2,000 L) and S.U.F.s (30 and 300 L). It is an engineered-to-order product that brings versatility to manage, monitor, and control any third-party vessels. This controller also allows mobility and flexibility in terms of any reconfiguration and application expansion.

Features

- Open-architecture capabilities to integrate with vessels from other suppliers
- Single- or dual-cart mount option for easy mobility and an option to control up to 2 vessels thereby reducing footprint
- Scalability—transfer any process from 30 L to 2,000 L
- Touchscreen interface by NEMA for easy data entry and control
- Probe configuration options—flexible to connect both electrochemical and single-use probes for pH and DO measurements
- Optional redundant sensor control mechanism
- Flexible upstream TruBio software powered by the Emerson DeltaV system
- Can be adapted for multiproduct applications

Gas mass flow controllers (MFCs)

MFC for the HyPerforma G3Lab Bioprocess Controller

The TruFlow gas MFC is designed to work with all of the HyPerforma bioreactor control systems. Its compact assembly provides up to six standard mass flow controllers and three associated solenoid valves. When connected, the TruFlow gas MFC is instantly recognized by TruBio software to help provide precise control of gas flow, without requiring any configuration, even at extremely low flow rates.

Key features

- Variety of flow rate options
- Flow range configurability
- Plug-and-play connectivity

Gas MFC for the HyPerforma GXCore Bioprocess Controller

The MFC for the HyPerforma GXCore Bioprocess Controller is a compact assembly providing 4 MFCs and two associated solenoid valves for gas sparge and overlay. When connected, the MFC is instantly recognized by TruBio software to provide precise control of gas flow.

- Option of 0.002–1 slpm or 0.03–15 slpm in aluminum or stainless steel
- Plug-and-play connectivity

Ordering information	Cat. No.
0–1 slpm; suitable for all bioprocess gases; aluminum flow path	F100-7001-100
0–1 slpm; suitable for all bioprocess gases; stainless steel flow path	F100-7001-200
0–15 slpm; suitable for all bioprocess gases; aluminum flow path	F100-7015-100
0–15 slpm; suitable for all bioprocess gases; stainless steel flow path	F100-7015-200

Superior pump technology

Unrivaled precision for dosing, feeding, mixing, transferring, or harvesting

Our pumps have been designed to meet high-precision liquid delivery requirements in upstream with controller and downstream (external pumps) for bioprocess applications. The pumps combine industry-known Watson Marlow™ pump heads with electronic boards. This pairing optimizes control of dosing, feeding, product transfer and harvest, buffer mixing (gradient or step), or general liquid management.

Features

- Ability to switch the pump models (different flow rates)
- Auto-detection for the pump by the TruBio software

Unleash your controller

These pumps are standard in the G3 controller family and can be swapped out if the process flow rate requirements change or if the controller is used with a different size or type of vessel. In G3 controllers, all pump communication is aggregated by a master communication board; this board reads process values from and sends instructions to the pumps.

Pump specifications			
Pump series	**114**	**313**	**520**
Power supply	24 V DC	24 V DC	24 V DC
Max current (at 25°C)	0.25 A	0.95 A	1.5 A
Average current (at 25°C)	0.2 A	0.75 A	1 A
Operating temperature	5°C to 50°C (41°F to 122°F)		
Storage temperature	–10°C to 70°C (14°F to 158°F)		
Humidity	10% to 90% (noncondensing)		
Speed	5 to 160 rpm	1 to 300 rpm	1 to 300 rpm
Accuracy	±2 rpm, or ±2% of set point	±1 rpm, or ±2% of set point	±1 rpm, or ±2% of set point
Certifications	CE: EN-60101 and EN-61326	CE: EN-60101 and EN-61326	CE: EN-60101 and EN-61326
Tubing (thickness, ID)	0.8 mm, 4.8 mm	0.8 mm, 8.0 mm	1.6 mm, 9.6 mm

Sensors and transmitter blade

Sensors for superior process control

Thermo Fisher Scientific offers single-use and reusable sensors for the measurement of pH, dissolved oxygen (DO), biomass, and headspace pressure—designed for higher reliability and superior performance for cell culture and fermentation process monitoring and that meet all of your process analytical technology (PAT) needs.

To further enhance your processes, digital integration is possible with the use of our bioprocess controllers paired with the TruBio Bioprocess Control Software.

We offer a range of intuitive process sensors—whether you're incorporating them into a single-use bioprocess container or autoclavable vessel process—to help you monitor processes, reduce failures, and gain efficiencies.

TruSens Transmitter Blade

The Thermo Scientific™ TruSens™ Transmitter Blade is a combined technology designed to monitor all conventional pH and DO sensors. It allows the connection of a resistance temperature detector (RTD) or a thermistor inputs to suit the user's preferred sensor technology in upstream processes.

This transmitter blade with TruBio software allows for temperature compensation and is compatible with electrochemical sensors and digital sensors that output nAmp or mV signals.

Features

- Compatible with most single-use or reusable sensors
- Designed to easily integrate with TruBio Bioprocess Control software
- Easily incorporated into the HyPerforma Bioprocess Controllers
- Minimal maintenance

TruSens Transmitter Blade specifications	
Physical	
Case material	Aluminum bracket
Dimensions (H x W x D)	130 x 35 x 128 mm (5.1 x 1.4 x 5.0 in.)
Weight/shipping weight	0.1/0.3 kg (0.2/0.6 lb)
Mounting	Enclosure mounted within utility tower
Display	TruBio Bioprocess Control Software (GAMP5)
RFI/EMI	EN 61326-1
Operating temperature	5°C to 45°C (41°F to 113°F) ambient
Storage temperature	0°C to 65°C (32°F to 149°F)
Relative humidity	10% to 90% (noncondensing)
Electrical	
Power supply	24 VDC @ 150 mA
Signal outputs	6 analog 4–20 mA (1 electrochemical pH, 1 electrochemical DO, 2 PT100 RTD, 2 thermistor)
Signal inputs	pH (–520 mV–520 mV), DO (0–500 nA) , PT100 RTD (0–100°C), thermistor (0–100°C for 10 kΩ, 15–130°C for 22 kΩ)
Output accuracy	Analog: ± 0.1 mA Digital: NA

HyPerforma Rocker Bioreactor

The Thermo Scientific™ HyPerforma™ Rocker Bioreactors bring control and measurement to rocking bioreactor applications. The rocker is controlled by a HyPerforma Bioprocess Controllers and Bioprocess Automation and Control Software, powered by the Emerson DeltaV Distributed Control Platform. This provides a complete solution for research, process development, or seed train production applications. The HyPerforma Rocker Bioreactors use BPCs with working volumes of 5, 10, and 25 L, and are available with or without the novel Thermo Scientific™ pH+dO$_2$ sensor and reader.

Key features

- Compatible with most cell culture applications
- Rocking motion is customizable to your specific workflow—from a smooth waveform that minimizes shear forces for sensitive cell lines, through four intermediate steps, to an aggressive motion that maximizes oxygen transfer for robust cells with high oxygen demands
- Quick, simple setup with a HyPerforma Bioprocess Controller and TruBio software
- Optional accessories include rocker cover, tray adapter for use with 10 L and 20 L BPCs, and sensorless cover plate for when the reader is not being used
- Each HyPerforma Rocker BPC is available in 10, 20, and 50 L (5, 10, and 25 L maximum liquid volume) sizes and is delivered with all relevant certificates, gamma-irradiated (25 to 40 kGy), and conforming to USP Class 6 specifications
- Standard service packages
- cGMP-compliant capabilities
- Load cell for weight control
- The pH+dO$_2$ sensor provides measurement and control of critical process parameters: pH, DO, and temperature

HyPerforma Rocker Bioreactors and BPCs	Cat. No.
HyPerforma Rocker Bioreactor, with load cells	F100-2683-001
HyPerforma Rocker Bioreactor, without load cells	F100-2683-002
10 L HyPerforma Rocker BPC, LDPE film, cGMP	F100-2544-001
20 L HyPerforma Rocker BPC, LDPE film, cGMP	F100-2545-001
50 L HyPerforma Rocker BPC, LDPE film, cGMP	F100-2546-001
10 L HyPerforma Rocker BPC, Aegis5-14 film, cGMP, without sensor	SH31187.01
20 L HyPerforma Rocker BPC, Aegis5-14 film, cGMP, without sensor	SH31187.02
50 L HyPerforma Rocker BPC, Aegis5-14 film, cGMP, without sensor	SH31187.03

HyPerforma Glass Bioreactors

Thermo Scientific™ HyPerforma™ Glass Bioreactors are available in 1 L, 3 L, 7 L, and 15 L total volume sizes. They offer easy operation and rapid assembly and are manufactured with the highest standards for materials and surface finish. Developed using a computational fluid dynamics (CFD) simulator, the HyPerforma Glass Bioreactor impellers provide maximum mixing with minimum shear force, resulting in a higher average k_La.

HyPerforma Glass Bioreactor key features

- The motor adapter uses coupling windows and an alignment marker for easy assembly
- Ergonomic head plate design provides easy assembly and disassembly of components for rapid reconfiguration

Accessories

- Kits to help enable the end user to configure the vessel according to the intended use
- Heating blanket: designed for rapid thermal transfer; a bimetallic temperature-limiting switch embedded in the blanket helps protect against overheating or fires
- Common accessories kit: includes blind stoppers for vessel reconfiguration

HyPerforma Glass Bioreactor*			
Size	**Voltage**	**Description**	**Cat. No.**
1 L	120 V	Heat only	F100-2684-002
		Heat and cool	F100-2684-004
	240 V	Heat only	F100-2684-102
		Heat and cool	F100-2684-104
3 L	120 V	Heat only	F100-2680-002
		Heat and cool	F100-2680-004
	240 V	Heat only	F100-2680-102
		Heat and cool	F100-2680-104
7 L	120 V	Heat only	F100-2681-002
		Heat and cool	F100-2681-004
	240 V	Heat only	F100-2681-102
		Heat and cool	F100-2681-104
15 L	120 V	Heat only	F100-2685-002
		Heat and cool	F100-2685-004
	240 V	Heat only	F100-2685-102
		Heat and cool	F100-2685-104

Note: All bioreactors listed are manufactured according to GMP.

* Each lab-scale bioreactor needs to be operated using a HyPerforma G3Lab Controller and appropriate automation platform.
Please contact your Thermo Fisher Scientific sales representative for more information on standard package options suitable for your requirements.

DynaDrive Single-Use Bioreactor (S.U.B.)

The Thermo Scientific™ HyPerforma™ Single-Use Bioreactor (S.U.B.) is one of the most widely used S.U.B.s designed for mammalian cell culture. We first launched the HyPerforma S.U.B. in 2006 and updated its design in 2013, while maintaining its robust, top-down, stirred-tank mixing system. The HyPerforma S.U.B. has been widely adopted in process development (PD) and clinical trials, as well as in bioproduction of cGMP cell culture. The new Thermo Scientific™ DynaDrive™ S.U.B. is the latest advancement based on our proven innovation, which offers better performance and accommodates larger volumes.

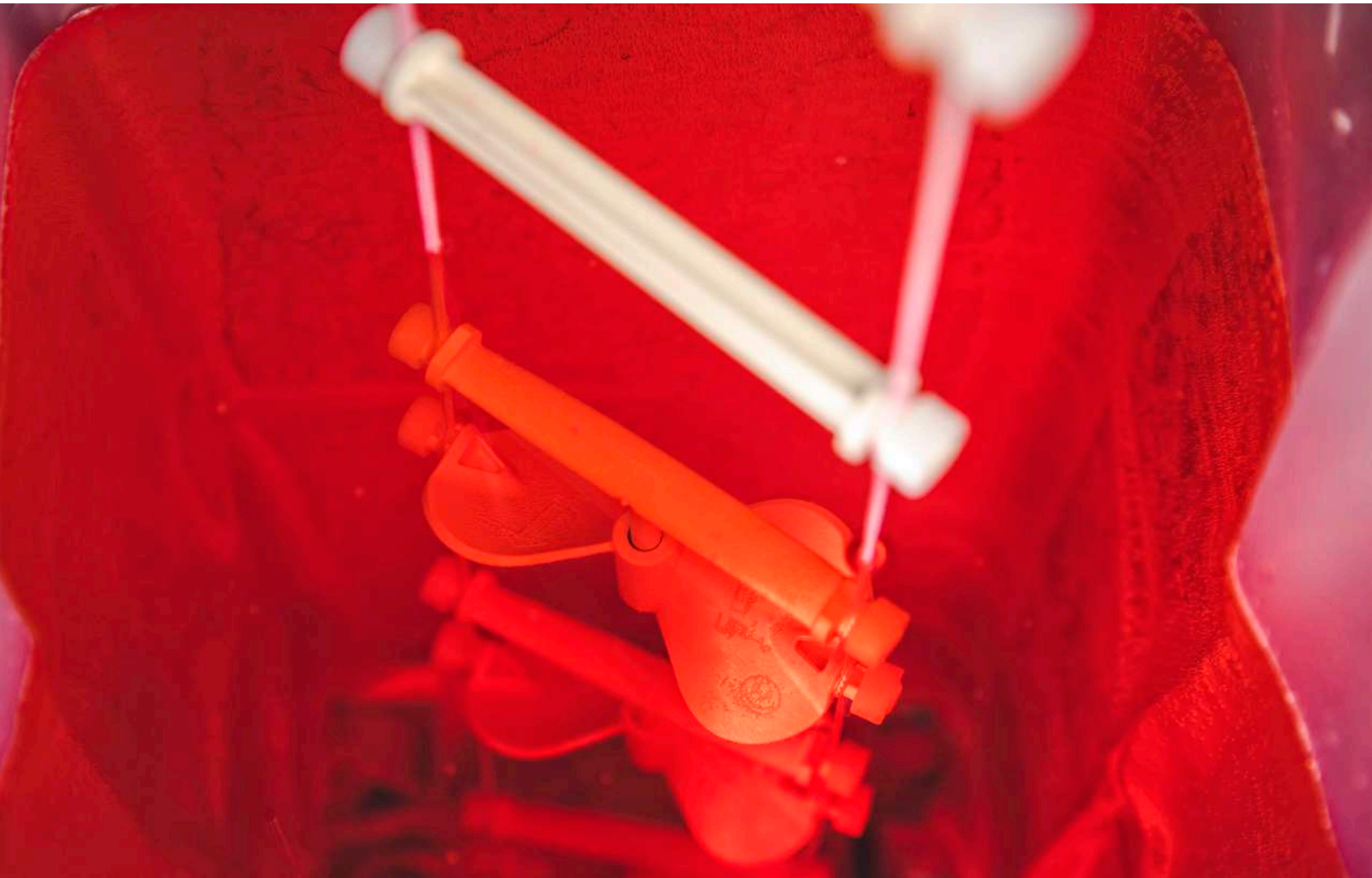
Key advantages

- Large volume—50 L, 500 L, and option of scalability to larger sizes of up to 5,000 L
- Improved seed train process—10:1 turndown ratio in the 50 L reactor and 20:1 turndown in the 500 L, plus projected larger-size reactors allow for streamlined seed-train process and help reduce risk
- Mixing times, power input per volume (PIV), and k_La performance are optimized for modern cell culture processes >100 million cells/mL
- Hardware optimized for perfusion cell culture processes
- Ergonomically friendly hardware—designed with the user in mind and allows for consistent and uniform BPC loading
- Open-architecture approach—allows interoperability with available control systems
- Integrated drive train
- BPCs, which are made with highly robust bioprocessing film—the Aegis5-14 film
- The film and components have been tested for leachable and extractable (L&E) evaluation according to BioPhorum
- Follows the BioPhorum Operations Group (BPOG) guideliness

DynaDrive S.U.B. hardware and BPCs

Ordering information

Description	Cat. No.
Hardware (ready for controller integration)	
50 L DynaDrive S.U.B. hardware unit, with casters and load cells	DDB0050.1011
500 L DynaDrive S.U.B. hardware unit, with casters and load cells	DDB0500.1011
3,000 L DynaDrive S.U.B. hardware unit, with load cells	DDB3000.1021
5,000 L DynaDrive S.U.B. hardware unit, with load cells	DDB5000.1021
BPCs (Aegis5-14 film)	
50 L DynaDrive S.U.B. Standard BPC	SH31192.01
50 L DynaDrive S.U.B. Standard BPC, ATF port	SH31192.02
500 L DynaDrive S.U.B. Standard BPC	SH31193.01
3,000 L DynaDrive S.U.B. Standard BPC	SH31196.01
5,000 L DynaDrive S.U.B. Standard BPC	SH31195.01



HyPerforma Single-Use Bioreactor (S.U.B.)

The Thermo Scientific™ HyPerforma™ 5:1 Single-Use Bioreactor (S.U.B.) and BPC are designed using traditional stainless steel bioreactor principles to ensure optimal cell culture performance. The complete line of HyPerforma S.U.B.s includes 50, 100, 250, 500, 1,000, and 2,000 L sizes with a 5:1 turndown ratio that ensures consistent scalability from pilot-scale studies to preclinical and commercial production.

Ergonomic and elegant tank design

The S.U.B. is elegant in design while being extremely functional, and it is designed to meet cGMP requirements. The S.U.B. tank provides operator ergonomics, a small footprint, and easy cleaning capabilities associated with an open-cart frame.

- Helps save precious lab space with a minimized vessel footprint
- Easier access to harvest lines with the open-frame design
- Reduced hold-up volumes with the smartly designed tank floor
- Simple bag loading with a vertical access door (available on 500, 1,000, and 2,000 L sizes; electromechanical hoist provided on the 2,000 L)
- Pneumatic motor lift assembly for the 1,000 and 2,000 L sizes is used to lower the impeller for proper mixing when 20% of the fill volume is utilized

Efficient and fast

The water jacket design allows fast heat-up and cool-down times, reducing process cycle time. The bottom water-jacketed systems increase surface area, improving heat transfer from low-volume cultures.

- Optional precision load cells and standard sight-volume indicators allow you to keep your processes running efficiently
- Optional brushless DC motor includes encoder feedback for improved rpm accuracy and is compatible with ground-fault circuit interrupters (GFCIs)
- 3/8 in. dimple jacket improves flow rate through the water jacket for higher-performance temperature control
- Graduated sight-volume indicators accommodate visual volume references at a glance

Applications

- Batch, fed-batch, and perfusion cultures
- Suspension and microcarrier cultures
- Proven for various cell lines such as CHO, Sp2/0 hybridoma, NS0, PER.C6, HEK293, Vero, and MDCK

HyPerforma 5:1 S.U.B. hardware

Description	Size	Cat. No.
HyPerforma S.U.B. products		
Jacketed S.U.B., 5:1, AC motor, no e-box, load cells without display	50 L	SUB0050.8100
Jacketed S.U.B., 5:1, AC motor, 120 VAC, e-box, analog load cells		SUB0050.8101
Jacketed S.U.B., 5:1, AC motor, 240 VAC, e-box, analog load cells		SUB0050.8102
Jacketed S.U.B., 5:1, AC motor, no e-box, load cells without display	100 L	SUB0100.8200
Jacketed S.U.B., 5:1, AC motor, 120 VAC, e-box, analog load cells		SUB0100.8201
Jacketed S.U.B., 5:1, AC motor, 240 VAC, e-box, analog load cells		SUB0100.8202
Jacketed S.U.B., 5:1, AC motor, no e-box, load cells without display	250 L	SUB0250.8300
Jacketed S.U.B., 5:1, AC motor, 120 VAC, e-box, analog load cells		SUB0250.8301
Jacketed S.U.B., 5:1, AC motor, 240 VAC, e-box, analog load cells		SUB0250.8302
Jacketed S.U.B., 5:1, AC motor, no e-box, load cells without display	500 L	SUB0500.8400
Jacketed S.U.B., 5:1, AC motor, 240 VAC, e-box, analog load cells		SUB0500.8401
Jacketed S.U.B., 5:1, AC motor, no e-box, load cells without display	1,000 L	SUB1000.9009
Jacketed S.U.B., 5:1, AC motor, 240 VAC, e-box, analog load cells		SUB1000.9010
Jacketed S.U.B., 5:1, AC motor, no e-box, load cells without display	2,000 L	SUB2000.9009
Jacketed S.U.B., 5:1, AC motor, 240 VAC, e-box, analog load cells		SUB2000.9010
Additional products		
Cable Management System	50 L, 100 L	SV50992.01
	250 L	SV50992.02
	500 L	SV50992.03
	1,000 L	SV50992.04
Load cells		
Load cell with summing box, without display	50 L	SV50988.01
	100 L, 250 L	SV50988.02
	500 L	SV50988.03

HyPerforma 5:1 S.U.B. hardware accessories

	50 L	100 L	250 L	500 L	1,000 L	2,000 L
Bioreactor probe assembly with Kleenpak connector (nonsterile)	SH30720.01	SH30720.01	SH30720.01	SH30720.01	SH30720.01	SH30720.01
Bioreactor probe assembly with AseptiQuik connector (nonsterile)	SH30720.02	SH30720.02	SH30720.02	SH30720.02	SH30720.02	SH30720.02
Sterile sampling manifold, with Luer lock (individual)	SH31263.01	SH31263.01	SH31263.01	SH31263.01	SH31263.01	SH31263.01
Sterile sampling manifold, with Luer lock (10 count)	SH31263.02	SH31263.02	SH31263.02	SH31263.02	SH31263.02	SH31263.02
Heavy-duty tubing clamp (individual)	SV20664.01	SV20664.01	SV20664.01	SV20664.01	SV20664.01	SV20664.01
Heavy-duty tubing clamp (10 count)	SV20664.04	SV20664.04	SV20664.04	SV20664.04	SV20664.04	SV20664.04
S.U.B. temperature/ sample port	SV20750.01	SV20750.01	SV20750.01	SV20750.01	SV20750.01	SV20750.01
Cable management tree	SV50992.01	SV50992.01	SV50992.02	SV50992.03	SV50992.04	NA
Autoclave tray	SV50177.01	SV50177.01	SV50177.01	SV50177.01	SV50177.01	SV50177.01
Sparge line support	SV50177B.19	SV50177B.19	SV50177B.19	SV50177B.19	SV50177.65	SV50177.65
PendoTech pressure sensor	SH31134.01	SH31134.01	SH31134.01	SH31134.01	SH31134.01	SH31134.01
Thermo Scientific pressure sensor	SH31134.02	SH31134.02	SH31134.02	SH31134.02	SH31134.02	SH31134.02
120 V condenser system	NA	NA	NA	NA	NA	SV50232.01
240 V condenser system	NA	NA	NA	NA	NA	SV50232.02

Note: All 5:1 S.U.B. BPCs are supplied with AseptiQuik connectors on the probe ports and need bioreactor probe assembly with an AseptiQuik connector, SH30720.02. All S.U.B. BPCs are supplied with AseptiQuik connectors on pressure sensor ports. Select tubing assembly with pressure sensor depending on the transmitter.

HyPerforma S.U.B. BPCs and accessories

5:1 S.U.B. BPCs

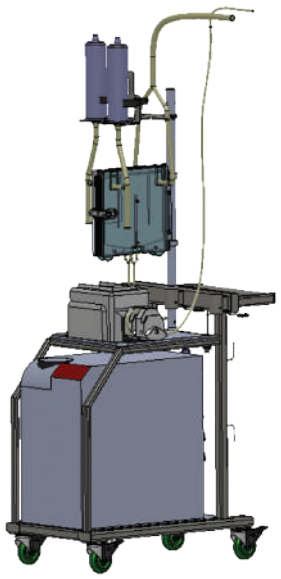
	50 L	100 L	250 L	500 L	1,000 L	2,000 L
S.U.B. BPC—CX5-14 Film						
DHS + crossflow sparger	SH31072.01	SH31102.01	SH31074.01	SH31076.01	SH31132.01	SH31138.01
DHS + crossflow sparger, with condenser	NA	NA	NA	NA	NA	SH31137.01
S.U.B. BPC—Aegis5-14 Film						
DHS + crossflow sparger	SH31073.01	SH31103.01	SH31075.01	SH31077.01	SH31133.01	SH31135.01
DHS + crossflow sparger, with condenser	NA	NA	NA	NA	NA	SH31136.01

2:1 S.U.B. BPCs

	50 L	100 L	250 L	500 L	1,000 L	2,000 L
S.U.B. BPC—CX5-14 Film						
Frit + OP	SH30774.01	SH30774.02	SH30774.03	SH30774.04	SH30774.05	SH30774.08
Frit + OP, with condenser	NA	NA	NA	NA	NA	SH30774.07
Frit + DHS	SH30985.01	SH30985.02	SH30985.03	SH30985.04	SH30985.05	SH30985.08
Frit + DHS, with condenser	NA	NA	NA	NA	NA	SH30985.07
S.U.B. BPC—Aegis5-14 Film						
Frit + OP	SH30972.01	SH30972.02	SH30972.03	SH30972.04	SH30972.05	SH30972.08
Frit + OP, with condenser	NA	NA	NA	NA	NA	SH30972.07
Frit + DHS	SH30999.01	SH30999.02	SH30999.03	SH30999.04	SH30999.05	SH30999.08
Frit + DHS, with condenser	NA	NA	NA	NA	NA	SH30999.07

HyPerforma S.U.B. condenser system

The Thermo Scientific™ HyPerforma™ Single-Use Bioreactor (S.U.B.) condenser system supports the effective use of the Thermo Scientific™ HyPerforma™ 2,000 L S.U.B. It is also available as an auxiliary product for all other S.U.B. systems. It efficiently condenses exhaust gases and transfers condensate back into the bioreactor, preventing potential vent filter blockage and reducing fluid loss due to evaporation. It is offered in both single and double chill-plate formats.



Specifications

The condenser system protects against filter blockage by condensing out moisture prior to exhaust gases reaching the vent filters. BPCs are not intended to operate under pressure, and fouled (blocked) exhaust filters lead to bag pressurization. While vent filter heaters may prevent condensate buildup in many instances, with larger bioreactors, such as the 2,000 L S.U.B., this becomes less effective, whereas condensing out the moisture first is a more reliable method for preventing liquid from reaching the filters.

The S.U.B. condenser system consists of the following components:

- **Cart and brackets**—convenient means of organizing and transporting working elements of the condenser system
- **Condenser (chill) plate**—disposable double chamber condenser bag is secured to the condenser plate to cool exhaust gases. Up to 2 plates can be used per system
- **Peristaltic pump**—returns condensate to bioreactor
- **Temperature control unit (TCU or chiller)**—circulates water to cool the condenser plate
- **Condenser disposables**—the BPC (double-chambered bag), tubing, and exhaust filters though which the exhaust gases flow and are chilled, and in which the condensate collects and is returned to the bioreactor

Ordering information

Description	Cat. No.
Complete condenser system (120 V) including cart, chill plate and mounting post with filter brackets, TCU, and pump	SV50232.01
Complete condenser system (240 V) including cart, chill plate and mounting post with filter brackets, TCU, and pump	SV50232.02
Condenser assembly including chill plate and mounting post with filter brackets (option: allowing two chill plates per system)	SV50232.21
ThermoFlex 900 TCU (115 VAC/60 Hz) with necessary plumbing	SV50232.23
ThermoFlex 900 TCU (240 VAC/50 or 60 Hz) with necessary plumbing	SV50232.24
Masterflex™ Pump (115 VAC/50 or 60 Hz or 230 VAC/50 or 60 Hz)	SV50241.01

Disposable BPCs needing two “condenser assemblies” (SV50232.21) for high exhaust capacity will require the purchase of two condenser assembly “connection lines” (SV50177.270).

HyPerforma Single-Use Fermentors (S.U.F.s)

The design of the Thermo Scientific™ HyPerforma™ Single-Use Fermentor (S.U.F.) was generated with spatial and practical challenges of the fermentation process in mind, and offers specifications focused on maintaining a closed, sterile system while providing ease-of-use specification improvements.

The Thermo Scientific™ HyPerforma™ enhanced Single-Use Fermentor (eS.U.F.) further enables the production of high-demanding dense cultures with optimized parabolic turbine impellers and 35% more cooling jacketed surface area. The HyPerforma S.U.F. systems from Thermo Fisher Scientific enable companies to bring vaccines, therapeutics, and other medicines to the market with robust performance and streamlined scale-up.

HyPerforma S.U.F. systems offer:

- 30 L and 300 L working volume with a 5:1 turndown ratio
- Vertically centered, top-driven impeller locations for powerful mixing
- Consistent scalability from process development through production
- Single-use sensors: pH, DO, temperature, foam, pressure, and biomass
- High-flow exhaust filters
- Four 1/8 in. (ID) feed, two 3/8 in. (ID) fill, 1/2 in. drain, and sparge filter line set(s)

The HyPerforma eS.U.F. features:

- 35% increase in jacketed surface area for the 300 L size
- 4x higher oxygen delivery in 30 L and 300 L due to a larger, more powerful impeller design
- Oxygen delivery as good as or better than stainless steel fermentors
- Redesigned BPC with three enhanced parabolic turbine impellers

The HyPerforma S.U.F. and BPC system offers:

- Powerful mixing from a top-driven shaft with three Rushton impellers in a baffled vessel
- Controlled, flexible delivery of air and oxygen through drilled-hole spargers
- Reliable off-gassing with a proprietary exhaust management system
- Increased cooling capacity with a 3:1 aspect ratio that maximizes surface area
- Automated foam control to reduce the risk of excess foam buildup
- Robust BPC design with integrated single-use sensor technology for continuous assessment of pH, DO, temperature, foam, and pressure

Controllers and options: adaptability and choice

The HyPerforma S.U.F. offers a choice of control systems in either an open-architecture or turnkey system. An open-architecture system allows you to integrate with any controller. Alternatively, the S.U.F. can be supplied as a ready-to-use, turnkey system with a Thermo Scientific™ HyPerforma™ G3Lite or G3Pro Bioprocess Controller.

HyPerforma S.U.F. hardware, BPCs, and accessories

30 L S.U.F. hardware and BPCs

Product	Cat. No.
HyPerforma Enhanced S.U.F. hardware and BPC	
30 L HyPerforma enhanced Single-Use Fermentor BioProcess Container, Aegis5-14 film, pH/DO sensor, foam sensor, one 5 in. exhaust filter	SUT00007
HyPerforma S.U.F. hardware and BPC	
30 L HyPerforma Single-Use Fermentor System, jacketed, AC motor, with 2-position vent filter bracket	SUF0030.9001
30 L HyPerforma Single-Use Fermentor System, jacketed, AC motor, with 2-position vent filter bracket and 120 VAC electrical box	SUF0030.9002
30 L HyPerforma Single-Use Fermentor System, jacketed, AC motor, with 2-position vent filter bracket and 240 VAC electrical box	SUF0030.9003
HyPerforma S.U.F. BPC options	
Mettler Toledo single-use pH and DO sensor, foam sensor, low flow inlet and one 5 in. exhaust filters, condenser (Aegis5-14)	SH31010.01
Mettler Toledo single-use pH and DO sensor, foam sensor, low flow inlet and one 5 in. exhaust filters, condenser (CX5-14)	SH31019.01
Mettler Toledo single-use pH and DO sensor, foam sensor, low flow inlet and two 5 in. exhaust filters, condenser (Aegis5-14)	SH31010.02
Traditional ports, foam sensor, low flow inlet and one 5 in. exhaust filter, condenser (CX5-14)	SH31036.01
Traditional ports, foam sensor, high flow inlet and one 5 in. exhaust filter, condenser (CX5-14)	SH31037.01
Traditional ports, foam sensor, low flow inlet and two 5 in. exhaust filters, condenser (CX5-14)	SH31038.01
Traditional ports, high flow inlet and one 5 in. exhaust filter (CX5-14)	SH31039.01

300 L S.U.F. hardware and BPCs

Product	Cat. No.
HyPerforma Enhanced S.U.F. hardware and BPC	
300 L HyPerforma enhanced Single-Use Fermentor, jacketed, AC motor, with 4-position vent filter bracket, pinch clamp, 151 W vent heaters	ESUF0300.9100
300 L HyPerforma enhanced Single-Use Fermentor BioProcess Container, Aegis5-14 film, pH/DO sensor, foam sensor, two 10 in. exhaust filters	SUT00008
HyPerforma S.U.F. hardware and BPC	
300 L HyPerforma Single-Use Fermentor System, jacketed, AC motor, with 2-position center filter bracket	SUF0300.9001
300 L HyPerforma Single-Use Fermentor System, jacketed, AC motor, 2-position vent filter bracket and 240 VAC electrical box	SUF0300.9002
HyPerforma S.U.F. BPC options	
Mettler Toledo single-use pH and DO sensor, foam sensor, low flow inlet and two 10 in. exhaust filters, condenser (CX5-14)	SH31017.02
Mettler Toledo single-use pH and DO sensor, foam sensor, low flow inlet and four 10 in. exhaust filters, condenser (Aegis5-14)	SH31009.03
Traditional ports, foam sensor, high flow inlet and one 10 in. exhaust filter, condenser (CX5-14)	SH31030.01
Traditional ports, foam sensor, high flow inlet and two 10 in. exhaust filters, condenser (CX5-14)	SH31030.02
Traditional ports, high flow inlet and one 10 in. exhaust filter (CX5-14)	SH31030.04
Traditional ports, high flow inlet and two 10 in. exhaust filters (CX5-14)	SH31030.03

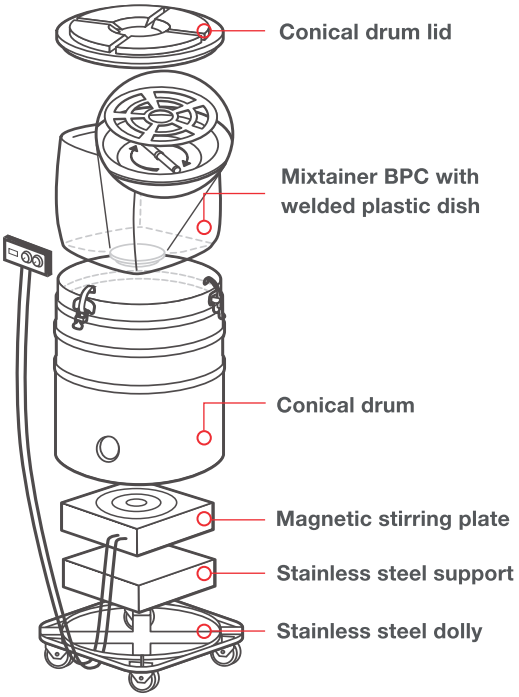
HyPerforma S.U.F. accessories and options

S.U.F. accessories

Product	30 L Cat. No.	300 L Cat. No.
Load cells and load cell displays		
3x load cell with summing box without display	SV50988.04	SV50988.03
Autoclave tray and probe assemblies		
Autoclave tray	SV50177.01	SV50177.01
4 probe clips	SV50177.23	SV50177.23
Heavy-duty tubing clamp (single)	SV20664.01	SV20664.01
Heavy-duty tubing clamp (10-pack)	SV20664.04	SV20664.04
Exhaust filter pinch clamp	SV50177E.16	SV50177E.16
Probe holder, plastic molded	SV50177P.01	SV50177P.01
Additional options		
120 V 151 W vent filter heater with Binder 99-4217-00-07 controller connector, 6-pin	SV50191.72	NA
240 V 151 W vent filter heater with Binder 99-4217-00-07 controller connector 6 pin	SV50191.73	SV50191.73
120 V 151 W vent filter heater with Nema 5-15 connector, preset 55°C bulb controller	SV50191.69	SV50191.69
240 V 151 W vent filter heater with IEC connector, preset 55°C bulb controller	SV50191.70	SV50191.70
30 L cable management system	SV50992.01	NA
300 L cable management system, left-hand configuration	NA	SV51006.02
300 L cable management system, right-hand configuration	NA	SV51006.03
Bottle management system	SV50992.10	SV50992.10
Feed bag management system	SV51006.03	SV51006.03
120 VAC complete condenser system (TCU for condenser included)	SV51009.02	NA
240 VAC complete condenser system (TCU for condenser included)	SV51009.03	SV51009.03
Thermo Scientific™ Masterflex™ pump for 300 L systems (115 VAC/50 or 60 Hz, or 230 VAC/50 or 60 Hz)	NA	SV50241.02

HyPerforma Mixtainer systems

The Thermo Scientific™ HyPerforma™ Mixtainer™ system is an integrated, single-use unit designed for optimal mixing of cell culture media, process liquids, buffers, reagents, and bulk product.

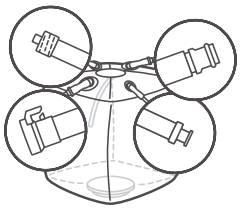


Key features

- The Mixtainer system utilizes a sophisticated BPC constructed of CX5-14 film with a plastic dish welded into the base
- The plastic dish contains a magnetic stir bar that is held in the proper operating position using an integrated locking ring
- Available in 50, 100, and 200 L unit volumes
- BPCs available for liquid-to-liquid and powder-to-liquid mixing
- Optimized supporting hardware allows for mixing, storage, transport, and discharge in a closed system to help minimize the risk of cross-contamination

Mixtainer BPC

4 ports, top dispense, powder-to-liquid mixing

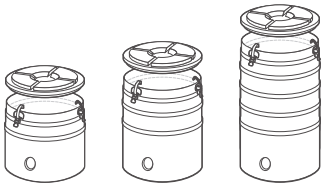


Line 1
9.5 mm (0.38 in.) quick-connect body with 16.5 cm (6.5 in.) dip tube
Tube length: 91 cm (36 in.)
Line 2 and 3
6.3 mm (0.25 in.) Luer lock insert
Tube length: 91 cm (36 in.)
Line 4
9.53 mm (.38 in.) quick-connect body
Tube length: 91 cm (36 in.)
Powder addition port: 38.1 mm (1.5 in.) Triclamp port

Size	Cat. No.
50 L	SH30687.04
100 L	SH30687.05
200 L	SH30687.06

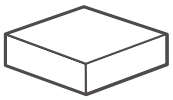
Conical drum

Top dispense, with clamps



Size	Cat. No.
50 L	SV50517.11
100 L	SV50517.12
200 L	SV50517.13

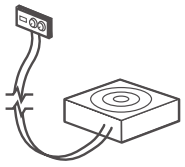
Stainless steel support



Area	Cat. No.
EU	SV30097.03
US	SV30097.04

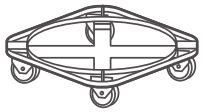
Magnetic stirring plate

IKAMAG™ motor and support required



Description	Cat. No.
EU, 230 V, 50/60 Hz, 0.5 A	SV30097.01
US, 115 V, 50/60 Hz, 1 A	SV30097.02

Universal stainless steel dolly



Dimensions (D x H)	Cat. No.
61.6 x 15.2 cm (24.38 x 6 in.)	SV50109.01

Mixtainer systems specifications and options

Custom BPC options

	Description
Dip tubes	• Specific lengths 6.36–12.7 mm (0.25–0.5 in.) ID
Tubing type	• TPE (clear or white) • Silicone • PVC
Tubing size	• Specific lengths of 3.18–19.05 mm (0.25–0.75 in.) ID
Connectors	• Luer ID: 3.18–6.35 mm (0.13–0.25 in.) • CPC ID: 6.35–19.05 mm (0.25–0.75 in.) • SIP triclamp ID: 6.35–19.05 mm (0.25–0.75 in.) • Mini triclamp ID: 6.35–19.05 mm (0.25–0.75 in.) • Hose barb
Others	• Injection port ID: 6.35–9.53 mm (0.25–0.38 in.) • Filling bell ID: 6.35 mm (0.25 in.) • Filter capsule: Millipore, Pall, Sartorius, Domnick Hunter

BPC presentation

	Description
Outer packaging	Supplied flat-packed—two polyethylene outer layers
Label	Description, product code, lot number, and expiry date on outer packaging and shipping container
Shipping container	Durable cardboard carton
Documentation	Certificate of analysis provided

System options

Thermo Scientific™ Powdertainer™ II powder feed BPC: Connect a Powdertainer II BPC to the Mixtainer system using a concentric reducer 7.6 cm (3 in.) triclamp to 3.8 cm (1.5 in.) triclamp. Ordering information for the reducer is shown.

	Description
304 stainless steel	Saint Patricks of Texas: Concentric reducer (3 x 1.5 in.)
304 stainless steel	RT Process: Cat. No. 31-14MP-3X1.5-304
316 stainless steel	RT Process: Cat. No. 31-14MP-3X1.5-316
Polypropylene	Saint-Gobain (Sani-Tech): Cat. No. TAD300-150
Kynar material (PVDF)	Saint-Gobain (Sani-Tech): Cat. No. KAD300-150

HyPerforma Single-Use Mixer (S.U.M.) DS 300

The Thermo Scientific™ HyPerforma™ Single-Use Mixer (S.U.M.) DS 300 is a modular mixing system consisting of a mixing station that mates to plastic drums containing single-use BPCs or tank liners, offering the user a cost-effective, docking station–style mixing platform with multiple mixing volume options.

HyPerforma S.U.M. DS 300 docking station

The docking station consists of a stainless steel base with locking casters, an adjustable handle, a tethered handheld control device, an electronic vertical lift mechanism with integrated height indicator, motor mount and motor, three sizes of driveshafts, and two adjustment tools—a spanner and a torque wrench. An adjustable-angle motor head and drum positioner are available as add-on options.

Key features

- Top-drain support containers are available in 50, 100, 200, and 300 L sizes; bottom-drain drums are available in 50, 100, and 200 L sizes
- Top-drain tank liners are available in four sizes from 50 to 300 L
- Tank liners with bottom access ports are available in three sizes from 50 to 200 L
- Closed-top 3D BPCs, with both top and bottom drain access ports, are available in sizes 50, 100, and 200 L
- Optional dollies are available for all drum sizes

S.U.M. DS 300 specifications

Power	108–240 VAC, 50–60 Hz
Input amperage	15 A
Operating temperature range	Ambient to 40°C
Motor speed	30–350 RPM
Footprint (W x L)	76.2 x 86.4 cm (30 x 34 in.)
Height (lowest to tallest point)	122.4–162.3 cm (48.2–63.9 in.)
Weight	180 kg (398 lb)
Control box	Built to IP65 standards
Flow type	Radial/axial
Hardware material	304 stainless steel

S.U.M. DS 300 options

Description	Cat. No.
DS 300 standard unit	SUMDS0300.9000
DS 300 unit with drum positioner	SUMDS0300.9001
DS 300 unit with adjustable motor head	SUMDS0300.9002
DS 300 unit with drum positioner and adjustable motor head	SUMDS0300.9003

S.U.M. DS 300 hardware and BPC specifications and options

S.U.M. DS 300 drum options

Description	Volume range	Dimensions	Bottom drain	Cat. No.
50 L plastic drum with conical insert	10–50 L	60 x 58 cm (23.5 x 23 in.)	10.2 cm (4 in.)	SH30959.01
100 L plastic drum	20–100 L	60 x 76 cm (23.5 x 29.75 in.)	10.2 cm (4 in.)	SH30959.02
200 L plastic drum	40–200 L	60 x 114 cm (23.5 x 44.75 in.)	10.2 cm (4 in.)	SH30959.03
300 L plastic drum	60–300 L	61 x 122 cm (24 x 48 in.)	NA	SH30959.04
Optional support plate for bottom drain	50–200 L	12.7 cm (5 in.) diameter split	NA	SV50102.02

Typical open-type mixing with catalog impeller sizes

	50 L	100 L	200 L	300 L
Turndown ratio	5:1	5:1	5:1	4:1†
Minimum working liquid volume	10 L	20 L	40 L	79 L
Minimum hold up	100 mL	100 mL	100 mL	500 mL
Maximum liquid fill	50 L	100 L	200 L	300 L
Left-to-right offset*	0	0	0	1.3 cm (0.5 in.) left
Front-to-back position*	2.5 cm (1 in.)	5.1 cm (2 in.)	5.4 cm (2.13 in.)	6.4 cm (2.5 in.)
Lift height*	0.48 cm (0.19 in.)	2.2 cm (0.88 in.)	30.64 cm (12.06 in.)	39.98 cm (15.74 in.)
Motor angle (fixed or adjustable motor head models)	10°	10°	10°	10°
Motor RPM	350	350	350	350

* All measurements listed in the above table are ±0.16 cm (0.06 in.).
†For the 300 L drum, a 5:1 turndown ratio can be achieved using the adjustable-angle motor head.

S.U.M. DS 300 impeller specifications

Impeller material	USP class VI, HDPE
Impeller to BPC system/tank liner location	5:1 off center
Number of impeller blades	3
Closed-top BPC system	Qualified LDPE
Open-top BPC tank liner	Qualified LDPE

Impeller sleeve options

Drum size	Sleeve length	Description	Cat. No.
50 L	35.3 cm (13.9 in.)	Impeller, sleeve, and connector for 66 cm (26 in.) driveshaft	SH30749.11
100 L	53.1 cm (20.9 in.)	Impeller, sleeve, and connector for 83.8 cm (33 in.) driveshaft	SH30749.12
200 L	77 cm (30.3 in.)	Impeller, sleeve, and connector for 108 cm (42.5 in.) driveshaft	SH30749.13
300 L	96 cm (37.8 in.)	Impeller, sleeve, and connector for 129.5 cm (51 in.) driveshaft	SH30749.08

S.U.M. DS 300 hardware and BPC specifications and options

Reusable hub options

Size	Description	Cat. No.
50–300 L	Stainless steel bearing hub	SV50177.77

BPC system specifications

Description	Bottom drain line
Tubing set (ID x OD x L)	1.27 x 1.91 x 122 cm (0.5 x 0.75 x 304.1 in.)
End treatment	Polycarbonate quick-connect 12.7 mm (0.5 in.) insert (MPX) and cap

Irradiated BPC tank liner options

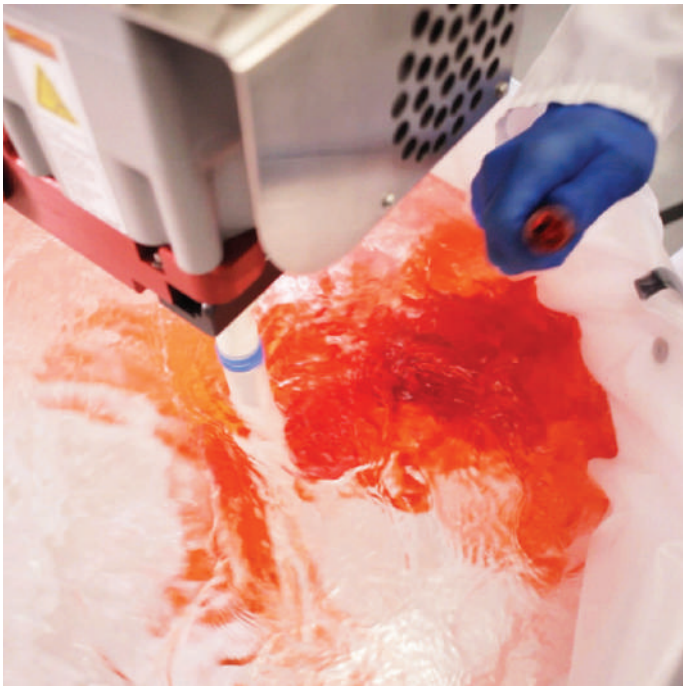
Size	Description	Cat. No.
50 L	Tank liner: Open-top, bottom drain, irradiated CX3-9 film	SH30646.01
50 L	BPC: Closed-top, bottom drain, irradiated CX3-9 film	SH30946.01
100 L	Tank liner: Open-top, bottom drain, irradiated CX3-9 film	SH30646.02
100 L	BPC: Closed-top, bottom drain, irradiated CX3-9 film	SH30946.02
200 L	Tank liner: Open-top, bottom drain, irradiated CX3-9 film	SH30646.03
200 L	BPC: Closed-top, bottom drain, irradiated CX3-9 film	SH30946.03
300 L	Tank liner: Open-top, top drain, irradiated CX3-9 film	SH30647.06

Dolly options

Description	Material	Quantity	Cat. No.
50–200 L plastic drum	Polyethylene	1	SH30958.01
		2	SH30958.02
Dolly for 300 L plastic drum	Zinc-plated	1	SH30958.03

Nonirradiated BPC tank liner options

Size	Description	Cat. No
50 L	Open-top, bottom drain, nonirradiated CX3-9 film	SH30399.01
100 L	Open-top, bottom drain, nonirradiated CX3-9 film	SH30399.02
200 L	Open-top, bottom drain, nonirradiated CX3-9 film	SH30399.03



HyPerforma Single-Use Mixer (S.U.M.)

The Thermo Scientific™ HyPerforma™ Single-Use Mixer (S.U.M.) with Touchscreen Console provides enhanced functionality, ease of use, and efficiency. The complete HyPerforma S.U.M. system consists of a mixer tank, available in 50, 100, 200, 500, 1,000, and 2,000 L sizes with the Touchscreen Console.

The HyPerforma S.U.M. has a 5:1 turndown mixing ratio, and maintains traditional stirred-tank mixer design principles with a directly coupled motor impeller drive assembly, and a cylindrical tank with a specific height-to-diameter ratio. This allows quick turnaround times for both liquid-to-liquid mixing and powder-to-liquid mixing.

Features and benefits

- Cable management system for improved ease of use with BPC process lines for system organization
- Access door for convenient BPC loading on the 500 L, 1,000 L, and 2,000 L mixing systems
- Water-jacketed (heating) and nonjacketed (no heat transfer) options; improved high-flow water jacket with side and bottom jacket to improve system heat transfer
- Adjustable powder hanger that fits 1 kg, 5 kg, and 25 kg Thermo Scientific™ Powdertainer™ BPCs
- Two swivel-locking casters and push handles for better maneuverability of the units (except 2,000 L)
- BPC tab holders for easy single-use container setup
- Dual-probe opening for redundancy and low-volume pH and conductivity monitoring
- Open-cart frame for easy cleaning

Applications

- Media preparation
- Final formulation steps
- Buffer preparation
- Large-volume mixing (up to 2,000 L)
- Pooling and liquid transfer
- Product suspension
- Mixing and storing multiple batches
- Harvest collection and bulk mixing
- Viral inactivation

Touchscreen Console and controllers

The Touchscreen Console provides state-of-the-art in-process monitoring and automation capability for the HyPerforma S.U.M. Its modular design allows for an easy-to-use custom user interface. Capabilities include agitation, pumps, pinch valves, and temperature control. Users can easily visualize measurements from load cells, pH sensors, conductivity sensors, RTD, and pressure sensors.

As an engineered-to-order product, the HyPerforma S.U.M. with Touchscreen Console can be fully integrated with either HyPerforma G3 Bioprocess Controllers, or controllers from other manufacturers—providing an open-architecture mixing solution configured to your unique requirements. The Touchscreen Console can integrate TruBio automation software powered by Emerson's DeltaV Distributed Control platform, enabling users to optimize data acquisition while maintaining full compliance with 21 CFR Part 11.

HyPerforma S.U.M. hardware specifications and options

HyPerforma S.U.M. specifications

	50 L	100 L	200 L	500 L	1,000 L	2,000 L
Maximum liquid working volume	50 L	100 L	200 L	500 L	1,000 L	2,000 L
Minimum liquid working volume	10 L	20 L	40 L	100 L	200 L	400 L
Fluid geometry at working volume (height : diameter) ratio	1.5 : 1	1.5 : 1	1.5 : 1	1.5 : 1	1.1 : 1	1.0 : 1
Overall reactor geometry (height : diameter) ratio	1.9 : 1	1.9 : 1	1.95 : 1	1.7 : 1	1.2 : 1	1.2 : 1
Impeller (quality x blade count)	1 x 3	1 x 3	1 x 3	1 x 3	1 x 3	1 x 3
Mixing rate range	30–350 rpm	30–350 rpm	30–350 rpm	30–350 rpm	30–350 rpm	30–350 rpm
Overall dimensions (W x L x H)	87 x 86 x 152 cm (34.1 x 33.9 x 59.8 in.)	87 x 92 x 153 cm (34.1 x 36.4 x 60.2 in.)	90 x 107 x 174 cm (35.4 x 42.0 x 68.5 in.)	118 x 132 x 197 cm (46.2 x 51.8 x 77.7 in.)	144 x 158 x 200 cm (56.4 x 62.3 x 76.7 in.)	180 x 171 x 225 cm (70.7 x 67.4 x 88.5 in.)

Note: Overall dimensions include the cable management system and Touchscreen Console. They do not include the pump shelves or Powdertainer arm accessories.

Ordering information

All Cat. Nos. listed below include the Touchscreen Console and load cells.

Size	Description	Cat. No.
50 L	Nonjacketed, DC motor	SUM0050.9001
	Jacketed, DC motor	SUM0050.9002
100 L	Nonjacketed, DC motor	SUM0100.9001
	Jacketed, DC motor	SUM0100.9002
200 L	Nonjacketed, DC motor	SUM0200.9001
	Jacketed, DC motor	SUM0200.9002
500 L	Nonjacketed, DC motor	SUM0500.9001
	Jacketed, DC motor	SUM0500.9002
1,000 L	Nonjacketed, DC motor	SUM1000.9001
	Jacketed, DC motor	SUM1000.9002
2,000 L	Nonjacketed, AC motor, 240 V	SUM2000.9003
	Jacketed, AC motor, 240 V	SUM2000.9004

HyPerforma S.U.M. BPC specifications and options

HyPerforma S.U.M. catalog BPCs

Size	Probe ports	Film	Cat. No.
Powder-to-liquid BPC			
50 L	0	Aegis5-14	SH30973.01
		CX5-14	SH30768.01
	3	Aegis5-14	SH31051.02
		CX5-14	SH31055.02
100 L	0	Aegis5-14	SH31052.01
		CX5-14	SH31046.01
	3	Aegis5-14	SH31052.02
		CX5-14	SH31046.02
200 L	0	Aegis5-14	SH30973.02
		CX5-14	SH30750.01
	3	Aegis5-14	SH31053.02
		CX5-14	SH31054.02
500 L	0	Aegis5-14	SH30973.03
		CX5-14	SH30751.01
	3	Aegis5-14	SH30974.03
		CX5-14	SH30751.02
1,000 L	0	Aegis5-14	SH30973.04
		CX5-14	SH30752.01
	3	Aegis5-14	SH30974.04
		CX5-14	SH30752.02
2,000 L	0	Aegis5-14	SH30973.05
		CX5-14	SH30770.01
	3	Aegis5-14	SH30974.05
		CX5-14	SH30770.02

Size	Probe ports	Film	Cat. No.
Liquid-to-liquid BPC			
50 L	0	Aegis5-14	SH30983.01
		CX5-14	SH30767.01
	3	Aegis5-14	SH31051.04
		CX5-14	SH31055.04
100 L	0	Aegis5-14	SH31052.03
		CX5-14	SH31046.03
	3	Aegis5-14	SH31052.04
		CX5-14	SH31046.04
200 L	0	Aegis5-14	SH30983.02
		CX5-14	SH30753.01
	3	Aegis5-14	SH31053.04
		CX5-14	SH31054.04
500 L	0	Aegis5-14	SH30983.03
		CX5-14	SH30754.01
	3	Aegis5-14	SH30982.03
		CX5-14	SH30754.02
1,000 L	0	Aegis5-14	SH30983.04
		CX5-14	SH30755.01
	3	Aegis5-14	SH30982.04
		CX5-14	SH30755.02
2,000 L	0	Aegis5-14	SH30983.05
		CX5-14	SH30769.01
	3	Aegis5-14	SH30982.05
		CX5-14	SH30769.02

HyPerforma S.U.M. hardware and BPC accessories

Catalog open-top liners

Film	Size	Cat. No.
CX3-9	50 L, no port probes	SH30762.04
	100 L, no port probes	SH30762.06
	200 L, no port probes	SH30762.01
	500 L, no port probes	SH30762.02
	1,000 L, no port probes	SH30762.03
	2,000 L, no port probes	SH30762.05

Impeller sleeve for open-top mixing

Size	Cat. No.
50 L	SH30749.06
100 L	SH30749.14
200 L	SH30749.08
500 L	SH30749.10
1,000 L	SH30749.10
2,000 L	SH30772.01

HyPerforma S.U.M. accessories

	50 L	100 L	200 L	500 L	1,000 L	2,000 L
Cable management system	SV50992.12	SV50992.12	SV50992.12	SV50992.12	SV50992.12	SV50992.12
3 load cell with cables	SV51145.01	SV51145.01	SV51145.02	SV51145.03	SV51145.05	SV51145.04
Autoclave tray	SV50177.01	SV50177.01	SV50177.01	SV50177.01	SV50177.01	SV50177.01
Probe assembly (nonsterile for use in autoclave)	SH30720.01	SH30720.01	SH30720.01	SH30720.01	SH30720.01	SH30720.01
Heavy-duty tubing clamp (each)	SV20664.01	SV20664.01	SV20664.01	SV20664.01	SV20664.01	SV20664.01
Sampling manifold with Luer lock (each)	SH31263.01	SH31263.01	SH31263.01	SH31263.01	SH31263.01	SH31263.01
Sampling manifold with Luer lock (10 per pack)	SH31263.02	SH31263.02	SH31263.02	SH31263.02	SH31263.02	SH31263.02
Temperature/sample port	SV20750.01	SV20750.01	SV20750.01	SV20750.01	SV20750.01	SV20750.01
Reusable hub assembly with triclamp	NA	NA	NA	NA	NA	SV50177.78
Reusable hub assembly with quick connect	SV50177.77	SV50177.77	SV50177.77	SV50177.77	SV50177.77	NA
Powdertainer arm	SV51002.01	SV51002.01	SV51002.01	SV51002.01	SV51002.01	SV51002.02

imPULSE Single-Use Mixer (S.U.M.)

The Thermo Scientific™ imPULSE™ Single-Use Mixer (S.U.M.) can be utilized for many bioprocess mixing applications. The imPULSE design features include innovative disc mixing technology, configurable high-end controls, and monitors to fit specific process requirements. These features are designed to provide scalability from 30 L to 5,000 L.

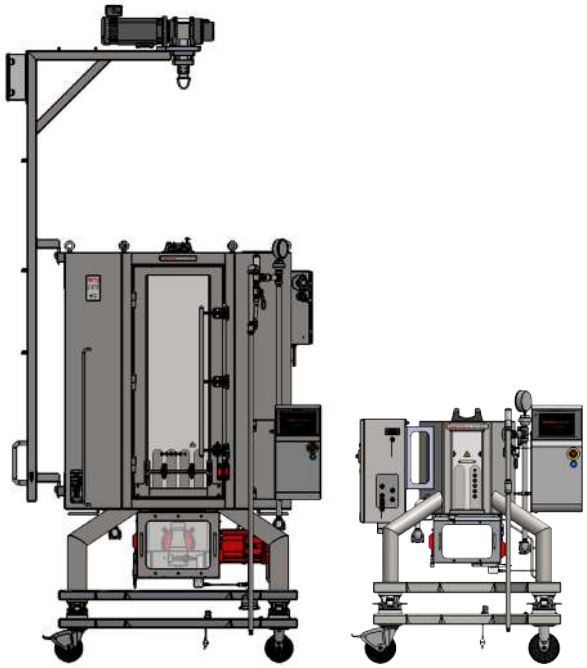
The Touchscreen Console for the imPULSE S.U.M. provides superior integrated sensor monitoring, and pump control for pH and saline titration and for automatic fill and harvest.

Efficient and customizable

The standard imPULSE Mixing BPCs are made of ASI 26/77 polyethylene two-layer film. These BPCs are available with four inlet/outlet lines and a powder addition port. The standard tube sets connect to the imPULSE Mixing BPC for liquid addition, powder addition, recirculation, inflation, and vent control. The tube sets are modular and can be customized to best suit your process.

Key features

- Touchscreen Console provides ease of use with multifunctional capabilities to monitor and control mixing parameters
- Integrated rolling diaphragm that provides the pumping action to the mixing disc; the diaphragm will not abrade the surfaces or produce particulates
- Mixing tank jacket and insulation
- Weighing systems that utilize load cells enable accurate batch weight monitoring
- Auto-inflate and vent control options
- Adjustable powder hanger for 1,000 L and higher mixers that fits 1, 5, and 25 kg Powdertainer BPCs
- Open cart frame for easier cleaning



Standard features

- 304L stainless steel vessel and sliding window or door and window
- Clean room–grade stainless steel nonmarring casters available on 30—1,000 L systems
- Rolling diaphragm
- Touchscreen Console: IP 54 enclosure

Applications

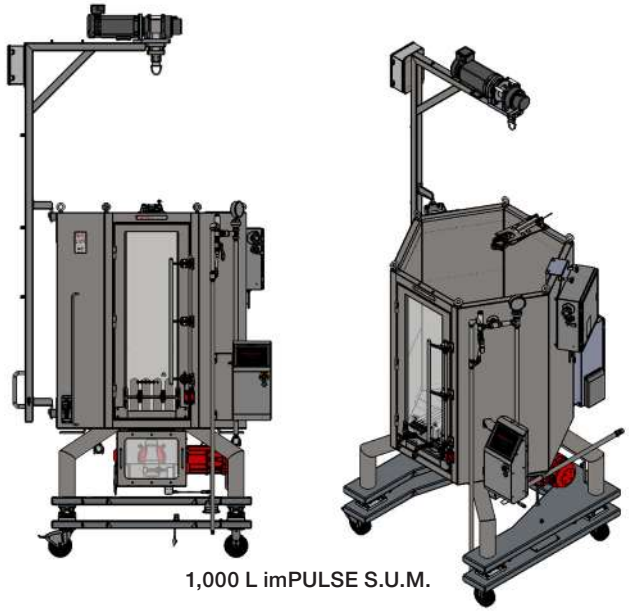
- Buffer and media preparation
- Final formulation
- High-viscosity mixing
- Heavy powder loads
- Suspension or resuspension
- Homogenization or rehomogenization
- Harvesting
- Storage
- Purification

imPULSE S.U.M. hardware and BPC specifications

imPULSE hardware

All products listed below are constructed with 304 stainless steel and include the Touchscreen Console and load cells.

Size	Description	Cat. No.
30 L	Jacketed, AC motor, sliding window	IM00030.9001
100 L	Jacketed, AC motor, sliding window	IM00100.9002
250 L	Jacketed, AC motor, swinging door	IM00250.9003
500 L	Jacketed, AC motor, swinging door	IM00500.9004
1,000 L	Jacketed, AC motor, auto-inflate	IM01000.9005
2,000 L	Jacketed, AC motor, auto-inflate	IM02000.9006
3,000 L	Jacketed, AC motor, auto-inflate	IM03000.9007
5,000 L	Jacketed, AC motor, auto-inflate	IM05000.9008



1,000 L imPULSE S.U.M.

imPULSE S.U.M. BPC specifications

All imPULSE BPCs are constructed of ASI 26/77 film and silicone tubing.

Description	Size	Cat. No.
1 inlet line: 1.5 in. triclover, 0.5 x 0.75 in. ID x OD **1 inflate/vent line:** 1.5 in. triclover, 0.5 x 0.75 in. ID x OD **1 pressure sensing line:** PendoTECH™ Pressure Sensor, 0.75 in. triclover, 0.5 x 0.75 in. ID x OD **1 powder port:** 3 in. triclover **4 side probe ports:** 0.5 in. AseptiQuik™ G Connector **2 outlet/recirculation lines:** MPX body with plug, 0.5 x 0.75 in. ID x OD	30 L	HM00285-I
	100 L	HM00287-I
	250 L	HM00288-I
1 inlet line: 1.5 in. triclover, 0.5 x 0.75 in. ID x OD **1 inflate/vent line:** 1.5 in. triclover, 0.75 x 1.125 in. ID x OD **1 pressure sensing line:** PendoTECH Pressure Sensor, 0.75 in. triclover, 0.5 x 0.75 in. ID x OD **1 powder port:** 3 in. triclover **4 side probe ports:** 0.5 in. AseptiQuik G Connector **2 outlet/recirculation lines:** MPX body with plug, 0.5 x 0.75 in. ID x OD	500 L	HM00289-I
1 inlet line: 1.5 in. triclover, 0.75 x 1.125 in. ID x OD **1 inflate/vent line:** 1.5 in. triclover, 0.75 x 1.125 in. ID x OD **1 pressure sensing line:** PendoTECH Pressure Sensor, 0.75 in. triclover, 0.5 x 0.75 in. ID x OD **1 powder port:** 3 in. triclover **4 side probe ports:** 0.5 in. AseptiQuik G Connector **2 outlet/recirculation lines:** MPU body with plug, 0.75 x 1.125 in. ID x OD	1,000 L	HM00291-I
	2,000 L	HM00293-I
	3,000 L	HM00294-I
	5,000 L	HM00295-I

Note: tubing lengths will vary according to each vessel size.

imPULSE S.U.M. hardware specifications

imPULSE S.U.M. hardware specifications

Working volume (L)			Unit dimensions*	Unit weight	
Nominal	Max.	Min.	(D x W x H)	Dry	Wet (Nominal working volume)
30	35	0	88.99 x 112.88 x 133.36 cm (35.04 x 44.44 x 52.50 in.)	245.9 kg (542.25 lb)	279.62 kg (616.45 lb)
100	107	0	104.77 x 121.12 x 160.83 cm (41.25 x 47.68 x 63.30 in.)	303.4 kg (668.9 lb)	410.18 kg (904.29 lb)
250	266	0	119.84 x 136.25 x 177.20 cm (47.18 x 53.64 x 69.76 in.)	513.8 kg (1,132.87 lb)	776.77 kg (1,712.49 lb)
500	549	0	136.26 x 141.03 x 202.30 cm (53.65 x 55.52 x 79.65 in.) With hoist: 136.26 x 150.41 x 327.37 cm (53.65 x 59.22 x 128.89 in.)	733.0 kg (1,616.7 lb)	1,255.77 kg (2,768.48 lb)
1,000	1,136	0	158.43 x 153.82 x 234.88 cm (62.37 x 60.56 x 92.47 in.) With hoist: 158.43 x 173.79 x 364.68 cm (62.37 x 68.42 x 143.57 in.)	928 kg (2,047.8 lb)	1,960.43 kg (4,321.98 lb)
2,000	2,038	0	189.58 x 162.42 x 259.92 cm (74.64 x 63.94 x 102.33 in.) With hoist: 189.58 x 190.05 x 384.43 cm (74.64 x 74.82 x 151.35 in.)	1,049 kg (2,411.9 lb)	3,295.24 (7,264.72 lb)
3,000	3,155	0	207.36 x 180.47 x 282.85 cm (81.64 x 71.05 x 111.36 in.) With hoist: 207.36 x 208.10 x 413.39 cm (81.64 x 81.92 x 162.75 in.)	1,730 kg (3814 lb)	4,534.89 kg (9,997.75 lb)
5,000	5,237	0	227.47 x 201.00 x 322.00 cm (89.56 x 79.13 x 126.77 in.) With hoist: 227.47 x 228.63 x 452.94 cm (89.56 x 90.01 x 178.32 in.)	3,251 kg (7167.2 lb)	7,026.24 kg (15490.10 lb)

* The unit dimensions listed are nominal and may vary depending on options selected.

Touchscreen Console for the HyPerforma and imPULSE S.U.M.s

The Touchscreen Console provides state-of-the-art in-process monitoring and automation capability for the HyPerforma and imPULSE S.U.M.s. Its modular design allows for an easy-to-use custom user interface. Capabilities include agitation, pumps, pinch valves, and temperature control. Users can easily visualize measurements from load cells, pH sensors, conductivity sensors, resistance temperature detectors (RTDs), and pressure sensors.

The interface above highlights the module functionalities for the HyPerforma S.U.M.

Key advantages

To suit various processes, the user is able to semi-automate their formulation, pH or saline titrations, and viral inactivation processes with the Touchscreen Console. Additionally, the system's modular design allows for an ergonomic, custom user interface. Simple, routine processes can be automated by utilizing measurement values to control the pumps, temperature control unit (TCU), and agitation motor. The data measured during a process can be exported remotely via Ethernet, Profibus, Modbus RTU, or using a USB drive.

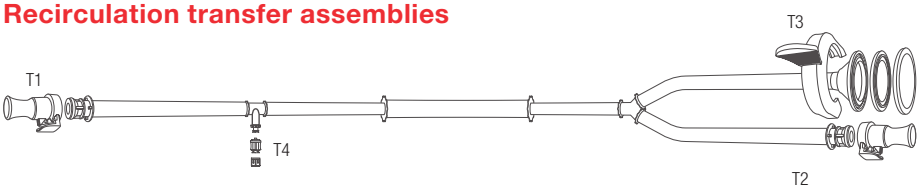
Touchscreen Console module functionalities

The main screen is populated with user-selectable modules, which allow for simple screen customization.

Modules	HyPerforma S.U.M.	imPULSE S.U.M.
Pump control	✓	✓
BPC pressure	✓	✓
Liquid pressure	✓	✓
Auxiliary output and input	✓	✓
Automated and metered fill and harvest	✓	✓
Agitation	✓	✓
Mass	✓	✓
Temperature	✓	✓
Timer	✓	✓
pH	✓	✓
Conductivity	✓	✓
Recipe function	✓	
PDC pressure		✓

imPULSE S.U.M. transfer assembly specifications

Recirculation transfer assemblies



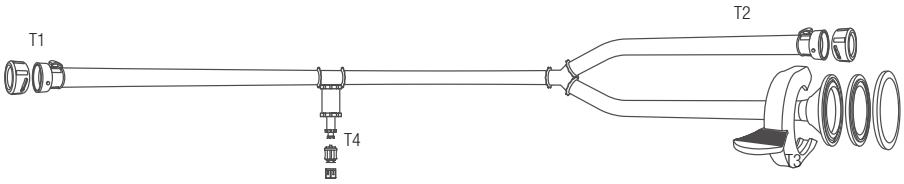
Tubing: silicone with size 90 PharMed BPT pump tubing, ID x OD: 1.27 x 1.91 cm (0.5 x 0.75 in.)

T1, T2: MPX insert with cap

T3: 3.8 cm (1.5 in.) sanitary x 1.27 cm (0.5 in.) barb with gasket, end cap, and push/pull clip

T4: Sample port

Description	Cat. No.
For less than 1,000 L 1.27 cm (0.5 in.) recirculation	HM00005-I



Tubing: silicone with size 90 PharMed BPT pump tubing, ID x OD: 1.91 x 2.86 cm (0.75 x 1.125 in.)

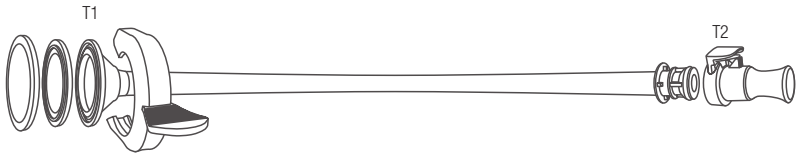
T1, T2: MPU insert with cap

T3: 3.8 cm (1.5 in.) sanitary x 1.91 cm (0.75 in.) barb with gasket, end cap, and push/pull clip

T4: Sample port

Description	Cat. No.
For 1,000 L and larger 1.91 cm (0.75 in.) recirculation	HM00006-I

Water fill transfer assemblies

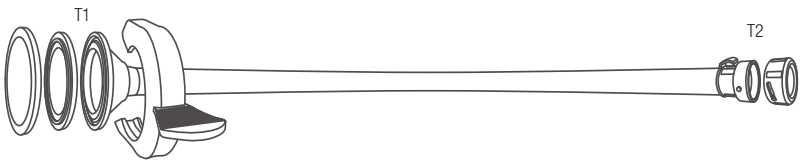


Tubing: silicone 182.9 cm (72 in.), ID x OD: 1.27 x 1.91 cm (0.5 x 0.75 in.)

T1: 3.8 cm (1.5 in.) sanitary x 1.27 cm (0.5 in.) barb with gasket, end cap, and push/pull clip

T2: MPX insert with cap

Description	Cat. No.
For less than 1,000 L 1.27 cm (0.5 in.) water fill	HM00015-I



Tubing: silicone 182.9 cm (72 in.), ID x OD: 1.27 x 1.91 cm (0.5 x 0.75 in.)

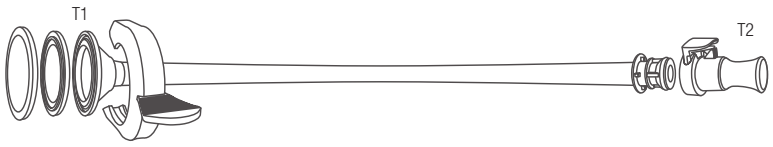
T1: 3.8 cm (1.5 in.) sanitary x 1.91 cm (0.75 in.) barb with gasket, end cap, and push/pull clip

T2: MPU insert with cap

Description	Cat. No.
For 1,000 L and larger 1.91 cm (0.75 in.) water fill	HM00016-I

imPULSE S.U.M. transfer assembly specifications

Inflation transfer assemblies

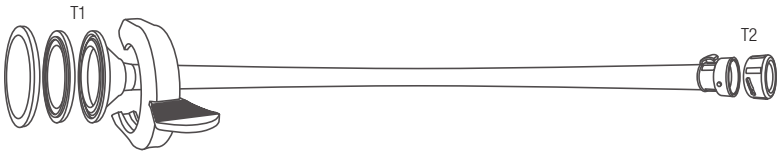


Tubing: silicone 365.8 cm (144 in.), ID x OD: 1.27 x 1.91 cm (0.5 x 0.75 in.)

T1: 3.8 cm (1.5 in.) sanitary x 1.27 cm (0.5 in.) barb with gasket, end cap, and push/pull clip

T2: MPX insert with cap

Description	Cat. No.
For less than 1,000 L 1.27 cm (0.5 in.) air inflate and purge	HM00017-I



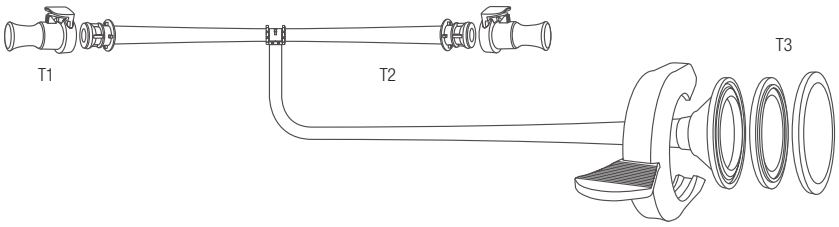
Tubing: silicone 396.2 cm (156 in.), ID x OD: 1.91 x 2.86 cm (0.75 x 1.125 in.)

T1: 3.8 cm (1.5 in.) sanitary x 1.91 cm (0.75 in.) barb with gasket, end cap, and push/pull clip

T2: MPU insert with cap

Description	Cat. No.
For 1,000 L and larger 1.91 cm (0.75 in.) air inflate and purge	HM00018-I

Vent transfer assemblies

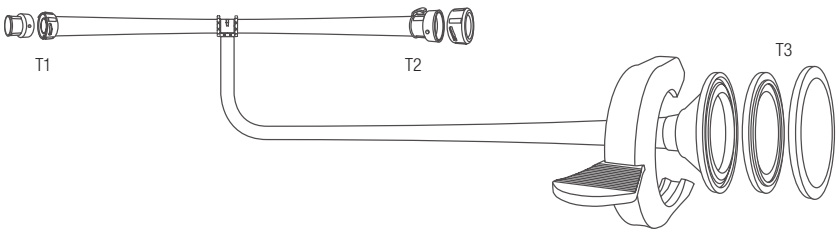


Tubing: silicone 15.2 x 15.2 x 152.4 cm (6 x 6 x 60 in.), ID x OD: 1.27 x 1.91 cm (0.5 x 0.75 in.)

T1: MPX body with cap **T2:** MPX insert with cap

T3: 3.8 cm (1.5 in.) sanitary x 1.27 cm (0.5 in.) barb with gasket, end cap, and push/pull clip

Description	Cat. No.
For less than 1,000 L 1.27 cm (0.5 in.) vent fill	HM00019-I



Tubing: silicone 22.9 x 22.9 x 182.9 cm (9 x 9 x 72 in.), ID x OD: 1.91 x 2.86 cm (0.75 x 1.125 in.)

T1: MPU body with cap **T2:** MPU insert with cap

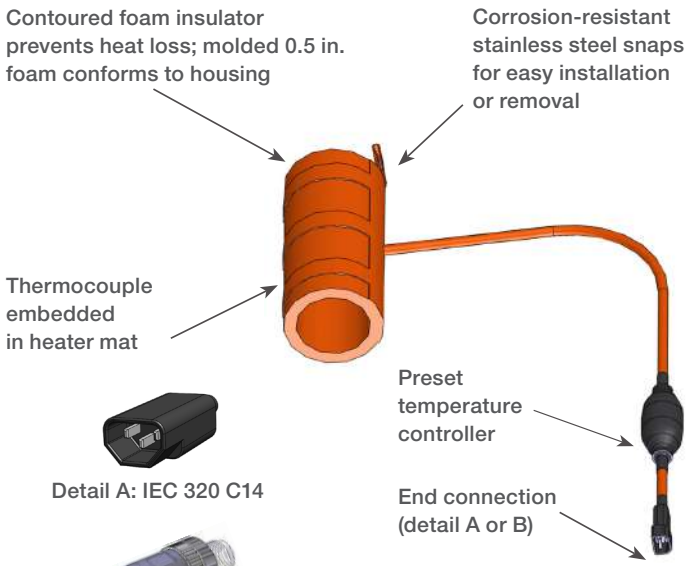
T3: 3.8 cm (1.5 in.) sanitary x 1.91 cm (0.75 in.) barb with gasket, end cap, and push/pull clip

Description	Cat. No.
For 1,000 L and larger 1.91 cm (0.75 in.) vent fill	HM00020-I

Vent filter heaters

For use with single-use bioreactors and fermentors

The Thermo Scientific™ vent filter heater system consists of a heater, preset temperature controller, and a power cord. It also includes a fully insulated resistive heating element with molded silicone foam. It is secured around the filter by use of snap retainers and fully encapsulates the exhaust filters for consistent temperature regulation. The temperature controller is preset at 50°C. Vent filter heaters come standard with or without preset temperature control. Vent filter heaters without preset temperature controllers require integrated controls to operate the heating element. Refer to the vent filter heater user's manual included in the system equipment turnover package for more information. Vent filter heaters should not be operated above 50°C.



Detail A: IEC 320 C14

Detail B: M12 4-pin connector

Ordering information

The required parts are sold as a kit that includes a vent filter heater, controller with a watertight closure, quick connects, and installation power cord.

Description	Voltage	Power	Controller	End connection	Manuf. No.	Cat. No.
S.U.F. vent filter heaters						
Suspended series 46	120 VAC	53 W	Preset	IEC 320 C14	9699-1463	SV50191.35
Suspended series 46	240 VAC	53 W	Preset	IEC 320 C14	9699-1464	SV50191.36
Suspended series 46*	120 VAC	53 W	Integrated	Flying lead	9699-0744	SV50191.41
Suspended series 46*	240 VAC	53 W	Integrated	Flying lead	9699-0745	SV50191.42
Suspended series 46	120 VAC	53 W	Integrated	M12 4-pin connector	9599-0764	SV50191.49
Suspended series 46	240 VAC	53 W	Integrated	M12 4-pin connector	9599-0765	SV50191.50
S.U.B. vent filter heaters						
Meissner 10 in. series 46	120 VAC	99.6 W	Preset	IEC 320 C14	9699-1461	SV50191.33
Meissner 10 in. series 46	240 VAC	99.6 W	Preset	IEC 320 C14	9699-1462	SV50191.34
Meissner 10 in. series 46	120 VAC	99.6 W	Integrated	M12 4-pin connector	9699-0762	SV50191.47
Meissner 10 in. series 46	240 VAC	99.6 W	Integrated	M12 4-pin connector	9599-0763	SV50191.48
Pall Kleenpak KA3 series 46	120 VAC	23.8 W	Preset	IEC 320 C14	9699-1459	SV50191.31
Pall Kleenpak KA3 series 46	240 VAC	30.3 W	Preset	IEC 320 C14	9699-1460	SV50191.32
Pall Kleenpak KA3 series 46	120 VAC	23.8 W	Integrated	M12 4-pin connector	9599-0760	SV50191.45
Pall Kleenpak KA3 series 46	240 VAC	30.3 W	Integrated	M12 4-pin connector	9599-0761	SV50191.46

* Information not available for NEMA standards. All other vent filters conform to NEMA standards.

DHX Heat Exchanger

The Thermo Scientific™ DHX™ Heat Exchanger is a modular heat exchanger system that uses single-use BPCs as the fluid path. The BPCs fit tightly between five stainless steel plates, efficiently transferring heat in a countercurrent flow path. The DHX exchanger provides efficient heat transfer that easily integrates into any process.

Key features

- Completely isolated flow paths for process fluid and heat transfer fluid
- Counter-current, serpentine flow patterns
- Dimpled jacketing on the plates to ensure turbulent flow
- BPCs fill in place with no operator interaction
- Modular design and small overall footprint allows for changing process needs
- Helps reduce infrastructure requirements
- Helps reduce processing time
- Helps improve product consistency

Applications

- cGMP commercial and clinical biotherapeutics, vaccines, and other biologic processes
- Upstream applications include media hold, fermentation, cell separation/protein harvest, harvest cooling, and harvest hold
- Downstream applications include harvest hold, buffers, protein purification, and bulk drug substance

Technical specifications

- **Effective heat transfer area:** up to 27 square feet
- **Overall dimensions (W x D x H):** 50.8 x 73.66 x 68.58 cm (20 x 29 x 27 in.)
- **Number of plates:** 5
- **Number of BPCs:** up to 4
- **Dry weight:** 150 kg (330.7 lb)
- **Full weight (includes four BPCs):** 190 kg (418.9 lb)

DHX plate system

- **Material of construction:** 316L stainless steel
- **Pressure/temperature rating:** FV/140 psig at 150°F
- **Pressure vessel code:** ASME U-1
- **Connections:** 1/2 in. compression

Ordering information

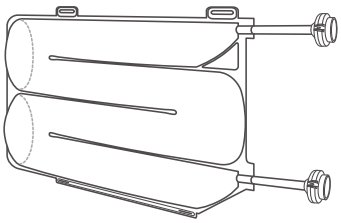
Description	Cat. No.
316 stainless steel DHX unit	DHX1001

DHX Heat Exchanger BPCs

Specifications

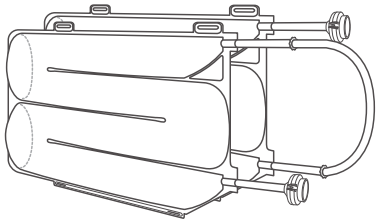
- Single-use BPC material: polyethylene, ASI 26/77 film
- Interconnecting tubing: TPE
- Pressure/temperature rating (installed in DHX plate system): 20 psig at 122°F (50°C)
- Connections: GE ReadyMate Disposable Aseptic Connector (DAC) 500 as standard—custom connections upon request
- Single BPC volume: 6 L
- Flow rate capacity: up to 15 liters per minute (LPM)

Single BPC



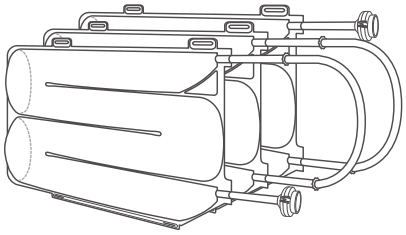
Description	Cat. No.
1 BPC with DAC connections	DX00006-I

2 BPCs



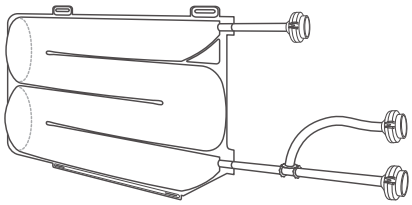
Description	Cat. No.
2 BPCs with DAC connections	DX00007-I

3 or 4 BPCs



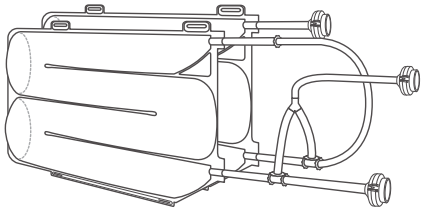
Description	Cat. No.
3 BPCs with DAC connections	DX00008-I
4 BPCs with DAC connections	DX00009-I

Single BPC



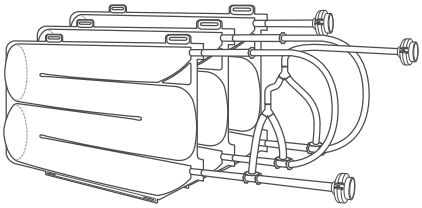
Description	Cat. No.
1 BPC with DAC connections and drain	DX00010-I

2 BPCs



Description	Cat. No.
2 BPCs with DAC connections and drain	DX00011-I

3 or 4 BPCs



Description	Cat. No.
3 BPCs with DAC connections and drain	DX00012-I
4 BPCs with DAC connections and drain	DX00013-I

DynaChrom Single-Use Chromatography System

The Thermo Scientific™ DynaChrom™ Single-Use Chromatography System is designed to meet the needs of process scale-up and cGMP manufacturing. The DynaChrom system utilizes modular, single-use fluid transfer assemblies, industry-standard sensor technology, innovative valve technology, and robust automation designed with customer needs in mind and provides the flexibility to scale up their processes in the future.

The DynaChrom Single-Use Chromatography System provides a complete, single-use solution for chromatographic purification—a principal unit operation in viral vector production and downstream bioprocessing of recombinant proteins such as monoclonal antibodies. Pre-engineered system options and modular flow kit designs allow selection of suitable tools and technology for each application. The system can be used for multiple chromatography steps, and with the automation package, provides the platform necessary for consistent, high-performing purification.

Key features

- Wide operational flow ranging from 1 L/hr to 1,980 L/hr enabled by up to three pump combinations and four fluid transfer assembly sizes
- Meets the demands of modern downstream bioprocessing with isocratic and gradient elution support, as well as in-line dilution (ILD) processing capability
- Zero dead leg with ring flush valve design eliminates residual fluid in the fluid transfer assemblies
- Valve design provides advantages for scaling flow path processes—the same block or locking mechanism can accommodate different fluid transfer assembly sizes
- Works with any alternately sourced column (prepacked or self-packed) within the design specification of the system
- Ergonomic, space-saving design provides ease of access for system operation and maintenance, including fluid assembly transfer installation, and a user interface for monitoring and control
- Built on the superior DeltaV Distributed Control Platform, and packaged with Thermo Scientific™ TruChrom™ automation software
- Simplified recipe structure of TruChrom software provides an enhanced user experience

Ordering information

Description	Size	Cat. No.
DynaChrom Single-Use Chromatography System	NA	F100-3500-000
DynaChrom Single-Use Chromatography System Fluid Transfer Assemblies	1/4 in.	F100-3600-001
	3/8 in.*	F100-3600-002
	1/2 in.*	F100-3600-003
	3/4 in.	F100-3600-004

* These fluid transfer assembly sizes are not immediately available. Please consult our technical support team.

DynaSpin Single-Use Centrifuge

The Thermo Scientific™ DynaSpin™ Single-Use Centrifuge provides a solution the industry needs, with specially designed ergonomic hardware, consumables, and simple software, decreasing both process and facility requirements for the harvest unit operation. The DynaSpin centrifuge is a truly scalable solution that allows process volumes from 50 to 5,000 L, and helps increase efficiency, especially at larger scales.

Advantages of the DynaSpin system

- Set up and operate the user-friendly, plug-and-play hardware in a matter of minutes
- Reduce traditional depth filtration surface area across all scales
- Help mitigate process risk and increase efficiency using the closed system
- Reduce unit operation footprint in support of process sustainability

This DynaSpin Single-Use Centrifuge system includes the centrifuge hardware and consumable. The single-use consumable is composed of a rotor that implements disc stack technology and three line sets (an inlet line where cell culture fluid is supplied to the rotor, and two outlet lines that carry the separated product and waste streams) with fully automated control. Each line set contains appropriate sensors that communicate with the hardware via the firmware on the built-in touchscreen.

Components

- Stainless steel hardware that arrives fully assembled and mobile, with locking casters and three handles
- Single-use rotor and line set consumables
- Ergonomically friendly touchscreen with built-in firmware

Consumables

- Gamma-irradiated and ready-to-use rotor with line sets
- Inlet, centrate, and concentrate line sets with built-in sensors:
  - Reflectance sensor on concentrate line
  - Absorbance sensor on centrate line
  - Pressure sensors on all lines
- Inlet, centrate, and concentrate pumps

Ordering information

Description	Size	Cat. No.
DynaSpin Single-Use Centrifuge	1	DSPIN.9000
DynaSpin Single-Use Rotor—harvest	1	SUT00056

Learn more at **thermofisher.com/dynaspin**

CaptureSelect and POROS purification products

Purifying next-generation biotherapeutics

To meet your downstream processing needs, we offer a variety of commercialized resins for affinity, ion exchange (IEX), and hydrophobic interaction chromatography (HIC) applications. From large-scale bioprocess resins and small-scale purification solutions to prepacked columns and analytical tools for characterization, we have you covered. Thermo Scientific™ CaptureSelect™ and POROS™ resin technologies address today's challenges in the purification workflow.

Thermo Scientific™ POROS™ chromatography resins are used throughout the industry offering high-performance, high-throughput bioseparations at process scale.

Thermo Scientific™ CaptureSelect™ affinity products are available for process-scale or analytical bioseparations for a wide variety of biotherapeutic compounds including antibodies and antibody fragments, recombinant and plasma proteins, and viral vectors.

Our custom ligand and resin discovery platforms enable the development of innovative purification resins, providing a solution for challenging downstream processes. We can design a custom ligand or develop a resin for your unique separation needs.

CaptureSelect technology

Maximize efficiency of your capture chromatography step with CaptureSelect affinity resins

Affinity chromatography helps to:

- Reduce the number of steps in your downstream purification process
- Increase product yield in a single step
- Reduce bioprocess development time
- Reduce time to market

Thermo Scientific™ CaptureSelect™ ligands offer a unique affinity purification solution based on single-domain V_HH antibody fragments. Through their tunable specificity and easy formatting, these small 14 kDa affinity ligands are the solution for complex biomolecule purification challenges. Proven CaptureSelect affinity technology enables the purification of antibodies, antibody fragments, recombinant and plasma proteins, and viral vectors. These products enable increased purity and yield in a single purification step and are designed to simplify workflows and reduce time and cost in biopharmaceutical drug development. CaptureSelect affinity resins are manufactured in an animal origin-free production process making these resins suitable for process-scale bioseparations for a wide variety of biotherapeutic compounds.

CaptureSelect Leakage ELISAs

Products incorporating CaptureSelect technology can be used for clinical and commercial manufacturing. To complement each affinity resin, we offer product specific ELISAs to measure any ligand potentially leaching from the column.

Conjugated affinity ligands

CaptureSelect biotinylated ligands are available for use in a range of analytical assays, and available for each matching resin. The affinity ligand is chemically conjugated to biotin via an appropriate spacer that retains binding reactivity of the ligand when immobilized onto streptavidin-functionalized surfaces.

Applications for CaptureSelect biotinylated ligands include sandwich ELISA, western blot, Gyros' Gyrolab®-based immunoassays, and label-free detection platforms such as those based on surface plasmon resonance (Biacore® and IBIS-MX96 systems) and biolayer interferometry (ForteBio® Octet® systems).

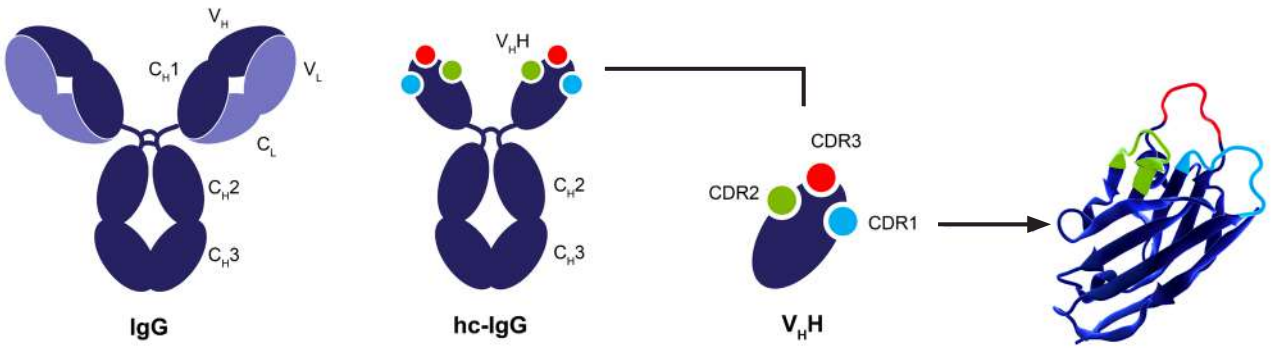


Figure 1. CaptureSelect technology. The small size of the V_HH fragments allows binding to epitopes that are difficult to access.

POROS technology

Simplify your downstream process with POROS chromatography resins

POROS resins exhibit high-capacity, high-resolution, and flow-rate-independent performance, built to deliver exceptional separation capability and to meet the increasing demands of process intensification. High-performance resins, like POROS, can simplify the development process, balance all the purification requirements, and help develop more efficient and cost-effective downstream processes.

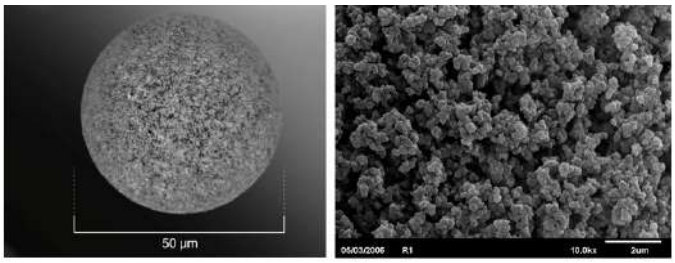


Figure 2. Scanning electron microscope images showing the POROS bead (left) and the large throughpore structure of the bead (right).

Unique features of POROS chromatography:

- **Poly(styrene-divinylbenzene) backbone**—resulting in linear and scalable performance. The beads are rigid and have a high mechanical strength enabling easy and reproducible scale-up. The polymer backbone is chemically stable allowing for stringent cleaning when needed.
- **Large throughpores**—leading to a reduced mass transfer resistance compared to other resins. Capacity and resolution are maintained over a wide range of linear velocities, thereby establishing a more efficient purification process.
- **50 µm bead size**—providing superior resolution. The smaller particle size results in tighter peaks and smaller elution volumes, helping to overcome tank size limitations at larger scales.

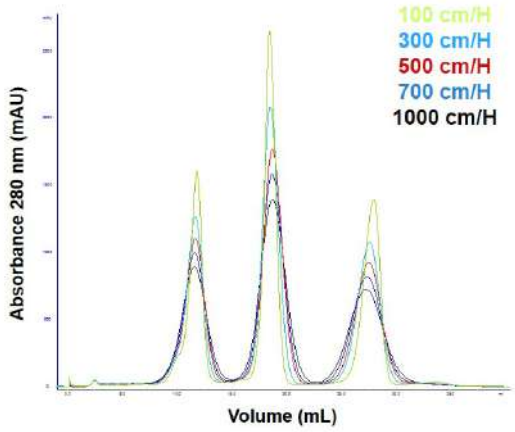


Figure 3. The graph shows the excellent resolution characteristics of the POROS resins and demonstrates resolution is well maintained when flow rates increase.

Quality you can count on

Our products and services are specifically designed to enable proven performance through innovative, efficient, and highly selective downstream applications. By selecting from our portfolio as a single supplier, we can help you optimize production, improve process efficiency, add flexibility, and fast-track product development and market introduction.

Thermo Fisher Scientific owns the production process of the resins from qualified raw materials to released finished goods. We do not utilize chromatography media intermediates from other suppliers. This gives us complete traceability and control over the entire process. Also, because we control the entire manufacturing process, our customers are better protected from supply shortages and disruptions. The base material is polymerized, coated, functionalized, sized, and exchanged into shipping solvent prior to packaging.

POROS chromatography resins are produced in validated, state-of-the-art manufacturing facilities in Bedford and Chelmsford, Massachusetts. Both facilities are ISO 13485 certified.

The CaptureSelect affinity products are manufactured at our production site in Naarden, Netherlands. The facility is ISO 9001:2015 certified, and includes two lines of 15,000 L (15 cbm) fermentation reactors, micro- and ultrafiltration systems for biomass removal and product concentration, and a separate purification suite for efficient industrial production of the affinity ligands.

Second-site sourcing for the CaptureSelect affinity ligands is assured by manufacturing capabilities at the Thermo Fisher Scientific site in Vilnius, Lithuania, operating under ISO 9001:2015 and ISO 13485 certification.

Bedford, Massachusetts, USA facility

Certification status: ISO 13485:2016

Chelmsford, Massachusetts, USA facility

Certification status: ISO 13485:2022

- **Key capabilities:**
  - POROS bulk chromatography resin manufacturing, including QC analysis
  - Production of customized process-scale resin

Naarden, Netherlands facility

Certification status: ISO 9001:2015

- **Key capabilities:**
  - Production of CaptureSelect affinity ligands and process-scale affinity resins, including QC analysis
  - Production of customized process-scale affinity resins

Vilnius, Lithuania facility

Certification status: ISO 9001:2015 and ISO 13485

- **Key capabilities:**
  - Production of CaptureSelect affinity ligands

Affinity chromatography

Protein A purification solutions

Thermo Scientific™ MabCaptureC™ Affinity Matrix is a high-performance Protein A chromatography resin, specifically designed to help improve the productivity and efficiency of your antibody purification process. Featuring high capacity and a highly cross-linked agarose backbone, the MabCaptureC resin is your Protein A resin of choice for efficient process-scale purification of monoclonal antibodies.

Key features:

- **High dynamic binding capacity:** >50 g/L at 4.8 min residence time
- **A highly cross-linked and uniformly sized agarose bead (75 ± 10 µm) delivering excellent performance characteristics***
- **Excellent alkaline stability allowing for efficient cleaning and sanitization**
- **A scalable Protein A resin, suitable for use in cGMP manufacturing processes**
- **An in-house manufactured Protein A ligand, recombinantly expressed in yeast**

Ordering information

Description	Quantity	Cat. No.
MabCaptureC Affinity Matrix	250 mL	1963662250
	1 L	196366201L
	5 L	196366205L
	10 L	196366210L

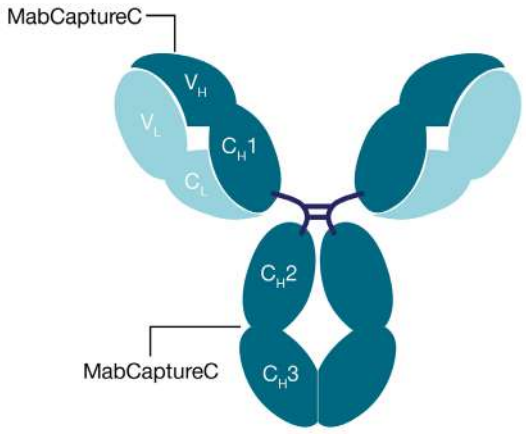


Figure 4. MabCaptureC ligand binds antibodies at the Fc-region of the IgG molecule (CH2-CH3 interface). Binding at the VH3 region of the IgG's variable heavy domain (VH) can occur but will be molecule dependent.

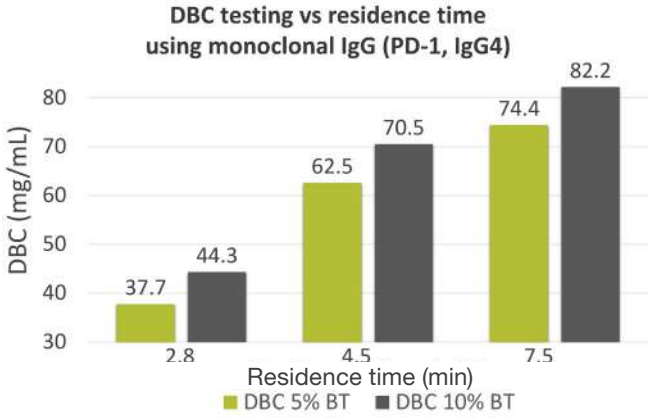


Figure 5. MabCaptureC affinity matrix dynamic binding capacity (DBC) at 5 and 10% breakthrough using a monoclonal antibody (IgG4) feedstock and three increasing residence times.

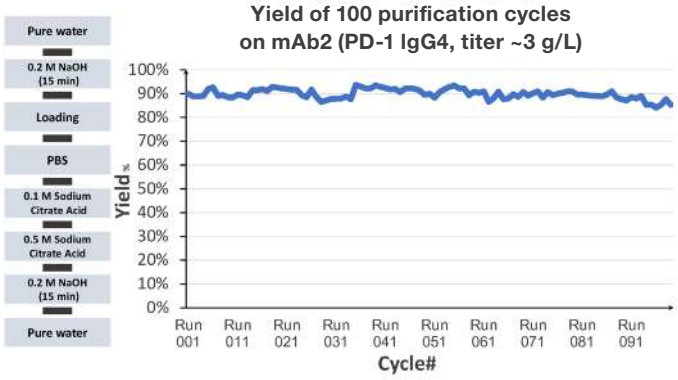


Figure 6. MabCaptureC affinity matrix alkaline stability. Determined in a life cycle study using a monoclonal antibody (IgG4) feedstock, over 100 purification cycles and cleaning in place using 2X 0.2 M NaOH for 15 min during each cycle (before and after loading).

* Using Praesto Jetted Technology.

Check out our other resins and additional sizes at
thermofisher.com/mabcapturec

Purification of antibody-derived therapeutics

We have developed a unique portfolio of affinity resins, helping you to develop next-generation antibody therapeutics. CaptureSelect affinity chromatography resins, specifically developed to bind antibody-subdomain regions are a key solution for the purification of novel antibody therapeutics, such as bi-specific monoclonal antibodies, Fab fragments, and Fc-fusion proteins. These affinity resins can be used for clinical and commercial production, and offer:

- High capacity, addressing process demand and high-titer feedstocks
- Mild elution conditions for successful purification of pH-sensitive modalities
- Efficient antibody fragment purification, without co-purification of light chains
- Alternative purification solutions when Protein A doesn't yield desired results

Due to the unique selectivity of each resin, a broad range of antibody modalities can be captured. The antibody-subdomain-specific resins help to improve downstream processing of monoclonal antibodies and antibody fragments, and serve as an alternative solution when Protein A does not yield optimal results.

Ordering information

Description	Quantity	Cat. No.
CaptureSelect CH1-XL Affinity Matrix	250 mL	1943462250
	1 L	194346201L
	5 L	194346205L
CaptureSelect KappaXP Affinity Matrix	250 mL	1943212250
	1 L	194321201L
	5 L	194321205L
CaptureSelect LambdaXP Affinity Matrix	250 mL	1943752250
	1 L	194375205L
	5 L	194375201L
CaptureSelect FcXP Affinity Matrix	250 mL	1943712250
	1 L	194371201L
	5 L	194371205L
CaptureSelect IgE Affinity Matrix	250 mL	1943542250
	1 L	194354201L
	5 L	194354205L

Check out our other resins and additional sizes at
thermofisher.com/antibody-therapeutics

Purification of recombinant proteins, biosimilars, and vaccines

Biosimilars and recombinant proteins

CaptureSelect affinity resins help you to develop biosimilars, biobetters, and other types of recombinant proteins. These affinity resins can be used for clinical and commercial production. CaptureSelect protein purification products exhibit affinity and specificity for their target proteins, for efficient single-step purification of non-antibody biomolecules.

Key features

- **Selectivity**—high purity in single step; feedstock-independent
- **Mild elution conditions**—retention of biological activity of target
- **Reduction of process steps**—helps reduce costs, allows higher yields
- **Efficient clearance of HCP, DNA, virus**—high selectivity in one capture step

Protein vaccine development with C-tag and C-tagXL affinity resin

One of the major bottlenecks in protein vaccine development is obtaining sufficient quantities of high-quality and pure protein. The C-tag affinity tag allows for recombinant protein production through the addition of a small tag (4 amino acids) to the protein of interest. The Thermo Scientific™ CaptureSelect™ C-tagXL Affinity Resin combines the unique selectivity of the C-tag with the benefits of a robust and high-quality affinity matrix allowing for high yield and purity in a single purification step.

Benefits of C-tag:

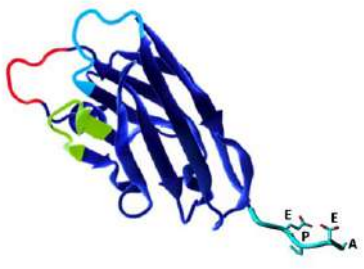
- Small inert tag, limiting effect on protein functionality
- Highly selective when fused at the C-terminus of a protein
- Limits drawbacks of conventional tags such as lack of selectivity, heavy metal waste, or limited reusability
- Enables high target yield and purity from complex mixtures (compared to His6 tag)

Benefits of the CaptureSelect C-tagXL affinity matrix:

- Enables high target purity and yield from complex mixtures
- Mild elution, protecting the protein of interest
- Scalable

Ordering information

Description	Qty	Cat. No.
CaptureSelect FSH Affinity Matrix	250 mL	1943180250
	500 mL	1943180500
	1 L	19431801L
	5 L	19431805L
CaptureSelect Human Albumin Affinity Matrix	250 mL	1912970250
	500 mL	1912970500
	1 L	19129701L
	5 L	19129705L
CaptureSelect hCG Affinity Matrix	250 mL	1943410250
	500 mL	1943410500
	1 L	19434101L
	5 L	19434105L
CaptureSelect tPA Affinity Matrix	250 mL	1943430250
	1 L	19434301L
	5 L	19434305L
CaptureSelect TSH Affinity Matrix	250 mL	1943562250
	1 L	194356201L
	5 L	194356205L
CaptureSelect hGH Affinity Matrix	250 mL	1943160250
	1 L	194316001L
	5 L	194316005L
CaptureSelect Factor X Affinity Matrix	250 mL	1943702250
	1 L	194370201L
	5 L	194370205L
CaptureSelect C-tagXL Affinity Matrix	250 mL	1943072250
	1 L	1943072500
	5 L	194307201L
	10 L	194307205L



Check out additional sizes at
thermofisher.com/captureselect

Purification of viral vectors

AAV purification

Our proven CaptureSelect ligand technology, combined with the large pore structure of the POROS beads, enables efficient purification of large biomolecules such as viral vectors. These unique affinity resins are developed to significantly improve downstream processing of viral vectors by reducing the number of purification steps and offering scalability, thus maximizing process consistency, efficiency and productivity.

POROS CaptureSelect AAV affinity resins

The utilization of Thermo Scientific™ POROS™ CaptureSelect™ AAV affinity resins represents a significant improvement to the downstream processing of AAV vectors.

The use of AAV affinity resins helps to:

- Limit the number of steps and maximize productivity in the AAV purification process
- Increase purity and yield in a single capture step
- Increase process flexibility and throughput
- Scale up the AAV manufacturing process
- Establish a single purification platform for multiple AAV serotypes

Ordering information

Description	Quantity	Cat. No.
POROS CaptureSelect AAV8 Resin	250 mL	A30792
	1 L	A30793
	5 L	A30794
	10 L	A30795
POROS CaptureSelect AAV9 Resin	250 mL	A27355
	1 L	A27359
	5 L	A27358
	10 L	A27357
POROS CaptureSelect AAVX Affinity Resin	250 mL	A36742
	1 L	A36743
	5 L	A36744
	10 L	A36745

Resin	Binding capacity (vg/mL)*	Serotype affinity
POROS CaptureSelect AAV8	$>10^{13}$	AAV8
POROS CaptureSelect AAV9	$>10^{14}$	AAV9
POROS CaptureSelect AAVX	$>10^{14}$	AAV1, AAV2, AAV3, AAV4, AAV5, AAV6, AAV7, AAV8, recombinant and chimeric vectors

* Viral genomes per milliliter; binding capacity will vary based on serotype, feed stream, additives, and mutations to parent serotypes.

Viral clearance contribution of affinity capture step

Viral clearance results using AAVX affinity resin for the purification of AAV8:

- Model viruses are listed in the top row and experimental conditions are listed in the left column
- Manufacturing processing conditions mimic the typical load volumes and chromatographic settings
- The high load ratio plus high residence time run is performed to create a worst-case scenario allowing maximum virus-resin contact
- Viral clearance levels are depicted in LRV (Log reduction value) where ≥4 LRV is an effective clearance, 1–3 LRV is defined as contributing viral clearance and <1 LRV is neglectable clearance

Run description	xMuLV	MVM	Reo-3	HAV	PRV	HSV-1
Virus type	RNA env	DNA non env	RNA nonenveloped		DNA enveloped	
Manufacturing process conditions	>6.4	4.4	2.7	>4.9	4.0	3.1
High load ratio and residence time	4.6	3.6	2.5	5.0	3.8	3.6
Clearance level	Effective	Effective	Contributing	Effective	Effective	Contributing

Check out our other resins and additional sizes at
thermofisher.com/cgt-purification

Purification of mRNA

Supporting mRNA-based therapies and vaccines

The Thermo Scientific™ POROS™ Oligo (dT) 25 Affinity Resin is designed for the purification and isolation of mRNA from *in vitro* transcription (IVT) manufacturing processes. The use of affinity chromatography offers high selectivity and ease of use. Through the AT-base pairing mechanism, the resin effectively separates mRNA from components of the transcription reaction process, such as enzymes, unreacted nucleotides, partial transcripts and plasmid DNA.

The POROS Oligo (dT) 25 Affinity Resin helps to simplify the mRNA purification workflow by reducing the complexity of subsequent polish steps.

Why choose the Oligo (dT)25 affinity resin?

- Easy mRNA purification from crude transcription mix
- High dynamic binding capacity and high recovery
- Simplified workflow helps to maximize efficiency
- Excellent scalability, allowing purification from benchtop to commercial manufacturing

Ordering information

Description	Quantity	Cat. No.
POROS Oligo (dT)25 Affinity Resin	50 mL	A47382
	250 mL	A47383
	1,000 mL	A47384
	5,000 mL	A47385
	10,000 mL	A47386

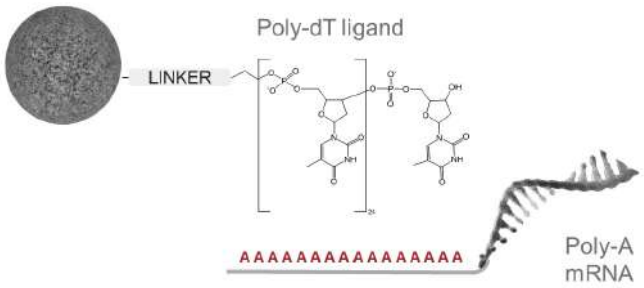


Figure 7. Mechanism of action of POROS Oligo dT(25) affinity resin. The poly-dT ligand allows binding with poly-A tailed mRNA molecules through AT-base pairing.

Check out additional sizes at
thermofisher.com/natx-purification

Ion exchange chromatography

POROS ion exchange resins

Thermo Scientific™ POROS™ ion exchange (IEX) resins are the industry standard for large-scale polish chromatography applications. POROS IEX resins allows target molecule binding and impurity removal over a broad range of process conditions, thereby increasing process flexibility and manufacturing throughput.

Selecting the right resin

Choosing the right ion exchange resin will help to ensure quality, productivity, and effectiveness of the purification process. Biomolecules vary in their net charge depending on the solution pH. Select either an anion exchange or cation exchange resin according the purification step and charged properties of the target molecule.

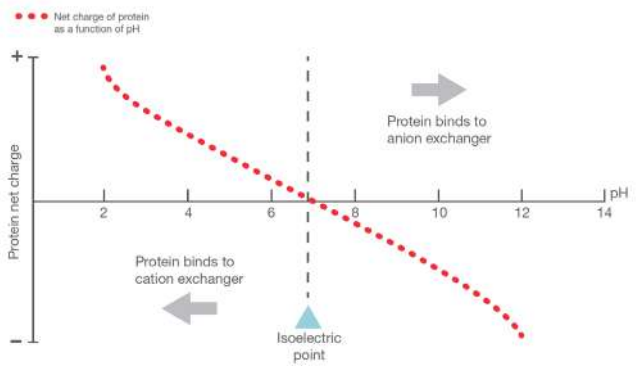


Figure 8. Isoelectric point (pI). The point along the pH scale at which the molecule or surface carries a zero-net charge. When the pH falls below the molecule's pI, the protein carries a net positive charge and will bind to an anion exchanger. When the pH falls above the molecule's pI, the protein carries a net negative charge and will bind to a cation exchanger.

POROS ion exchange resin applications.

POROS IEX resin	Bind/elute (B/E) application	Flow-through application
Cation exchange	Polish of many biomolecules such as: • Monoclonal antibodies (mAbs) • Virus-like particles (VLPs) • Viruses • Fusion and recombinant proteins with alkaline pI	Polish for mAbs by binding impurities under normal B/E conditions such as: • Viruses • HCP • Aggregates
Anion exchange	Capture of: • Proteins/mAbs • Viruses • Plasmid DNA Polish of: • Viral vectors—separation of empty particles	Trace impurity removal by binding impurities such as: • DNA • Viruses • HCP • Aggregates • Endotoxin

POROS anion exchange resins

POROS anion exchange resins

The Thermo Scientific™ POROS™ anion exchange (AEX) resin portfolio offers four unique chemistries (table below). These strong and weak AEX resins possess distinctive selectivity in bind/elute as well as flow-through operation to produce the highest purity elution.

POROS anion exchange applications

- **Bind/elute:** Capture of Mabs, proteins, virus, plasmid DNA purification; polish of viral vectors (empty vs full)
- **Flow-through:** Trace impurity removal by binding impurities (DNA, viruses, HCP, aggregates, endotoxin)

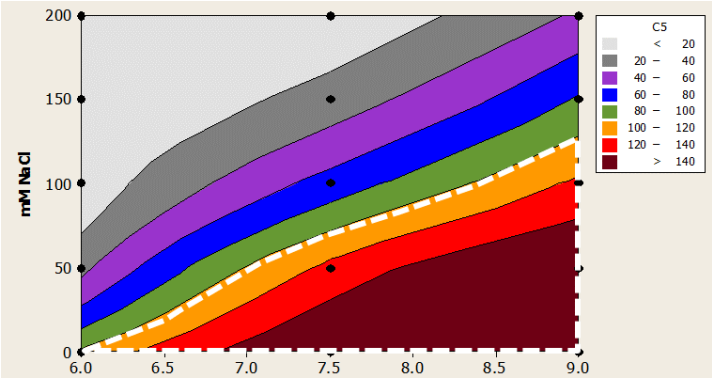


Figure 9. The dynamic binding capacity of POROS XQ resin with BSA at 5% breakthrough as a function of pH and salt concentration. High capacity is obtained under a wide range of process conditions. The orange, red, and dark red areas indicate the conditions in which greater than 100 mg/mL binding capacity of BSA can be obtained. Column: 0.46 cm (D) x 20 cm (L); load: 10 mg/mL BSA; base buffer: 20 mM Bis-Tris propane; flow rate: 300 cm/hr.

Ordering information

Description	Quantity	Cat. No.
POROS XQ 50 µm Strong Anion Exchange Resin	250 mL	4467820
	1 L	4467818
	5 L	4467817
	10 L	4467816
POROS HQ 50 µm Strong Anion Exchange Resin	250 mL	1255911
	1 L	1255907
	5 L	1255909
	10 L	1255908
POROS PI 50 µm Weak Anion Exchange Resin	250 mL	1245911
	1 L	1245907
	5 L	1245909
	10 L	1245908
POROS D 50 µm Weak Anion Exchange Resin	250 mL	1365911
	1 L	1365907
	5 L	1365909
	10 L	1365908

Anion exchange resins.

Resin	XQ	HQ	PI50	D50
Type of AEX resin	Strong	Strong	Weak	Weak
Surface chemistry	Fully quaternized amine	Quaternized polyethyleneimine (mixed amine)	Polyethyleneimine (mixed amine)	Dimethylaminopropyl
BSA binding capacity	>140 mg/mL	75 mg/mL	80 mg/mL	90 mg/mL
pH range	1–14	1–14	1–9	1–9

Viral clearance results for two common model viruses XmuLV and MMV.

- POROS HQ 50 and XQ resin provides excellent viral clearance for both model viruses under typical FT/wash conditions as well as increased conductivity
- Viral clearance with higher salt concentrations allows for increased flexibility when designing a purification scheme

		POROS HQ		POROS XQ	
Conductivity	Loading	XmuLV log_{10} reduction	MMV log_{10} reduction	XmuLV log_{10} reduction	MMV log_{10} reduction
5 mS/cm	500 g/L	>4.31 ± 0.12	>5.10 ± 0.09	>4.31 ± 0.12	>5.10 ± 0.09
10 mS/cm	500 g/L	>4.39 ± 0.14	2.49 ± 0.20	>4.39 ± 0.14	1.61 ± 0.23
15 mS/cm	500 g/L	4.13 ± 0.33	1.03 ± 0.13	3.46 ± 0.29	0.19 ± 0.28

POROS cation exchange resins

POROS cation exchange resins

Thermo Scientific™ POROS™ HS and XS resins are 50 µm strong cation exchange (CEX) resins based on a sulfopropyl functionalization and can be used over a wide range of pH (1–14) and conductivity conditions. These CEX resins have a high dynamic-binding capacity for more basic biomolecules and provide superior resolution for unprecedented impurity clearance independent of scale and flow rate.

POROS cation exchange applications

- **Bind/Elute:** Polish of many biomolecules (Mabs, VLP/viruses, fusion proteins, high pI rProteins)
- **Flow Through:** Polish for Mabs by binding impurities under normal B/E conditions: impurity removal (aggregates, HCP, DNA, viruses)

Ordering information

Description	Quantity	Cat. No.
POROS XS 50 µm Strong Cation Exchange Resin	250 mL	4404337
	1 L	4404336
	5 L	4404335
	10 L	4404334
POROS HS 50 µm Strong Cation Exchange Resin	250 mL	1335911
	1 L	1335907
	5 L	1335909
	10 L	1335908

POROS resin	HS	XS
Type of CEX resin	Strong	Strong
Surface chemistry	Sulfopropyl	Sulfopropyl
IgG binding capacity (mg/mL)	70	115
pH range	1–14	1–14

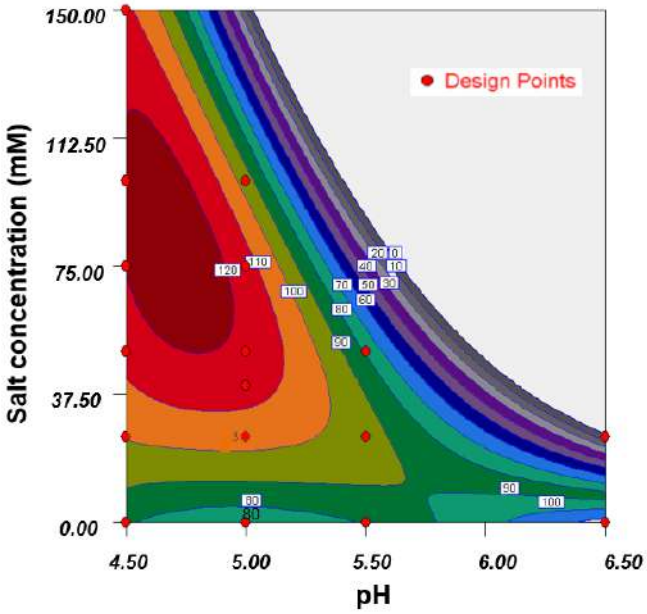


Figure 10. Binding capacity of POROS XS resin with IgG at 5% breakthrough. High binding capacity is obtained under a wide range of process conditions. Column: 0.46 cm (D) x 20 cm (L); buffer: 20 mM MES; load: 5 mg/mL IgG; flow rate: 300 cm/hr.

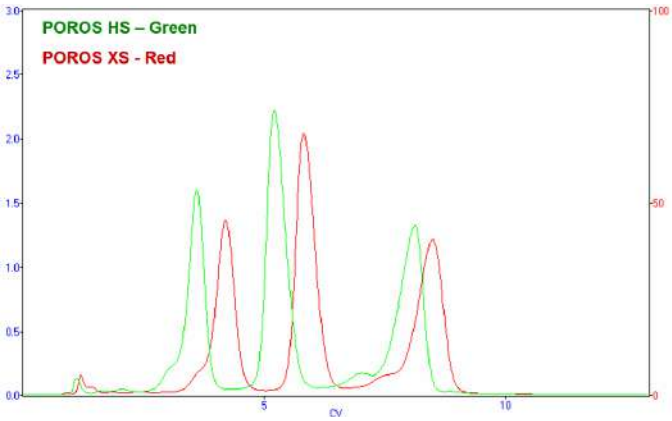


Figure 11. POROS XS and HS resins present with similar, high-resolution properties. Column: 1 cm (D) x 20 cm (L); buffer A: 20 mM MES, 25 mM NaCl pH 6.2, buffer B: 20 mM MES, 1 M NaCl pH 6.2; Elution: gradient 10%–50% buffer B, 7.5 CV; flow rate: 300 cm/hr; protein mix: chymotrypsinogen A, cytochrome C, and lysozyme.

Hydrophobic interaction chromatography

POROS hydrophobic interaction resins

Thermo Scientific™ POROS™ hydrophobic interaction chromatography (HIC) resins are based on the 50 µm POROS base bead, utilizing a novel coating procedure to enable functionalization with unique hydrophobic ligands. These resins are suitable for bind/elute and flow-through applications at lower salt concentrations and have higher binding capacity and resolution than classical HIC resins, thereby providing more flexibility around process operating conditions.

Key features

- 3 unique resins covering a wide range of hydrophobicity
- High resolution, even with lower conductivity conditions
- High dynamic binding capacity and superior pressure-flow characteristics

Key applications

- Monoclonal antibodies, bispecific antibodies, and antibody–drug conjugates (ADCs)
- Product-related impurities and aggregate removal
- Plasmids, RNAi, and oligonucleotides

Ordering information

Description	Quantity	Cat. No.
POROS Ethyl HIC Resin	250 mL	A32555
	1 L	A32554
	5 L	A32553
	10 L	A32552
POROS Benzyl HIC Resin	250 mL	A32561
	1 L	A32560
	5 L	A32559
	10 L	A32558
POROS Benzyl Ultra HIC Resin	250 mL	A32567
	1 L	A32566
	5 L	A32565
	10 L	A32564

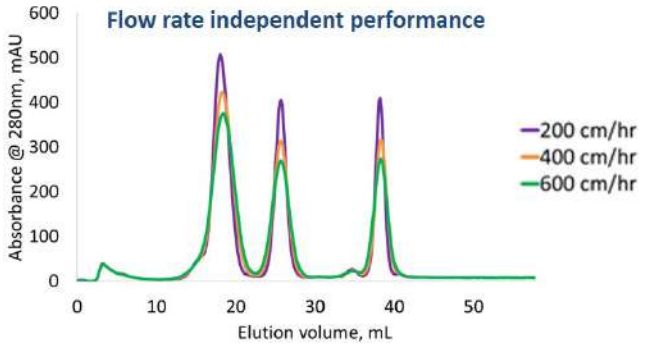


Figure 12. Separation comparison of POROS benzyl resin at different flow rates showing good resolution and flow rate independent performance. Experimental details: a load buffer: 1.7 M ammonium sulfate in 50 mM sodium phosphate, pH 7; buffer gradient: load buffer to 50 mM sodium phosphate, pH 7, in 10 CVs; format: 0.46 cm D x 20 cm L; flow rate: 200, 400, 600 cm/hr. Protein mixture: ribonuclease A, lysozyme, and chymotrypsinogen A.

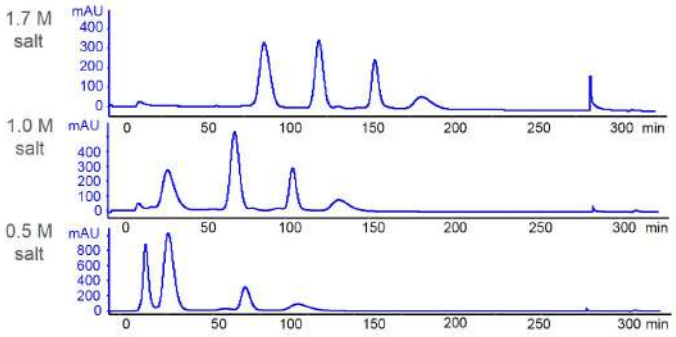


Figure 13. High performance and resolution of POROS Benzyl Ultra resin with lower-conductivity buffers. POROS Benzyl and Benzyl Ultra resins are designed for use in low-salt applications without compromising performance. Protein mixture: ribonuclease A, lysozyme, chymotrypsin, and chymotrypsinogen A.

Resin	Surface chemistry	Key application
POROS ethyl	Novel ethyl	Bind-elute mode of moderately to considerably hydrophobic molecules
POROS benzyl	Low-density benzyl/aromatic	Bind-elute or flow-through mode depending on molecule
POROS benzyl ultra	High-density benzyl/aromatic	Flow-through mode in lower salt to bind impurities such as aggregates

Increasing hydrophobicity

Process screening and optimization

Prepacked chromatography columns

To support resin screening, process development, and optimization, we offer a selection of columns prepacked with our bioprocess chromatography resins.

Our prepacked columns come in a variety of formats, suitable for high-throughput screening, process development, and bench-scale screening.

High-throughput screening

Thermo Scientific™ MabCaptureC™, CaptureSelect™, POROS™ CaptureSelect™, and POROS™ RoboColumns are small chromatography columns that are provided in 8-column strips. These columns are useful for fully automated and parallel chromatographic separations using a robotic liquid-handling platform and are available in 200 µL and 600 µL volumes.

Bench-scale process development screening

Thermo Scientific™ MabCaptureC™, CaptureSelect™, POROS™ CaptureSelect™, and POROS™ GoPure™ columns, and Thermo Scientific™ MabCaptureC™ and CaptureSelect™ MiniChrom columns are designed for bench-scale resin screening, process development, and sample preparation. The 1 mL columns can be used for quick screenings of application feasibility and lab-scale purification on a convenient and easy-to-use prepacked column. The 10 cm bed height of the 5 mL columns allows initial process development on a bench scale.

Ordering information

Resins for antibody and protein purification		RoboColumn 200 µL	RoboColumn 600 µL	MiniChrom 1 mL	MiniChrom 5 mL
MabCaptureC		5943662200	5943662600	5943662001	5943662005
CaptureSelect CH1-XL		5943462200	5943462600	5943462001	5943462005
CaptureSelect FcXP		5943712200	NA	5943712001	5943712005
CaptureSelect KappaXP		5943212200	NA	NA	5943212005
CaptureSelect LambdaXP		NA	NA	5943752001	5943752005
CaptureSelect HSA		5912970200	NA	NA	NA
CaptureSelect C-tagXL		NA	NA	5943072001	5943072005
Resins for viral vector and mRNA purification		RoboColumn 200 µL	RoboColumn 600 µL	GoPure 0.2 or 1 mL	GoPure 5 mL
POROS CaptureSelect AAV8		NA	NA	A36648	A36647
POROS CaptureSelect AAV9		NA	NA	A36650	A36649
POROS CaptureSelect AAVX		A37794	A37795	A36652	A36651
POROS Oligo (dT)25		A48349, A48350	A48350	A48351 (0.2 mL), A48352 (1 mL)	A48607
IEX resins	**Product**	RoboColumn 200 µL	RoboColumn 600 µL	GoPure 0.2 or 1 mL	GoPure 5 mL
Anion	POROS HQ 50	A30717	A30718	4481315	A36639
	POROS XQ	A30719	A30720	A25812	A36640
	POROS PI 50	A30721	A30722	4481318	A36641
	POROS D 50	A30723	A30724	4481319	A36642
Cation	POROS HS 50	A30713	A30714	4481316	A36637
	POROS XS	A30715	A30716	4481317	A36638
HIC resins		RoboColumn 200 µL	RoboColumn 600 µL	GoPure 0.2 or 1 mL	GoPure 5 mL
POROS Ethyl			A34812	A34983	A36653
POROS Benzyl		A34813	A34814	A34984	A36654
POROS Benzyl Ultra		A34815	A34816	A34985	A36655

Analytical tools

POROS and CaptureSelect analytical columns and conjugated ligands

We offer a range of products to support your analytical needs, including affinity columns, nonaffinity columns, and conjugated ligands for the development of analytical assays.

Analytical chromatography columns

Thermo Scientific™ POROS™ and CaptureSelect™ analytical columns are used throughout the industry to monitor monoclonal antibody titer and product yield from cell culture supernatant. The columns can be operated on any standard high-performance liquid chromatography (HPLC) or medium-pressure chromatography system. POROS analytical chromatography columns, available in 10 and 20 µm particle sizes, enable rapid separation of biomolecules for both analytical and lab-scale preparative applications. POROS Protein A analytical columns are widely used in the industry for monitoring monoclonal antibody titer and yield from cell culture supernatant. The addition of Thermo Scientific™ POROS™ CaptureSelect™ analytical columns expand the advantages of high-speed, high-performance quantitation to antibody fragments and isotypes, biosimilars, and fusions proteins.

Affinity columns include:

- Protein A and G columns
- Aldehyde-, epoxide-, or hydroxyl-activated affinity columns
- Antibody isotype and fragment affinity columns
- Biosimilars and recombinant protein columns

Nonaffinity columns include:

- Anion and cation exchange columns
- Reversed-phase columns
- Hydrophobic interaction columns

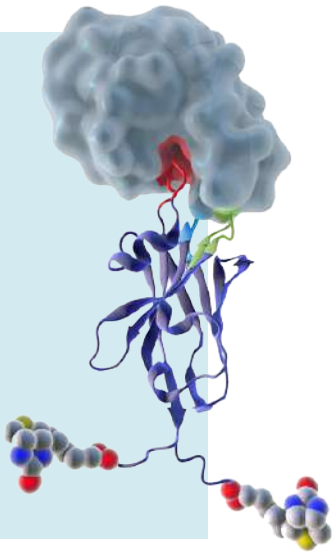
Columns are available in 4 different formats (D x L, volume):

- 2.1 x 30 mm, 0.1 mL
- 4.6 x 50 mm, 0.8 mL
- 4.6 x 100 mm, 1.7 mL
- 10 x 100 mm, 7.9 mL

CaptureSelect ligand conjugates

Thermo Scientific™ CaptureSelect™ biotinylated ligands are available for use in a range of analytical assays and include everything from ligands binding to antibodies and antibody fragments to plasma proteins and non-mAb biosimilars. The affinity ligand is chemically conjugated to biotin via an appropriate spacer that retains binding activity of the ligand when immobilized onto streptavidin-functionalized surfaces.

Applications for CaptureSelect biotinylated ligands include capture ELISA, western blot, and label-free detection platforms such as surface plasmon resonance and bio-layer interferometry.



Find out more at
thermofisher.com/captureselect-conjugates

Analytical tools

Ordering information

Description	Column size (D x L), volume	Cat. No.
POROS A 20 µm Column	2.1 x 30 mm, 0.1 mL	2100100
	10 x 100 mm, 7.9 mL	1502246
	4.6 x 50 mm, 0.8 mL	1502224
POROS G 20 µm Column	2.1 x 30 mm, 0.1 mL	2100200
	4.6 x 100 mm, 1.7 mL	1512226
	4.6 x 50 mm, 0.8 mL	1512224
POROS HE 50 µm Column	2.1 x 30 mm, 0.1 mL	4333411
	4.6 x 50 mm, 0.8 mL	4333412
	4.6 x 100 mm, 1.7 mL	4333413
POROS MC µm Column	2.1 x 30 mm, 0.1 mL	1542212
	4.6 x 50 mm, 0.8 mL	1542224
	4.6 x 100mm, 1.7 mL	1542226
POROS AL 20 µm Column	2.1 x 30 mm, 0.1 mL	1602212
	4.6 x 100 mm, 1.7 mL	1602226
	4.6 x 50 mm, 0.8 mL	1602224
POROS EP 20 µm Column	4.6 x 100 mm, 1.7 mL	1612226
	4.6 x 50 mm, 0.8 mL	1612224
POROS HP2 Column	4.6 x 50 mm, 0.8 mL	1452224
LC Kappa Affinity Column	2.1 x 30 mm, 0.1 mL	4469149
	10 x 100 mm, 7.9 mL	4469172
FG, POROS LC-lambda Affinity Column	2.1 x 30 mm	4469150
	4.6 x 50 mm	4469163
	4.6 x 100 mm	4469168
POROS IgM Affinity Column	2.1 x 30 mm	4469152
	4.6 x 50 mm	4469164
	4.6 x 100 mm	4469169
POROS IgA Affinity Column	2.1 x 30 mm	4485162
	4.6 x 50 mm	4485166
	4.6 x 100 mm	4485170
POROS CH1-XL Affinity HPLC Column	4.6 x 50 mm	A37053
	4.6 x 100 mm	A37054
POROS FcXL Affinity HPLC Column	2.1 x 30 mm	A37058
	4.6 x 50 mm	A37059
	4.6 x 100 mm	A37060

Description	Column size (D x L), volume	Cat. No.
POROS GCSF Affinity Column	2.1 x 30 mm	4485157
	4.6 x 50 mm	4485164
	4.6 x 100 m	4485168
POROS hGH Affinity Column	2.1 x 30 mm	4485161
	4.6 x 50 mm	4485165
	4.6 x 100 mm	4485169
	10 x 100 mm	4485173
POROS HCG Affinity HPLC Column	2.1 x 30 mm	A37055
	4.6 x 50 mm	A37056
	4.6 x 100 mm	A37057
POROS HSA Affinity Column	2.1 x 30 mm	4469151
	4.6 x 50 mm	4469165
	4.6 x 100 mm	4469170
POROS FSH Affinity Column	2.1 x 30 mm	4481822
	4.6 x 50 mm	4481824
	4.6 x 100 mm	4481826

Custom chromatography services

Ligand and resin development programs

The manufacture of complex biotherapeutics requires novel purification strategies, which may not always exist. Our custom ligand and resin development platforms enable the development of innovative purification resins, providing a solution for challenging downstream processes.

Custom development services

We have been successfully developing and manufacturing chromatography resins for more than two decades. Our ligand- and resin-manufacturing facilities support the production of prototype affinity resins and scale up to commercial lot sizes of 250 L.

Custom services include

- **Custom affinity ligand/resin:** CaptureSelect affinity solutions can be developed for your specific product or process
- **Custom resins:** POROS resins can be tailored to your process requirements based on existing ligands

Custom CaptureSelect ligand development

We offer a unique milestone-based service for the development of specific affinity solutions tailored to a target protein and its specific requirements. The custom ligand can be immobilized on a variety of backbones, including POROS resins, and further developed into an affinity resin, which can be used in large-scale processing of biopharmaceuticals.

Custom POROS resins

Through unique product attributes, POROS chromatography resins help maintain performance and add flexibility to your downstream process. Combine high resolution and high capacity in a custom chromatography resin tailored to your specific process requirements.

Resin development includes the use of Design of Experiments (DoE) to define the resin-manufacturing process required for your purification needs. DoE screening includes pore size, ligand density, and coupling chemistry to optimize performance for your biotherapeutic. Start the process with your ligand or another commercially available ligand, select from our library of existing CaptureSelect ligands, or generate a custom CaptureSelect ligand for your application.

Service and support

We offer experienced field applications, service, and training support to complement your development process every step of the way. This includes column packing on-site, training, process optimization, cleaning recommendations, stability studies, lifetime approaches, and much more.

For questions and concerns, please contact us at **bp@thermofisher.com**

Find out more at
thermofisher.com/custom-chromatography-solutions

SEQ rapid analytical methods

Applied Biosystems™ SEQ analytical testing products are rapid molecular methods designed for pharmaceutical manufacturing to help ensure quality and safety of your pharmaceutical products. Our rapid analytical methods offer fully integrated solutions, utilizing highly sensitive molecular technologies. These methods detect viral and microbial contaminants, identify bacterial and fungal species, and quantitate process- and product-related impurities. Sensitivity, accuracy, specificity, reproducibility, and time to results are critical in the detection of contaminants and quantitation of impurities. As of one of the leaders in rapid molecular identification, we offer:

- Rapid molecular methods, with same-day actionable results, typically in less than 5 hours
- Regulatory accepted analytical solutions for lot-release testing
- Broad use of our products in the majority of top pharma companies
- Experienced, comprehensive technical support and regulatory expertise

Validate with confidence and implement with success

Compliance with government and international standards requires documented verification that your systems are installed and functioning according to operational specifications. The process can be complex, time-consuming, and costly. Internal development and optimization of testing methods developed in-house requires investment, including procurement and qualification of reagents from multiple vendors, development of SOPs, and preparation of standards and controls.

When you use our complete analytical solutions, you leverage our experience gained from solving sample preparation and testing challenges around the world.

Our knowledgeable field applications scientists can help minimize the need for internal specialized training programs and improve implementation of rapid methods. Our Installation Qualification and Operational Qualification (IQ/OQ) Service verifies and records the system's ability to meet standard functional criteria after installation or reinstallation.

The IQ/OQ process involves a comprehensive set of tests to ensure data is acquired, processed, and retains integrity according to designed and configured specifications. Our implementation program assists in lab design, setup, and technician training.

No one understands your systems better than the people who design, develop, and support them. Trust our trained and certified specialists to help you through your IQ/OQ as part of your overall system validation.

Warrington, UK facility
Certification status: ISO 9001, ISO 13485, OHSAS 18001, AFNOR, ISO 18385

- **Key capabilities**
  - Multiscale clean (DNA-free) formulation and manufacturing
  - Real-time PCR
  - Automated, human contact–free manufacturing
  - Cell line and plasmid growth and manipulation
  - Human identification products (STR kits and associated sample prep and DNA quantification kits; allelic ladders)
  - Pharma analytics (microbial DNA extraction and real-time PCR target identification, including mycoplasma detection)
  - Food and environmental safety (food pathogen detection, GMO detection, flu virus detection, sample preparation)
  - PCR reagents (*Taq* polymerase, master mixes, size standards)
  - Oligo products
  - Protein-sequencing reagents

Impurity testing

resDNASEQ Host Cell Residual DNA Quantitation System

Host cell residual DNA quantitation

The removal of host cell impurities is a critical step in the purification of biopharmaceutical products. A major challenge is the accurate and sensitive quantitation of host cell DNA impurities in both in-process and drug substance samples for lot release testing to a level that meets regulatory requirements.

The hallmark of a great system is not that it makes one aspect better, but that it makes everything better—in this case, highly efficient process characterization. The Applied Biosystems™ resDNASEQ™ Host Cell Residual DNA Quantitation System uses the sensitivity and selectivity of qPCR for quantitation of residual host cell DNA at a lower sample cost compared to outsourcing, and you can enjoy greater productivity and confidence in your results.

The resDNASEQ Host Cell Residual DNA Quantitation System is the first and only fully integrated real-time qPCR system for quantitation of residual host cell DNA, including a highly characterized DNA reference standard. This system is an established industry-leading solution with wide adoption for routine use at major biopharma companies.

The resDNASEQ Host Cell Residual DNA Quantitation System offers:

- **Assays for commonly used cell lines**—CHO, HEK293, human, *E. coli*, Vero, MDCK, *Pichia pastoris*, NS0, and a duplex assay for Sf9 and Baculovirus
- **Rapid testing and streamlined workflow**—time to results is typically under 5 hours
- **Ultrahigh sensitivity and specificity**—no cross-reactivity to unrelated DNA
- **Reliable performance**—consistent performance kit to kit, lot to lot, year to year
- **Optimized sample prep**—quantitative DNA recovery with high precision
- **Comprehensive product solution**—all-inclusive kits with standards and all reagents
- **Worldwide support network**—expert training, technical support, validation, and regulatory guidance

Table 1. Sensitive and specific requirements for HEK293 host cell DNA.

Specification	
Accuracy	R^2 >0.99
PCR efficiency	100% ±10%
Precision	≤10% CV
Limit of detection (LOD)	30 fg
Limit of quantitation (LOQ)	300 fg
Assay range	300 fg–3 ng

Table 2. Sensitive and specific quantitation for SF9 insect cell line.

Specification	
Accuracy	R^2 >0.99
PCR efficiency	100% ±10%
Precision	≤10% CV
Limit of detection (LOD)	30 fg
Limit of quantitation (LOQ)	300 fg
Assay range	300 fg–3 ng

Find out more at
thermofisher.com/resdnaseq

Thermo Scientific™ Pharma KingFisher™ Flex System with Applied Biosystems™ PrepSEQ™ kit

Applied Biosystems™ resDNASEQ™ Quantitative HEK293 DNA Kit

Applied Biosystems™ QuantStudio™ 5 Real-Time PCR System

Applied Biosystems™ AccuSEQ™ software

Ordering information

Description	Cat. No.
resDNASEQ Quantitative CHO DNA Kit	4402085
resDNASEQ Quantitative CHO DNA Kit with PrepSEQ Residual DNA Sample Preparation Kit	4413713
resDNASEQ Quantitative HEK293 DNA Kit	A46014
resDNASEQ Quantitative HEK293 DNA Kit with PrepSEQ Residual DNA Sample Preparation Kit	A46565
resDNASEQ Human Residual DNA Quantitation Kit	A26366
resDNASEQ Human Residual DNA Quantitation Kit with PrepSEQ Residual DNA Sample Preparation Kit	A27335
resDNASEQ Quantitative *E. coli* DNA Kit	4458435
resDNASEQ Quantitative *E. coli* DNA Kit with PrepSEQ Residual DNA Sample Preparation Kit	4460366
resDNASEQ Quantitative Vero DNA Kit	4458444
resDNASEQ Quantitative Vero DNA Kit with PrepSEQ Residual DNA Sample Preparation Kit	4460367
resDNASEQ Quantitative NS0 DNA Kit	4458441
resDNASEQ Quantitative NS0 DNA Kit with PrepSEQ Residual DNA Sample Preparation Kit	4460364
resDNASEQ Quantitative *Pichia pastoris* DNA Kit	4464336
resDNASEQ Quantitative *Pichia pastoris* DNA Kit with PrepSEQ Residual DNA Sample Preparation Kit	4464340
resDNASEQ Quantitative MDCK DNA Kit	4464335
resDNASEQ Quantitative MDCK DNA Kit with PrepSEQ Residual DNA Sample Preparation Kit	4464339
PrepSEQ Residual DNA Sample Preparation Kit (sample prep only)	4413686
resDNASEQ Quantitative Sf9 and Baculovirus DNA Kit	A46066
resDNASEQ Quantitative Sf9 and Baculovirus DNA Kit with PrepSEQ Residual DNA Sample Preparation Kit	A47405

Note: Each resDNASEQ kit includes 100 reactions.

resDNASEQ Quantitative Plasmid DNA – Kanamycin Resistance Gene Kit

Real-time PCR system for quantitation of residual plasmid DNA

The Applied Biosystems™ resDNASEQ™ Quantitative Plasmid DNA–Kanamycin Resistance Gene (pDNA-KanR) Kit utilizes a qPCR-based system for detection of residual plasmid DNA containing the kanamycin-resistance gene. Residual DNA testing is an established method routinely used for assessment of product quality and safety in the development of gene therapies, vaccines, and similar biotherapeutics. The resDNASEQ system enables rapid, sensitive, and specific quantitation of plasmid DNA containing the kanamycin-resistance gene (KanR) by targeting multiple KanR variants present on commonly used plasmids. This performance helps ensure a high degree of confidence in quantitation data obtained from a broad range of sample types—from in-process samples with different sample matrices to bulk drug substances.

The resDNASEQ Quantitative Plasmid DNA–Kanamycin Resistance Gene Kit offers:

- **Multiplex assay**—targets all KanR gene alleles common in bioproduction
- **High specificity and sensitivity**—innovative DNA-free master mix and proven Applied Biosystems™ TaqMan™ real-time PCR technology
- **Reliable performance**—consistent, reproducible results, optimized for quantitative recovery from common gene therapy sample matrices such as those from viral vector workflows
- **Rapid testing and streamlined workflow**—time to results typically in under 5 hours
- **Comprehensive product solution**—all-inclusive kits with standards and all reagents
- **Worldwide support network**—expert training, technical support, validation, and regulatory guidance

Table 3. Sensitive and reproducible quantitation of plasmid DNA containing the kanamycin resistance gene using the resDNASEQ Quantitative pDNA-KanR Kit.

Specification	
Accuracy	R^2 >0.99
PCR efficiency	100% ±10%
Precision	≤10% CV
Limit of detection (LOD)	15 copies
Limit of quantitation (LOQ)	30 copies
Assay range	30–30,000 copies

Pharma KingFisher Flex System with PrepSEQ kit

resDNASEQ Quantitative Plasmid DNA-Kanamycin Resistance Gene Kit

QuantStudio 5 Real-Time PCR System

AccuSEQ software

Ordering information

Description	Cat. No.
resDNASEQ Quantitative Plasmid DNA–Kanamycin Resistance Gene Kit, 100 reactions	A50337
resDNASEQ Quantitative Plasmid DNA–Kanamycin Resistance Gene Kit with PrepSEQ Residual DNA Sample Preparation Kit, 100 reactions	A50460
Sample preparation and automation	
PrepSEQ Nucleic Acid Sample Preparation Kit, 100 reactions	A50485
Pharma KingFisher Flex 96 Deep-Well Magnetic Particle Processor, 1 instrument	A31508
Real-time PCR system	
7500 Fast Real-Time PCR System, with Dell Tower	4365463
QuantStudio 5 Real-Time PCR System, 96-well, 0.1 mL, 1 instrument	A31672
Software	
AccuSEQ Real-Time PCR Detection Software, 1 license	A48509
Service	
QuantStudio 5 IQ/OQ Service, 1 service	A45613
Pharma KingFisher Flex IQ/OQ	A31532

Find out more at
thermofisher.com/resdnaseq-plasmid

resDNASEQ Quantitative E1A DNA Fragment Length Kit

DNA fragment length and E1A oncogene quantitation

The Applied Biosystems™ resDNASEQ™ Quantitative E1A DNA Fragment Length Kit is a quantitative PCR (qPCR)-based system for the quantitation of host-cell DNA from the HEK293 system or other cell lines transformed with the *E1A* oncogene. The kit is designed for cell lines used in the development of gene therapies, cell-based vaccines, and similar biotherapeutics. Reliable and rapid, the resDNASEQ system enables sensitive and specific quantitation of *E1A* DNA fragments (Table 4). This performance helps ensure a high degree of confidence in quantitation data obtained from a wide range of sample types—from in-process samples with different sample matrices to purified final product (Figure 14).

The resDNASEQ Quantitative E1A Fragment Length Kit offers:

- Accurate quantitation of residual DNA fragments by targeting the *E1A* oncogene, inherent in HEK293 cell lines and other cell lines transformed with the *E1A* gene
- Highly sensitive quantitation using proven TaqMan real-time PCR technology, with results in under 5 hours
- Manual and automated sample preparation, optimized for quantitative recovery from various sample matrices
- Easy-to-use, integrated sample-to-results system with sample preparation kit, master mix, Applied Biosystems™ TaqMan™ primer/probe mixes, and an *E1A* DNA standard
- Option to utilize the same prepared sample for the resDNASEQ E1A kit and the Applied Biosystems™ resDNASEQ™ Quantitative HEK293 DNA Kit

Table 4. Sensitive and specific quantitation of three different fragments of the *E1A* gene within the HEK293 host-cell DNA using the resDNASEQ Quantitative *E1A* Fragment Length Kit.

Specification	
Linearity	R^2 >0.99
PCR efficiency	100% ± 10%
Precision	≤10% CV
Limit of detection (LOD)	10 copies
Limit of quantitation (LOQ)	30 copies
Assay range	10 to 1 x 10^8 copies

Ordering information

Description	Cat. No.
resDNASEQ Quantitative E1A DNA Fragment Length Kit	A51969
resDNASEQ Quantitative E1A DNA Fragment Length Kit with PrepSEQ Residual DNA Sample Preparation Kit	A51970

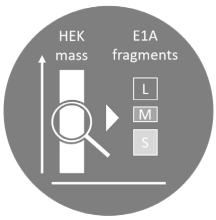


Figure 14. The resDNASEQ Quantitative *E1A* DNA Fragment Length Kit can be used in combination with the resDNASEQ Quantitative HEK293 DNA Kit to measure the length of residual *E1A* DNA fragments that are transformed into the HEK293 cell line. The workflow can use the same sample as for the resDNASEQ Quantitative HEK293 DNA Kit.

Find out more at
thermofisher.com/resdnaseq

Contaminant testing

MycoSEQ *Mycoplasma* Detection System

Mycoplasma species detection

Mycoplasmas, the smallest known free-living organisms, are relatively common bacterial contaminants of mammalian cell cultures. Detection of *Mycoplasma* species is difficult, sometimes impossible, when using traditional microbiological techniques such as the 28-day culture test. Regulatory guidance requires that all products derived from mammalian cell culture be tested for the presence of mycoplasmas. Regulatory agencies have expanded acceptance of nucleic acid tests, including real-time PCR, as an alternative method for traditional mycoplasma detection after proper method validation and regulatory review.

The Applied Biosystems™ MycoSEQ™ *Mycoplasma* Detection Kit is a fully integrated solution for real-time PCR–based mycoplasma detection. Used throughout the bioproduction workflow, the MycoSEQ kit is an alternative to costly, time-consuming culture-based tests often done externally by contract labs, which can take up to 28 days. Following validation, regulatory review, and acceptance, the MycoSEQ assay and method are now used for lot-release testing by many global manufacturers of different biotherapeutics modalities. Thermo Fisher holds two patents from the US Patent and Trademark Office for the MycoSEQ real-time PCR-based mycoplasma detection assay. These patents cover the assay's proprietary multiplexed PCR primer approach and the discriminatory positive/extraction control, which are new innovations to real-time PCR that enable this rapid test for mycoplasmas to meet the rigorous requirements of regulatory authorities and manufacturers.

- **Rapid testing and streamlined workflow**—time to results typically in under 5 hours
- **Comprehensive solution**—detection of more than 90 *Mycoplasma, Spiroplasma,* and *Acholeplasma* species
- **Demonstrated sensitivity**—detects less than 10 copies/reaction
- **Proven specificity**—no cross-reactivity with nonmycoplasma DNA
- **Discriminatory positive/extraction control**—minimize risk of false-positive results
- **Dependable and efficient**—rapid analysis of results and automatic presence/absence call (based on acceptance criteria) with Applied Biosystems™ AccuSEQ™ Real-Time PCR Detection Software

Find out more at
thermofisher.com/mycoseq

Applied Biosystems™ AutoMate *Express*™ Nucleic Acid Extraction System

MycoSEQ Mycoplasma Detection Kit

QuantStudio 5 Real-Time PCR System

AccuSEQ software

Ordering information

Description	Cat. No.
MycoSEQ *Mycoplasma* Detection Kit, with Discriminatory Positive Control	4460623
MycoSEQ *Mycoplasma* Detection Kit, with Discriminatory Positive Control (sample prep included)	4460626

MicroSEQ Microbial Identification System

Microbial identification

Bacterial and fungal contamination of raw materials and production facilities negatively impact product quality and safety. The use of a genetic approach for microbial detection based on the 16S rDNA gene for bacteria or a specific genomic region of the large-subunit rDNA gene for fungi can help prevent delayed product releases, back orders, and even recalls.

Identify thousands of bacterial and fungal species typically in under 5 hours with the Applied Biosystems™ MicroSEQ™ Microbial Identification System.

Validated

We conduct a rigorous validation process for accurate taxonomic information of new and existing bacterial and fungal species. From sequence information entry and genus- and species-level validation to revalidation of existing MicroSEQ library entries—all done by trained personnel—the process is designed to offer the most comprehensive, accurate, reliable libraries available for your pharma QC testing.

Curated

We closely evaluate our libraries and curate for what really matters to our pharma QC customers—quality and accuracy. We have increased the number of *Candida*, *Cladosporium*, and *Aspergillus* species, and added species for 223 new genuses to our fungal database. We partner with the Westerdijk Fungal Biodiversity Institute, part of the Royal Netherlands Academy of Arts and Sciences, for the latest reliable sequence information for mycological identification and classification.

Updated

We regularly update the powerful MicroSEQ ID Software Library, which currently includes more than 12,000 microbial species. This helps ensure that your MicroSEQ ID database is always up to date by providing periodic updates of quality-checked and validated bacterial and fungal sequences.

Ordering information

Description	Cat. No.
Genetic Analyzer	
MicroSEQ Rapid Microbial ID System with 3500 Genetic Analyzer	4406019
MicroSEQ Rapid Microbial ID System with 3500XL Genetic Analyzer	4406018
SeqStudio Genetic Analyzer for MicroSEQ ID System	A49988
Starter Kit for SeqStudio MicroSEQ ID System	A50685
Starter Kit for 3500 series MicroSEQ ID System	A35000
Assays	
Fast MicroSEQ 500 16s rDNA PCR Kit	4370489
MicroSEQ 500 16s rDNA Sequencing Kit	4346480
MicroSEQ Full Gene 16s rDNA PCR Kit	4349155
MicroSEQ Full Gene 16s rDNA Sequencing Kit	4347484
Fast MicroSEQ D2 Fungal rDNA PCR Kit	4382397
MicroSEQ D2 Fungal rDNA Sequencing Kit	4347481
Software	
CSV, MicroSEQ ID	A39692
IQ/OQ, MicroSEQ ID SeqStudio	A49996
IQ/OQ, MicroSEQ ID 3500	A41283
IQ/OQ, MicroSEQ ID 3500XL	A41284
MSID Software for SeqStudio Genetic Analyzer + All Library Bundle	A51427
Training	
MSID Implementation Program (3 day training)	A36868
Service	
IQ/OQ, SeqStudio Genetic Analyzer MicroSEQ ID System	A49996

ViralSEQ Detection System

Rapid adventitious virus testing

Mouse minute virus (MMV) and vesivirus contamination are potential threats to mammalian cell culture manufacturing processes. Multiple cell culture manufacturing facilities have been negatively impacted following contamination with these viruses. Monitor your process for rapid, actionable results with the Applied Biosystems™ ViralSEQ™ Detection System, an integrated DNA purification and real-time PCR–based test designed for rapid and sensitive detection of MMV and vesivirus from a wide range of sample types.

- **Comprehensive workflow solution**—kit utilized in same qPCR workflow as other contaminant and impurity assays, complete sample-to-answer solution
- **Proven TaqMan technology**—highly sensitive dectection down to 10 genome copies per reaction (viral particles equivalent to 0.002 TCID50)
- **Highly specific**—no cross-reactivity with unrelated DNA
- **Rapid time to results**—see results typically in under 5 hours
- **Assays for most common CHO cell culture contaminants**—MMV, and vesivirus
- **Discriminatory positive/extraction control**—minimized risk of false-positive results from accidental cross-contamination with control DNA
- **Reliable performance**—consistent performance kit to kit, lot to lot, year to year
- **Worldwide support network**—expert training, technical support, validation, and regulatory guidance

Ordering information

Description	Cat. No.
ViralSEQ Mouse Minute Virus (MMV) Detection System	4444415
ViralSEQ Vesivirus Detection Kit	4448398C

Find out more at
thermofisher.com/viralseq

ViralSEQ Quantitative Sf-Rhabdovirus Kit

qPCR system for quantitation of Sf-rhabdovirus genomic RNA

The Applied Biosystems™ ViralSEQ™ Quantitative Sf-Rhabdovirus Kit is a two-step RT-qPCR assay for the quantitation of Sf-rhabdovirus RNA from the Sf9 and Sf21 baculovirus platforms used in the development of gene therapies, cell-based vaccines, and other biotherapeutics. This assay leverages a tagged reverse transcription (RT) primer design containing a nonviral sequence to enable sensitive and specific quantitation of negative-sense genomic Sf-rhabdovirus RNA. This design allows more accurate quantitation of true viral counts and prevents overestimation that is usually due to mRNA in nonstrand-specific assay designs.

The ViralSEQ Quantitation Sf-Rhabdovirus Kit offers:

- **Accurate quantitation**—Sf-rhabdovirus genomic RNA utilizing a strand-specific design
- **High specificity**—no cross-reactivity with Sf-rhabdovirus mRNA or nontarget species
- **Proven TaqMan technology**—highly sensitive quantitation
- **Reliable performance**—optimized for reproducible recovery of RNA from common bioproduction sample matrices
- **Rapid testing and streamlined workflow**—easy to use, with results in under 6 hours
- **Integrated system**—sample preparation kit, master Applied Biosystems™ TaqMan™ primer/probe mix, and RNA standard

Sensitive and specific quantitation of Sf-rhabdovirus RNA using the ViralSEQ Quantitative Sf-Rhabdovirus Kit.

Specification	
Accuracy	R^2 >0.99
PCR efficiency	100% ± 10%
Precision	≤10% CV
Limit of detection (LOD)	10 copies
Limit of quantitation (LOQ)	30 copies
Assay range	10 to 1 x 10^7 copies

Ordering information

Description	Cat. No.
ViralSEQ Quantitative Sf-Rhabdovirus Kit	A50484
ViralSEQ Quantitative Sf-Rhabdovirus Kit with PrepSEQ Nucleic Acid Sample Preparation Kit	A50496

Find out more at
thermofisher.com/viralseq

Instruments and analysis software

Real-time PCR systems and AccuSEQ software

Real-time PCR detection software

AccuSEQ Real-Time PCR Detection Software supports the unique needs of analytical testing of contaminants and impurities during the biopharmaceutical manufacturing process, as well as routine qPCR assays. AccuSEQ software is part of the integrated workflow for mycoplasma detection, residual host cell protein (HCP) quantitation, residual Protein A quantitation, residual DNA quantitation, and adventitious virus testing. Advanced algorithms built in to the AccuSEQ real-time PCR software automate the analysis of presence/absence calls for the MycoSEQ *Mycoplasma* Detection Assay based on the melting temperature (Tm), cycle at threshold (Ct), and the derivative value (Dv) of the test sample and inhibition control, according to user specifications. Nonlinear curve fitting enables rapid analysis of ProteinSEQ Protein Quantitation System data. Next-generation algorithms are designed to deliver accurate quantitation data for the resDNASEQ Host Cell Residual DNA Quantitation System with automatic calculation of dilution adjusted quantity, % recovery, and % CV.

Key features

- **Streamlined workflow**—integrates with QuantStudio 5 and 7500 Fast Real-Time PCR instruments
- **High efficiency and ease of use**—single software platform for multiple real-time PCR assays
- **Proven technology**—supported and fully tested for the Windows 10™ operating system
- **Worldwide support network**—helps enable 21 CFR Part 11 compliance
- **Comprehensive solution**—features allow full traceability

Ordering information

Description	Cat. No.
AccuSEQ v2.1.2 Software for 7500 Fast Real-Time PCR System	A47130
7500 Fast Real-Time PCR System with Dell Tower	4365463
AccuSEQ Software V3.1 for QuantStudio 5	A48509
QuantStudio 5, 96-well, 0.1mL Block instrument with Dell Tower	A31672
Service	
AccuSEQ Computer Systems Validation (CSV)	A45528

Find out more at
thermofisher.com/accuseq

Sample preparation products

PrepSEQ nucleic acid extraction kits

Sample preparation kits

Applied Biosystems™ PrepSEQ™ chemistry enables universal sample preparation for contaminant and impurity testing used in multiple applications, including residual host cell DNA quantitation, residual plasmid DNA quantitation, *Mycoplasma* detection, and viral detection. It offers performance for quantitative recovery, high reproducibility, and consistent performance across a broad range of complex matrices.

Key features

- **Multi-assay, time-saving, cost-effective**—DNA extraction for *Mycoplasma*, MMV, vesivirus, residual host cell DNA, and residual plasmid DNA
- **Highly efficient, reproducible recovery**—DNA extraction from simple and complex samples
- **Superior performance**—enable consistent performance with complex matrices
- **Universal sample prep for nucleic acid extraction**—residual host cell DNA, residual plasmid DNA, *Mycoplasma*, MMV, and vesivirus
- **Flexible throughput and workflow options**—manual and automated workflows

Ordering information

Description	Cat. No.
PrepSEQ 1-2-3 Nucleic Acid Extraction Kit	4452222
PrepSEQ Residual DNA Sample Preparation Kit	4413686
PrepSEQ *Express* Nucleic Acid Extraction Kit	4466351

Find out more at
thermofisher.com/prepseq

Sample prep automation systems

Automated nucleic acid extraction

Automation systems

Boost lab productivity by helping reduce hands-on sample preparation time, increasing throughput, reducing costs, and improving the quality of sample extractions. Intuitive to operate and preloaded with protocols, our automated sample preparation instruments help meet your throughput needs.

- **Applied Biosystems™ AutoMate *Express*™ Nucleic Acid Extraction System**—ideal for in-process testing of contaminants that easily integrates into existing workflows and lab configurations, this closed system offers out-of-the-box automation with prefilled, Applied Biosystems™ PrepSEQ™ Express cartridges to minimize the risk of cross-contamination.
- **Thermo Scientific™ Pharma KingFisher™ Flex 96 Deep-Well Magnetic Particle Processor**—a premier automated platform designed to meet your high-throughput needs, this system seamlessly incorporates the rapid, reliable, and cost-effective magnetic bead–based extraction of nucleic acids in a 96-well automation system, providing excellent reproducibility and quality.

Whatever your throughput or automation requirements, we can help you find the right solution.

Ordering information

Description	Cat. No.
AutoMate *Express* Nucleic Acid Extraction System	4467754
Pharma KingFisher Flex 96 Deep-Well Magnetic Particle Processor	A31508
Consumables	
KingFisher Flex 96 Deep-Well Tip Combs	A43074
KingFisher Flex 96 Deep-Well Plates	A43075
KingFisher Flex 96 Standard Plates (200 µL)	A43076
Service	
Pharma KingFisher Flex IQ/OQ	A31532
AutoMate Express IQ/OQ	4470470

AutoMate *Express* Nucleic Acid Extraction System
52 extractions per day

Pharma KingFisher Flex 96 Deep-Well Magnetic Particle Processor
192 extractions per day

Find out more at
thermofisher.com/automate

Gibco cell culture media

Manufacturing sites

The Gibco™ media network provides a global supply of cell culture media and components from multiple facilities. US manufacturing sites are in Grand Island, New York; Miami, Florida; and Detroit, Michigan. European manufacturing is located in Paisley, Scotland. Serum operations are in Auckland, New Zealand; and Newcastle, Australia.

Grand Island and Paisley offer full product customization, so customers can experience redundant supply and regional media sourcing for all formats:

- Liquid media, buffers, and concentrates
- Dry powder
- Gibco™ Advanced Granulation Technology (AGT™) products
- Sera distribution

Grand Island, New York

Paisley, Scotland

Miami, Florida

Expanding our manufacturing capabilities, adding capacity, and shortening lead times

A key part of our commitment to supporting our customers is constantly evaluating our manufacturing network, and proactively investing in expanding our capacity to meet global demand.

To achieve this, we are making over $650 million of capital investments to enhance our bioprocessing production capabilities. This will involve expanding capacity at several of our manufacturing facilities and within our distribution network.

This includes increasing production of all dry media formats, including our proprietary Advanced Granulation Technology (AGT) format, at our Grand Island, New York and Paisley, Scotland sites. We are also adding additional dry powder media (DPM) manufacturing capacity at our Miami, Florida site and opening a new customer distribution center in Incheon, South Korea.

Together, these investments will enable us to improve global supply capacity, helping to reduce lead times and meet our commitments to our customers.

Assurance of supply

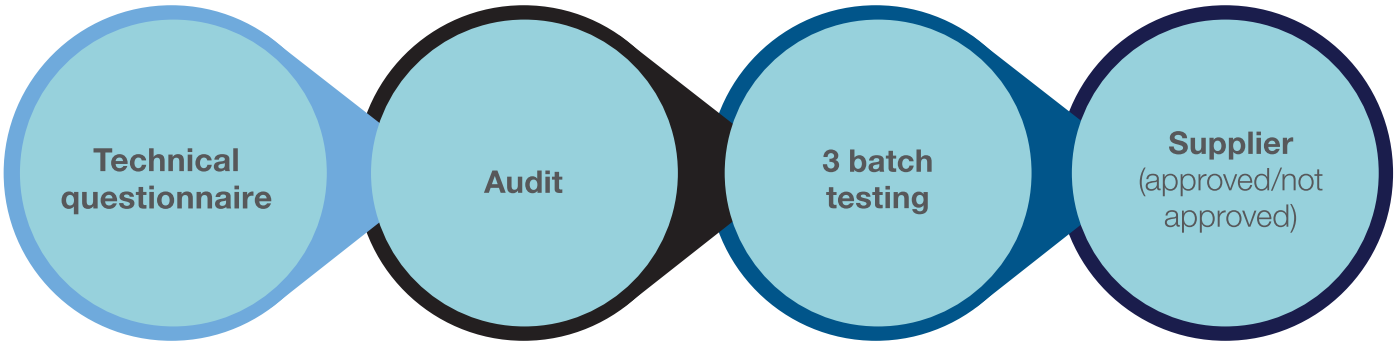
In addition to redundant manufacturing facilities, Thermo Fisher Scientific aims to establish a low-risk supply chain that meets demand with high transparency and low variability. Suppliers and raw materials are chosen based on several criteria, including the ability to complete a Raw Material Supplier Questionnaire (RMSQ), successfully passing specifications testing on multiple lots, and historical performance.

The RMSQ provides Thermo Fisher Scientific with a document for internal review of each supplier, confirms the animal origin status of raw materials, and functions as an agreement with the supplier for change notification. Risk assessments for historical performance of a supplier and for specific tests are performed to manage raw materials on an ongoing basis. Suppliers having transparency and acceptable performance are preferred, and these criteria are used as part of the risk assessment.

Continuity of supply is also a driving mechanism in the raw material and supplier evaluation process. Suppliers and raw materials are evaluated annually to eliminate the occurrence of sole sourcing. In choosing the supply chain, the ability for the supplier to meet our forecasted increases in demand is evaluated as well. Addition of suppliers incorporates redundancy to lessen risk against supply interruptions of finished goods and also supports a reduction in single-sourced raw materials.

Another factor in establishing a low-risk supply chain is to procure compendia grade as much as possible. Both animal origin–free (AOF) facilities are purchasing the same grade of each AOF raw material; the supplier specification is the same for review at both incoming quality control laboratories. Where possible, the specifications are aligned to compendia grades, and in some cases, upgraded to multicompendia grade.

Overview of supplier qualification process

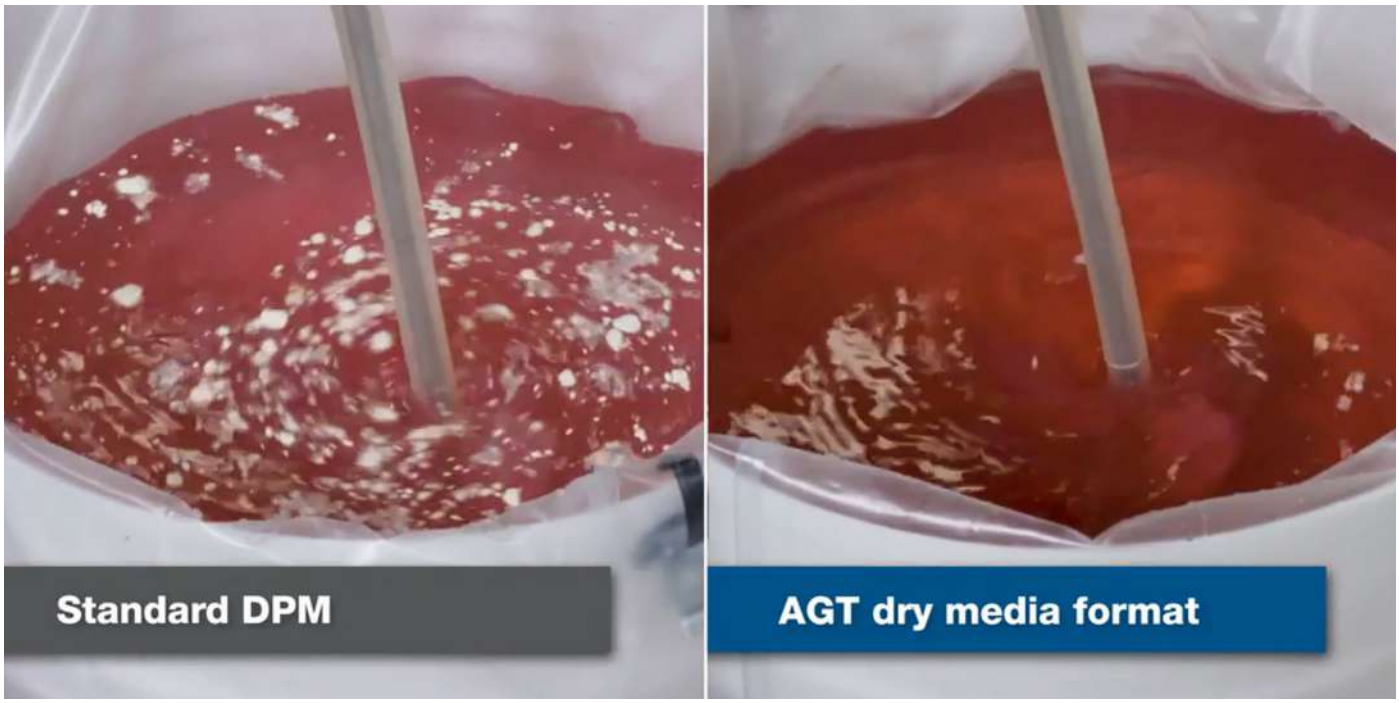


Advanced Granulation Technology (AGT) format

The most advanced media format available for cell culture

The AGT format is a granular dry media that's produced through a technologically advanced process. It allows manufacturing of complete formulations of a variety of serum-free, protein-free, and chemically defined media in a dry format. The AGT granules dissolve rapidly for faster media preparation time versus conventional dry powder media. Furthermore, it is efficient by nature because it is a complete medium with preadjusted pH and osmolality, offering all the benefits of liquid media without the cost, storage, and transportation issues.

Pain point	Technology innovation
Multiple step/component process	Single step to complete media
Titration required for dissolution	Auto pH; no titration required
Lengthy reconstitution	Fast dissolution
Respiratory hazard	Low dust generation
High concentration of essential components	Develop concentrating mechanism



Large-volume media and supplements

Let us handle your bulk liquids so you can focus on what matters most

Benefits of outsourcing bulk liquid production

Obtaining your large-volume media and supplements from a preferred supplier increases biopharmaceutical process efficiency and helps reduce risk by simplifying and standardizing workflows.

Features

- Manufacturing capacity
- Cold warehouse space and distribution
- Support resources
- Process optimization

Benefits

- Manufacturing extension
- Dependability
- Ability to forecast costs
- Access to our resources
- Cost and time savings

Advantages

- Better product consistency
- Fewer contamination risks
- Elimination of need for mixing tanks
- Elimination of time- and labor-intensive steps
  - QC of salts, liquid preparation, filtration, quarantine of materials, finished goods testing, documentation, procedures, and validation
- Improved safety due to less handling

Production network

	Size	Grand Island, USA	Paisley, Scotland
Bottled liquids	10 mL–1 L	✓	✓
Bagged liquids	1–1,000 L	✓	✓
Batched sizes	10–10,000 L	✓	✓

Standard (catalog) process liquid products

Choose from our comprehensive catalog:

- Gibco™ Dynamis™ Medium
- Gibco™ Efficient-Pro™ Medium and Feeds
- Gibco™ CD OptiCHO™ Medium
- Gibco™ CD CHO™ Medium
- Gibco™ ExpiCHO™ Stable Production Medium (SPM)
- Gibco™ CHO CD EfficientFeed™ A+, B+, and C+ liquid nutrient supplements
- Gibco™ FunctionMAX™ TiterEnhancer additive
- Common and custom supplements and reagents

Options for film and packaging

Thermo Scientific™ films are available in a variety of physical characteristics, engineered to help meet the most demanding requirements of your bioproduction processes.

- BPCs with Aegis5-14, CX5-14, and ASI 26/77 films are validated for liquid fills and shipments from Grand Island and Paisley
- Supporting other films through our custom process

Media, feeds, and supplements

Gibco media, supplements, cells, and cell culture reagent products help support the growth and maintenance of a variety of cells and cell lines. We have also developed an array of powdered and liquid formulations to fit your bioprocessing needs and budget.

Custom large-volume media products

Custom products

Help optimize feasibility, scalability, and reproducibility with comprehensive services that can be tailored to suit your workflow.

- Custom BioProcess Container (BPC) engineering—sizes, films, components library, and secondary packaging
- Formulation—catalog or custom specifications
- Prototyping—early development and formulation prior to scaling up
- Manufacturing:
  - Non-GMP: Gibco™ Rapid Prototyping Services help ensure formulation suitability prior to scale-up to GMP
  - cGMP products

Large-volume media and supplements

Options for large-volume media and supplements include:

- Catalog or custom
- Various formulations
- Raw material grade
- Custom labeling

Container and packaging selections

There are a number of containers or secondary packaging options to ship your bulk process liquids. All containers have two aspects: the BPC and the outer container. Select the appropriate volume to fit your workflow and then choose an outer container to meet your needs.

Corrugate cases and returnable plastic crates

- Fiber-corrugated and plastic shipping cases are available as the outer shipping containers for small-volume, end-ported liquid BPCs
- HDPE plastic nestable totes with attached lids are available as the outer shipping containers for small-volume, end-ported BPCs

Drums—top and bottom drain

- Available as the outer shipping containers for intermediate-volume 3D liquid BPCs
- Options available include top- or bottom-drain, straight-sided, nestable, or UN-certified for hazardous products
- Single-shipment use only

Returnable container systems

- Available as the outer shipping containers for intermediate- to large-volume 3D BPCs
- Top- or bottom-drain options
- These containers are used on a returnable basis

Select an outer container

Volume—pack size	1, 5, 10, and 20 L	50 L	100 L and 200 L	500 L and 1,000 L
Corrugate cases	✓			
Returnable plastic nesting totes	✓			
Drums—top and bottom drain		✓	✓	
Returnable container systems		✓*	✓*	✓

* 50, 100, and 200 L returnable containers are only available in the UK.

Custom BPC design

Custom BPCs are specifically tailored to meet your process needs. These containers consist of a combination of film, tubing, fittings, and connectors, which may or may not include a filter. Each choice can be customized for you from the ground up. If you're thinking about customization, we recommend a few ways to get started.

1

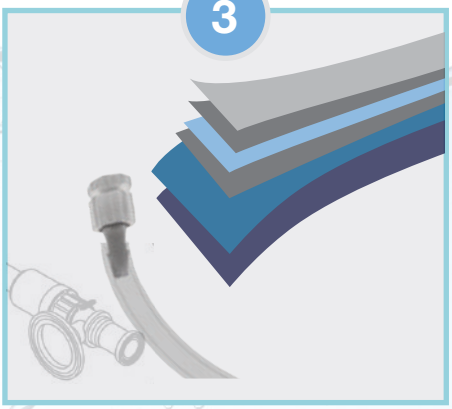
Use a standard BPC as your base

- Customize the lengths of tubing
- Change a connector

2

Design a separate tubing assembly to connect to a standard BPC

3



Customize every part of your BPC; choose your:

- Film (type and size of chamber)
- Tubing (type and lengths)
- Connectors (types)
- Filters (membrane and size)

Film options

Our BPCs are constructed with various film types to meet your single-use bioprocessing needs, whether upstream for cell culture and fermentation, or downstream for sophisticated applications, or simply as holding and transfer systems in your cGMP bioprocessing facilities.

- **Aegis5-14 film** is our highest-quality polyethylene (PE) film, and is produced in a cGMP facility; the outer layer of this single-web, 5-layer film is a polyester elastomer coextruded with an EVOH barrier layer and a low-density polyethylene product contact layer
- **CX5-14 film** has the same construction as Aegis5-14 film and is one of the most widely used PE films in the industry, proven over 10 years
- **ASI 26/77 film** is a dual-web, multilayer PE film that is produced in a cGMP facility and used for general applications

Connector options

We take pride in offering one of the largest catalog component libraries in the industry, which allows us to integrate connectors, tubing, and sensors to design a custom BPC or tubing assembly to fit your specific needs. Our services organization will assist you with drawings, implementation, and technical support.

Gibco Rapid Prototyping Service

Rapid media customization for proprietary and custom formulations

Gibco™ Rapid Prototyping Service provides fast non-cGMP production at pilot scale, combining the flexibility of prototyping with cGMP quality components. Small-scale media production is ideally suited for process development in research and clinical applications.

We can manufacture media in both liquid and dry powder formats to meet your needs. Additionally, our scientists are trained to optimize liquid or powder conversion to AGT format in order to achieve its benefits. Standard packaging options help ensure quick turnaround and alignment with cGMP for easy scale-up.

Key features

- Dedicated manufacturing facility and technical team
- cGMP-quality raw materials and processes
- 2-week turnaround time from order to shipment; 4-week turnaround time for AGT format

Standard packaging

We offer a scalable selection of packaging that enables fast delivery of media and buffers.

Format	Capacity	Packaging	Pack size
Liquid	1–200 L	Bottles	100 mL, 500 mL, 1,000 mL
		Bags	5 L, 10 L, 20 L, 50 L, 100 L, 200 L
Dry powder	1–10 kg	Buckets	1 kg, 2 kg, 5 kg, 10 kg
AGT	1–8 kg	Buckets	2 kg, 4 kg, 6 kg, 8 kg

Specialty and custom packaging is available upon request, subject to assessed lead times.

Processes and materials mirror cGMP production, helping to accelerate technology transfer during customer scale-up.

Gibco Rapid Prototyping Service: test and finalize formulation			cGMP: clinical- to commercial-scale production
Feasibility	Team conducts review of product feasibility and design for manufacturing	Technology transfer	Team conducts full cGMP feasibility review on custom orders
Raw materials	cGMP-qualified raw materials; novel raw materials by request		cGMP-qualified raw materials; novel raw materials by request
Batch records	Full batch record created		Full batch record created
Equipment	Lab-scale FitzMill™ equipment, pin mill, V-blenders, tumble blenders; lab-scale AGT granulator		Process operations management system (POMS) manufacturing execution system (MES) dispensing; cGMP FitzMill and pin mill equipment, tumble and ribbon blenders; V-blenders, bin blenders, commercial-scale AGT granulator
Capacity	Liquid media (1x) and liquid concentrate: 1–200 L DPM: 1–10 kg (FitzMill) DPM: 1–20 kg (pin mill) AGT: 1–30 kg		Liquid: 10–10,000 L DPM: 20–7,500 kg AGT: 50–1,500 kg
QC, analytical	pH, osmolality, sterility, endotoxin		Standard and custom testing available
Packaging	Standard bottles, Thermo Scientific™ BioProcess Containers (BPCs), buckets; custom packaging by request		Standard bottles, BPCs, buckets; custom packaging by request
Delivery	For standard orders: Liquid media, liquid concentrate, DPM: 2 weeks AGT format: 4 weeks		Liquid, DPM, AGT format: 8 weeks New Cat. No.: 10 weeks

Cell line development products

Gibco™ solutions for stable cell line development

Freedom™ ExpiCHO-S™, DG44, and CHO-S™ kits:

- Integrated system for development of single or two subunit protein expression CHO stable cell lines
- cGMP-banked and characterized host cells
- Complete workflow solution with step-by-step protocol
- Commercial production licensing available:
  - Covers clinical use
  - Single one-time payment, no royalties
  - Cell line document package after execution

Key features

- Ability to achieve IgG titers 3–5 g/L (Freedom ExpiCHO-S Kit) in fed-batch cultures
- Complete workflow that can take your gene of interest from transfection to lead clone typically in 5–6 months
- Convenient packaging for simplified ordering and storage

An example of a complete integrated kit (Freedom ExpiCHO-S Kit, Cat. No. A46847) includes:

- ExpiCHO-S™ Cells (cGMP-banked), 1 × 10^7 cells/mL
- ExpiCHO™ Expression Medium
- One Shot™ TOP10 Chemically Competent *E. coli*
- Freedom™ pCHOm 3.1 and Freedom™ pCHOp 3.2 expression vectors
- Complete protocol

Product information

Feature	Freedom CHO-S Kit	Freedom DG44 Kit	Freedom ExpiCHO-S Kit
Cat. No.	A1369601	A1373701	A46847
Parental cell line	cGMP CHO-S cells	cGMP CHO-DG44 cells	cGMP ExpiCHO-S cells
Medium	CD FortiCHO	CD DG44 and CD OptiCHO	ExpiCHO expression medium and ExpiCHO stable production medium
Growth rate	<24 hours	>30 hours	<24 hours
Vector	Freedom pCHO 1.0	pcDNA 3.3-TOPO and pOptiVEC-TOPO	Freedom pCHOm 3.1 and Freedom pCHOp 3.2
Primary application	mAb (IgG)	mAb and recombinant protein	mAb and recombinant protein
Amplification (with Methotrexate)	No	Yes	Yes
Timeline: transfection to stable clone	~24 weeks	~36 weeks	~24–36 weeks
Complete manual	Yes	Yes	Yes
Support	Yes	Yes	Yes
Commercial licensing	Yes	Yes	Yes

Need access to Freedom kit support?

If additional support is needed beyond the manual, you can contact your account manager to receive a Process Science Fellow consultation. Don't be surprised if one of our support scientists checks in with you to be sure your experience with the kit is as successful as possible. For further assistance, please email our support team with your questions and contact information at **gibcoservices@thermofisher.com**.

Discover cell line development freedom and advance your process

Cell line development involves multiple complex processes requiring consistency and reproducible results. That's why Gibco™ Freedom™ cell line development kits are designed to provide you with integrated, stable cell line development solutions to simplify your development workflow and accelerate your journey to commercial manufacturing.

Freedom kits contain the components for beginning-to-end cloning and expression

Benefits include:

- Regulatory-friendly, cGMP-banked cell lines
- Fast and efficient workflow for the creation of stable clones
- Proven for IgG production

Collaboration options and flexible licensing

Choose to work internally using our Freedom kit solutions; work with dedicated technical assistance from the Gibco™ PD-Express™ Services team; or work in collaboration with a contracted vendor of your choice. Freedom cell line development kits also provide you with simplified, royalty-free licensing options.

Simplified commercial licensing options

The Freedom cell development kits provide the licensing flexibility you need throughout development of the process. With purchase of the kit, you are granted the research-use rights that you or your CRO need to develop a stable cell line. When ready to move into the clinic, a simple licensing structure is available without the burden of royalties or multiple milestone payments. For more information regarding licensing, email **outlicensing@thermofisher.com**.

Features	Answers
Freedom from royalties?	Yes
Freedom from annual maintenance fees?	Yes
Freedom to use multiple contract manufacturers?	Yes
Freedom to use the host cell for multiple projects?*	Yes
Freedom to modify the host cell?	Yes
Freedom to modify the purchased vector?	Yes
Freedom to conduct process optimization?	Yes
Freedom to request support when desired?	Yes
Freedom to work with others within field of use?	Yes

*Some sale and distribution restrictions may apply.

Learn more at
thermofisher.com/freedom

Cell culture media

Vaccine production

Vaccine production is complex. This single segment encompasses many different classes of products such as viruses (live-attenuated, inactivated, and chimeric viruses; virus-like particles; and vectors), RNA, DNA, and antigens. Among these, viral vaccines cover a large gamut of diseases including polio, chickenpox, hepatitis A, rabies, Marek's disease, influenza, etc. Finding high-performance media, tools, and support are critical to accelerate vaccine development and streamline manufacturing efforts while ensuring that the vaccine cost or performance targets are met. However, viruses only grow in specific permissible cells. As a result, the vaccine industry cultures a wide variety of cell types with no single formulation able to support them all. We have therefore developed a variety of Gibco formulations to support this industry more fully.

Performance serum-free media

Gibco performance SFM and AOF media minimize the need to prequalify serum lots. Additionally, the use of serum-free media minimizes the high cost, volatile pricing, and unpredictable performance of the best serum products that the industry has to offer. Gibco serum-free and animal origin–free media for virus and vaccine production deliver cell growth and virus production equivalent to serum-supplemented systems, while maximizing consistency and reliability, and simplifying downstream purification. We offer several formulations for cell lines that act as hosts for viral production, such as Vero, MDCK, and BHK-21.

Standard catalog media availability by cell type

Media	AOF/protein-free	Suspension cells	Adherent cells
Diploid SRM System	AOF/protein-free		MRC-5, WI-38, KMB17 2BS
CD BHK-21	AOF/protein-free	BHK-21	
CD 293	AOF/protein-free	HEK293	
AEM	AOF	Per.C6, HEK293	
VP-SFM	AOF		Vero, Hep-2, COS-7L
OptiPRO SFM	AOF		HEP-2, BHK-21, Vero, MDCK, MDBK, PK-15

Standard catalog reagents for use with media

Media	Application	Overview
TrypLE Select	AOF cell dissociation reagent	Gibco™ TrypLE™ Select enzyme is a cell dissociation enzyme of nonporcine origin, may be stored at room temperature, and does not need to be quenched.
AlbuMAX Supplement	Serum reduction/elimination	Gibco™ AlbuMAX™ supplement is produced from a proprietary purification process that preserves greater BSA activity. Available as high-lipid and low-lipid formulations to meet specific customer needs and reduces customer dependence on serum.
BSA Fraction V	Serum reduction/elimination	Gibco™ BSA Fraction V is produced from a proprietary purification process that preserves greater BSA activity. Also available as low IgG formulation to meet specific customer needs.
Transferrin	Serum reduction/elimination	Gibco™ transferrin is the perfect combination to insulin and other supporting reagents to reduce or minimize serum from a vaccine process.
Biocon insulin	Serum reduction/elimination	Biocon insulin is a high-quality insulin for cell culture. It supports comparable cell growth vs. Novo Nordisk insulin and is available in both AO and AOF versions.

Reduced-serum media

Another economical solution to help reduce serum concerns is to replace it with a low serum–requiring medium, supplemented with other growth-promoting factors. Our newest reduced-serum medium enables you to work with human diploid cells without sacrificing cell growth or virus expression. Gibco™ Diploid SRM is a combination of two media to support vaccine manufacture under serum-reduced or serum-free conditions with human diploid cells such as MRC-5, WI-38, KMB17, and 2BS as well as chicken embryo fibroblasts (CEFs). When culturing human diploid cells such as MRC-5, WI-38, and KMB17, cell growth may be accomplished at 1–2% serum. CEFs may be cultured serum-free. Virus production can then be conducted under serum-free conditions without the addition of serum or albumin.

Our classical premium Gibco™ Opti-MEM™ minimum essential medium (MEM), which is supplemented with 2–4% FBS, actually outperforms ordinary media supplemented with 10% FBS in many critical applications. In some applications, researchers reduced serum requirements by at least 50%. Reducing serum also helps minimize the risk of adventitious agents responsible for diseases, such as bovine spongiform encephalopathy (BSE).

Ordering information

Product		Quantity	Cat. No.
Media	**Classification**		
Diploid Growth Serum-Reduced Medium (SRM)	Low protein†	10 L	A3968901
		100 L	A3968902
Diploid Production Serum-Free Medium (SFM)	Low protein†	10 L	A3969001
		100 L	A3969002
OptiPRO SFM (1X), liquid*	Low protein†	100 mL	12309-050
		1 L	12309-019
VP-SFM (1X), liquid*	Ultralow protein‡	1 L	11681-020
VP-SFM,* AGT	Ultralow protein‡	1 L	12559-027
		10 L	12559-019
Opti-MEM I Reduced-Serum Medium (1X), liquid (also available in dried powder format)	Minimal protein§	100 mL	31985-062
		500 mL	31985-070
		10 x 500 mL	31985-088
		(no phenol red) 500 mL	11058-021
		(with GlutaMAX Supplement) 500 L	51985-034
CD BHK-21	No protein	10 L	A1627701
		100 L	A1627702
		10 kg	A1627703
Adenovirus Expression Medium	Low protein†	1 L	12582011

Related products—nutritional supplements

Product	Quantity	Cat. No.
GlutaMAX-I Supplement (stable form of L-glutamine)	100 mL	35050-061
L-Glutamine, 200 mM (100X), liquid	100 mL	25030-081
TrypLE Select Recombinant Enzyme*	100 mL	12563-011
	500 mL	12563-029
Distilled Water	20 x 100 mL (case)	15230-196
	20 x 500 mL	15230-162
	10 x 500 mL (case)	15230-204
	1 L	15230-147

* Drug Master File available.
† Low protein concentration (<6–10 µg/mL).
‡ Ultralow protein concentration (<5 µg/mL).
§ Minimal protein concentration (10–15 µg/mL).
Note: All media listed can be customized.

CD OptiCHO Liquid Medium and CD OptiCHO AGT Medium

Gibco™ CD OptiCHO™ Liquid Medium and Gibco™ CD OptiCHO AGT™ Medium are specifically designed to offer high performance and yield with recombinant CHO cells in a chemically defined fed-batch environment. The protein-free, animal origin–free formulations are designed to provide consistency and reduce the need to screen for adventitious agents.

CD OptiCHO Medium builds on Gibco™ CD CHO Medium and its legacy of consistent cell growth and titers, while offering up to 40% better titer and cell growth over selected products from other suppliers. Thanks to its low osmolality and advanced Gibco™ CHO CD EfficientFeed™ Liquid Nutrient Supplement Kit feeding options, CD OptiCHO Medium is capable of gaining 2- to 5-fold increases in fed-batch productivity over batch culture.

When to use CD OptiCHO Medium

Consider CD OptiCHO Medium when:

- You are using a transfected CHO cell line other than CHO K1, GS CHO, or CHO-S cell lines
- Optimization of feeding strategies will be part of your base medium–selection testing in an effort to maximize productivity
- Your CHO cell line is “finicky”; i.e., hard to grow or adapt

CD OptiCHO AGT Medium

Unit size	Cat. No.
100 L	A11222-01
10 kg	A11222-03
1 L	A11222-04
10 L	A11222-05

1X CD OptiCHO Liquid Medium

Unit size	Cat. No.
1,000 mL	12681-001
6 x 1,000 mL	12681-029

CD CHO Medium and CD CHO AGT Medium

Gibco™ CD CHO Medium and Gibco™ CD CHO AGT™ Medium are protein-free, chemically defined media optimized for the growth of CHO cells and expression of recombinant proteins in suspension culture. CD CHO Medium and CD CHO AGT Medium contain no proteins or peptide components of animal, plant, or synthetic origin, as well as no undefined lysates or hydrolysates. The AGT dry media format is designed to provide increased consistency and productivity across all stages of production from development to commercial manufacturing.

When to use CD CHO Medium

Consider CD CHO Medium when:

- Your GS CHO cells are recommended to be grown in CD CHO Medium
- Your cells have been successfully cultured in CD CHO Medium in the past, and your process is nearing a regulatory filing (DMF available)

1X CD CHO Medium

Unit size	Cat. No.
10 L	10743-001
20 L	10743-002
500 mL	10743-011
1,000 mL	10743-029

CD CHO AGT Medium

Unit size	Cat. No.
100 L	12490-001
1 L	12490-017
10 L	12490-025

Dynamis AGT Medium

Gibco™ Dynamis™ AGT™ dry format medium is specifically designed to offer the high batch and fed-batch culture performance and yield with recombinant CHO cells in a chemically defined environment. The chemically defined, protein-free, animal origin component–free formulation provides the power to achieve high titers, faster process development, and seamless scale-up.

- Achieved 74% higher titer compared to the next-best supplier, with highest growth in titer from day 14 to day 21 at 30% confluency
- Maintained higher cell densities and cell viabilities than other suppliers' media when fed with glucose
- AGT dry media format enables a simple and scalable reconstitution process—just add water

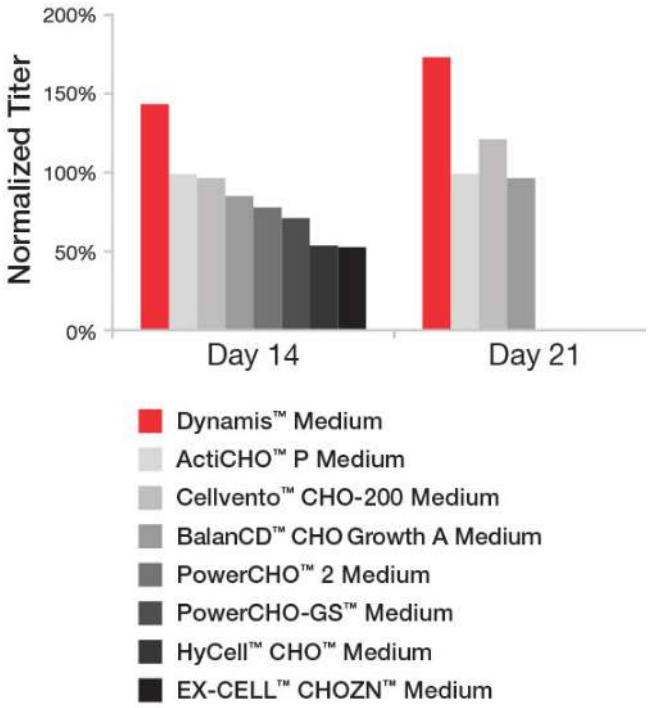
When to use Dynamis AGT Medium

Consider Dynamis AGT Medium when:

- The cell line you are using is a transfected CHO K1, GS CHO, or CHO-S cell line
- Maximum batch culture cell densities and protein titers are needed
- You have time to adapt cells into a new medium in an effort to maximize titers
- Cell health at harvest is a priority for downstream processing

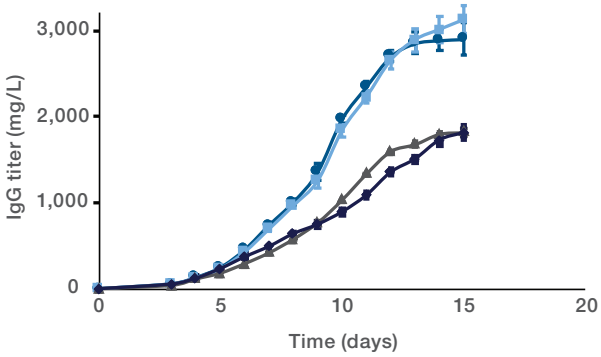
Description	Unit size	Cat. No.
Dynamis Medium	1,000 mL	A2661501
Dynamis Medium	10 L	A2661502
Dynamis Medium	20 L	A2661503
Dynamis AGT Medium	1 L	A2617504
Dynamis AGT Medium	10 L	A2617501
Dynamis AGT Medium	10 kg	A2617503
Dynamis AGT Medium	100 L	A2617502

IgG titer comparison on harvest day



ExpiCHO Stable Production Medium

Gibco™ ExpiCHO™ Stable Production Medium (SPM) is specifically designed to help simplify your cell line development process into production with minimal effort and offers a high degree of confidence. This chemically defined, protein-free, animal origin–free formulation is fully optimized for large-scale fed-batch culture with Gibco™ ExpiCHO-S™ cells. ExpiCHO SPM supports an easy transition from transient to stable production, provides high titers without the need for additional medium optimization, and works well with the existing EfficientFeed C+ supplement.



Comparative performance (volumetric productivity) of ExpiCHO SPM and other commercial media in ExpiCHO-S cell culture. Stable clones were developed using the ExpiCHO stable clone development protocol and were transitioned to test media for an ambr™ 15 cell culture run. The highest output was achieved in ExpiCHO SPM, with the liquid and AGT (dry format, reconstituted) media performing comparably. The data represent 16 replicates for each format of ExpiCHO SPM, and 3 replicates each for HyClone™ ActiPro™ and EX-CELL™ Advanced™ CHO media.

Unit size	Cat. No.
ExpiCHO Stable Production Medium, AGT Format	
10 L	A3711101
100 L	A3711102
450 L	A3711103
ExpiCHO Stable Production Medium, Liquid Format	
1,000 mL	A3711001

High-Intensity Perfusion CHO Medium

Get high titers with a variety of CHO cell lines

Gibco™ High-Intensity Perfusion (HIP) CHO Medium is formulated to provide exceptional performance in perfusion processes. It supports high cell density of more than 100 million cells/mL at 1 vessel volume/day (VVD) continuous perfusion. This high-performing medium is supported by the largest global manufacturing network, so you can focus on getting your product to market.

Key features and benefits

- Easy to use—AGT format
- Flexible—works with numerous CHO clones (e.g., CHO-S, CHO-GS, CHO-K1, CHO-DG44)
- Works in a variety of processes—intensified fed-batch, concentrated fed-batch, N-1, and continuous perfusion
- Improved process efficiency—supports high cell densities at low medium exchange rates
- Flexibly reconstituted to meet process needs—supports multiple reconstituted concentrations

Comparison of perfusion vs. fed-batch medium

	Perfusion	Fed-batch
Bioreactor size	50–2,000 L	2,000–25,000 L
Production run	16–90 days	16–90 days
Cell culture medium	2–5x more	1x
Product quality	Highly controllable	Moderately controllable

Unit size	Cat. No.
High-Intensity Perfusion CHO Medium	
2 L	A4230201
15 L	A4230202
100 L	A4230203
370 L	A4230204

Bacto CD Supreme Fermentation Production Medium (FPM)

The Gibco™ Bacto™ CD Supreme Fermentation Production Medium (FPM) is the first chemically defined medium to support robust plasmid and recombinant protein production. It offers an alternative to hydrolysates and animal-origin components in a one-part, easy-to-use medium that saves time and effort to help accelerate your speed to market.

Quality and consistency

Bacto CD Supreme FPM contains a proprietary blend of amino acids, vitamins, salts, and other essential nutrients for microbial fermentation. This formulation takes advantage of the unmatched expertise and experience of Thermo Fisher Scientific in peptones, fermentation, and innovative chemically defined media. Bacto CD Supreme FPM offers a dependable, defined composition based on the nutritional requirements of *Escherichia coli (E. coli)*.

Reduced risks

Our chemically defined formulation, with no animal-origin components, removes risk associated with BSE/TSE and eases regulatory requirements. No complex hydrolysates are part of the medium, which also decreases the likelihood of bacteriophage contamination.

Achieve the next level in performance efficiency

Bacto CD Supreme FPM saves time as a one-part dry powder medium. By eliminating the need for excessive raw material management, weighing, or blending of multiple components, you'll achieve improved efficiency and reduce handling.

A flexible, ready-to-use solution

- Shelf life of 18 months when stored refrigerated (2–8°C)
- Can be autoclaved or filter-sterilized
- Designed for standard fermentation equipment
- Easily scalable to large-volume fermentation

Unit size	Cat. No.
500 g	A4973701
10 kg	A4973702

Learn more at
thermofisher.com/bactocdsupreme

Cell culture feeds

EfficientFeed+ supplements

Gibco™ EfficientFeed™+ supplements are offered as either dry-format or concentrated liquid single-part supplements for fed-batch addition to the culture of multiple cell lines to assist with process development and maximization of bioreactor utilization. These products are animal origin–free, chemically defined formulations that contain no proteins, hydrolysates, or components of incompletely defined composition. Hydrated product can be stored at room temperature for up to 30 days. EfficientFeed+ supplements also help reduce the chance of product contamination by using fewer bioreactor connections.

EfficientFeed A+, B+, and C+ Supplements

Compared to original Gibco™ CHO CD EfficientFeed™+ A, B and C Nutrient Supplements, EfficientFeed™ A+, B+ and C+ Supplements have the ability to super-concentrate the AGT version from 1X to 3X, or the ready-to-use liquid is already concentrated up to 3X. This allows for reduction of product dilution and for increased titers with additional feeding, when appropriate.

Which EfficientFeed supplement to choose

Consider EfficientFeed A+ Supplement when:

- You have used CHO CD EfficientFeed A AGT Nutrient Supplement in the past and wish to explore simpler reconstitution and super-concentration benefits of new technology for delivery of key components.
- You are currently using CD OptiCHO as your base cell growth medium.

Consider EfficientFeed B+ Supplement when:

- You have used CHO CD EfficientFeed B AGT Nutrient Supplement in the past and wish to explore simpler reconstitution and super-concentration benefits of a newer technology for delivery of key components.
- You are currently using CD CHO as your base cell growth medium.

Consider EfficientFeed C+ Supplement when:

- You have used CHO CD EfficientFeed C AGT Nutrient Supplement in the past and wish to explore simpler reconstitution and super-concentration benefits of new technology for delivery of key components.
- You want higher productivity in GS CHO, CHO-K1, and CHO–S derived cell lines.
- You are currently using Gibco™ CD FortiCHO™ Medium as your base cell growth medium.
- You are using a base medium with greater than 6 g/L glucose or a hydrolysate at day 0.

Unit size	Cat. No.
EfficientFeed A+ AGT Supplement	
100 L	A25023-01
1 L	A25023-04
10 L	A25023-05
EfficientFeed B+ AGT Supplement	
100 L	A25030-01
1 L	A25030-04
10 L	A25030-05
EfficientFeed C+ AGT Supplement	
100 L	A25031-01
1 L	A25031-04
10 L	A25031-05
Feed Kit A+ B+ C+	
3 L	A3315801
EfficientFeed A+ 3X Liquid Supplement	
1,000 mL	A3937401
10 L	A3937402
EfficientFeed B+ 3X Liquid Supplement	
1,000 mL	A3937501
10 L	A3937502
EfficientFeed C+ 2X Liquid Supplement	
1,000 mL	A3937601
10 L	A3937602

GlycanTune+ Total Feeds

Gibco™ GlycanTune™+ Total Feeds are chemically defined, animal origin–free supplements that let you achieve consistent protein quality by dialing in your specific glycan profile. Shift glycan profiles from heavily G0F to primarily G1F and G2F glycans using GlycanTune A+/B+/C+ Total Feeds. Simplify glycan targeting and reduce guesswork with our easy-to-use, pH-neutral options.

Advantages

With GlycanTune+ Total Feeds, you acquire multiple capabilities that enable more control and consistency as you obtain your desired glycan profiles.

- Replace your normal feeds with GlycanTune Total Feeds at the time of glycan shifting and obtain a predictable, linear glycan response
- Improve protein quality by shifting glycan expression to mostly G1 and G2, with as much as 45% reduction in G0, and without significant loss in performance
- Gain ~20% more bioreactor utilization with less product dilution, more space for an additional feeding, and/or more working volume to start your run
- Store hydrated product at room temperature for up to 30 days, use fewer bioreactor connections, and reduce the chances of contamination
- Simple reconstitution with just water results in fewer parts, fewer reconstitution steps, and reduced opportunities for operator error

Unit size	Cat. No.
GlycanTune A+ Total Feed	
1 L	A2971904
10 L	A2971905
100 L	A2971901
GlycanTune B+ Total Feed	
1 L	A2972004
10 L	A2972005
100 L	A2972001
GlycanTune C+ Total Feed	
1 L	A2972104
10 L	A2972105
100 L	A2972101
GlycanTune Feed Kit A+ (1 L of EfficientFeed A+ and 1 L of GlycanTune A+)	
2 L	A3315901
GlycanTune Feed Kit B+ (1 L of EfficientFeed B+ and 1 L of GlycanTune B+)	
2 L	A3316001
GlycanTune Feed Kit C+ (1 L of EfficientFeed C+ and 1 L of GlycanTune C+)	
2 L	A3316101

Efficient-Pro Medium and Efficient-Pro Feeds 1 & 2

Developed utilizing an advanced multi-omics and bioinformatics modeling approach, the Gibco™ Efficient-Pro™ CHO media and feed system has been specifically formulated to help enhance mAb manufacturing processes and improve workflow productivity.

Comprising the state-of-the-art Gibco™ Efficient-Pro™ Medium and two premium feeds—Gibco™ Efficient-Pro™ Feed 1 specialized for CHO-K1 cells and Gibco™ Efficient-Pro™ Feed 2 for CHO-DG44 and CHO-S cells—the system provides a complete workflow solution. Bringing together two high-performance products, working in total harmony, the system can accelerate your mAb manufacturing process into a new era.

Streamlined workflow

Available in both a liquid and AGT format, the Efficient-Pro media and feed system has been developed to maximize workflow efficiency.

Through its unique design, the AGT format enables product reconstitution without the need for time-consuming pH and osmolality adjustments. Additionally, Efficient-Pro feeds have been developed as one-part solutions—eliminating the need for additional reconstitution steps and further simplifying the overall manufacturing workflow.

Efficient-Pro Medium

Unit size	Cat. No.
Efficient-Pro Medium, liquid	
1,000 mL	A5322201
10 L	A5322202
20 L	A5322203
Efficient-Pro AGT Medium	
1 L	A5322301
10 L	A5322302
100 L	A5322303
500 L	A5322304

Learn more at
thermofisher.com/chomedia

Enhanced protein titers and quality

The Efficient-Pro media and feed system can be seamlessly integrated into existing mAb manufacturing workflows and help revolutionize performance.

Achieve high levels of specific and volumetric productivity using this system and improve your product titers. Reductions in glycan profile variability and charge variants can also be realized, increasing protein quality and improving downstream purification steps.

By combining improvements in both product consistency and process productivity, this innovative system has the ability to raise CHO processes to a new level of bioprocessing success.

Increased process consistency

For maximum confidence in the consistency of your process, the Efficient-Pro medium and feeds are animal origin–free and chemically defined, improving batch-to-batch product consistency. You can also rely on Thermo Fisher Scientific's strict raw material sourcing and qualification protocols to further enhance consistency.

Thermo Fisher's unrivaled supply continuity, empowered by a global network of harmonized facilities providing manufacturing redundancy, also provides additional confidence. Help reduce the risk of costly delays by leveraging this supply assurance, so you can focus on your process.

Efficient-Pro Feeds

Unit size	Cat. No.
Efficient-Pro Feed 1, liquid	
1,000 mL	A5208801
Efficient-Pro AGT Feed 1	
1 L	A5209101
10 L	A5209102
100 L	A5209103
Efficient-Pro Feed 2, liquid	
1,000 mL	A5221401
Efficient-Pro AGT Feed 2	
1 L	A5221601
10 L	A5221602
100 L	A5221603

Learn more at
thermofisher.com/chomedia

FunctionMAX TiterEnhancer

The Gibco™ FunctionMAX™ TiterEnhancer uses a new technology to combine key nutrients in a highly concentrated (150 g/L), pH-neutral, chemically defined, animal origin–free functional additive. It is designed to reinforce existing feeds and amplify the productivity of standard high–cell density, fed-batch platforms. FunctionMAX TiterEnhancer is available in both a liquid format and an AGT dry format.

When to use FunctionMAX TiterEnhancer

Consider FunctionMAX TiterEnhancer when you have a drop-off in specific productivity late in a high-density, fed-batch culture; FunctionMAX TiterEnhancer may be able to improve your titers.

- You have an extremely low peak cell density fed-batch culture; you may want to consult with Gibco™ PD-Direct™ Services for advice on cell adaptation and/or fed-batch optimization
- You have no drop-off in specific productivity late in a high-density, fed-batch culture and still need higher titers; you may want to consult with PD-Direct Services for advice on fed-batch optimization

Key features

- Up to double the titers from prior fed-batch cultures
- Highly concentrated ingredients
- Easy-to-use, pH-neutral format
- Specialized delivery of ingredients found in base media—nothing exotic
- Use that is economical

FunctionMAX TiterEnhancer (liquid format)

Unit size	Cat. No.
100 mL	A15010-01
500 mL	A15010-02

FunctionMAX TiterEnhancer, AGT

Unit size	Cat. No.
10 L	A15009-01
100 L	A15009-02

Gibco Starter Paks

Gibco™ Starter Paks provide samples of our most widely used peptones tailored for specific applications, including monoclonal antibodies, recombinant proteins, and vaccines, for use in both mammalian cell culture and microbial fermentation. With the 100 g samples conveniently packaged in a box, you can identify the correct supplements for your specific cell lines faster.*

Gibco Starter Pak No. 2: one of three available sample packs to help you find the right supplements for your cell line.

Gibco Starter Paks

Details	
Gibco Starter Pak No. 1	**Cat. No.**
Ultrafiltered peptones ideal for human health applications Features a combination of yeast and soy-based peptones. Three of the products in this pack have been ultrafiltered (UF) to reduce endotoxin levels. The yeast products add a mixture of peptides, amino acids, carbohydrates (simple and complex), nucleosides, and vitamins to any medium formulation. • Gibco™ Difco™ TC Yeastolate, UF; Gibco™ Bacto™ TC Yeastolate—Customers have successfully used these peptones in CHO-based applications of biotherapeutic monoclonal antibodies and recombinant proteins. • Gibco™ Difco™ Yeast Extract, UF; Gibco™ Bacto™ Yeast Extract, Technical—These peptones support optimal growth of many microbial species for a variety of human and animal health vaccines. • Gibco™ Difco™ Phytone™ Supplement, UF—This enzymatic digest of soy is a nutritious, excellent source of carbohydrates and is used in mammalian cell culture.	215366
Gibco Starter Pak No. 2	**Cat. No.**
Animal origin–free and animal-origin peptones best suited for vaccine production Offers many essential nutrients needed for the production of human and animal vaccines. • Gibco™ Bacto™ Yeast Extract—Customers have used this supplement, which has the highest level of carbohydrates of our yeast products, in a variety of human and animal health vaccines. • Gibco™ Phytone™ Peptone; Gibco™ Difco™ Soytone—Both enzymatic digests of soy, these peptones also are a nutritious source of carbohydrates. Customers have used them in microbial fermentation processes as well as in mammalian cell culture processes such as CHO. • Gibco™ Bacto™ Proteose Peptone No. 2; Gibco™ Bacto™ Proteose Peptone No. 3—These enzymatic digests of porcine protein provide nutrition for fastidious microorganisms. Bacto Proteose Peptone No. 3 can replace serum in many applications and helps increase monoclonal antibody and recombinant protein production in CHO cells. • Gibco™ Bacto™ Casamino Acids—This supplement has low salt and iron content, making it an excellent supplement for media formulations for which nitrogen requirements are minimal.	215367
Gibco Starter Pak No. 3	**Cat. No.**
Animal origin–free peptones for animal and human vaccine production Provides a variety of yeast and soy products, ideal for processes when an animal origin–free medium is preferred. • Gibco™ Bacto™ Yeast Extract; Gibco™ Yeast Extract—These peptones contain a mixture of peptides, amino acids, carbohydrates, and vitamins to support optimal growth in microbial species, and are ideal for the production of vaccines. • Gibco™ Bacto™ TC Yeastolate—Customers have successfully used this peptone in CHO-based applications of biotherapeutic monoclonal antibodies and recombinant proteins. • Gibco™ Phytone™ Peptone; Gibco™ Difco™ Soytone—These soy-based supplements provide a nutritious source of carbohydrates for successful use in microbial fermentation processes. • Gibco™ Bacto™ Malt Extract—A water-soluble portion of malted barley, this peptone also provides carbohydrates for a variety of microbial fermentation processes.	215368

* Gibco Starter Paks are non-GMP and for evaluation use only.

Gibco PD-Express Services

Let us be your advantage

We understand the challenges of early-phase development and recognize that each project has its own needs and targeted outcomes.

When you choose Gibco™ PD-Express™ Services, we'll assign a dedicated team of experienced professionals to assess your project's specific requirements. We will then develop a customized solution of media and cell line development services to address your goals, maximize your outputs, and minimize variability.

Combine our unmatched portfolio of high-impact Gibco™ products, extensive process knowledge, and proven ability to deliver projects on time to more easily achieve your objectives and get to market quickly.

Catalog product evaluation and consultation

Accelerated timelines, higher titer requirements, and an increasing number of catalog options demand a well-planned approach to cell culture development. We can help by analyzing your unique production requirements and providing you with cell culture options. The portfolio of catalog options that we offer is optimized to help you save time, effort, and cost.

Gibco media and feed panel evaluations

- Start the path toward improved titers by gaining rapid access to our library of diverse AOF, chemically defined media and feed formulations
- Gibco panels have been specifically developed for CHO and HEK cell lines with distinct nutrient levels, helping you identify optimal formulations for your target clones
- Consultation and technical support are provided from our experienced team of scientists, along with a protocol, data analysis, and a summary report to help you make the most of your panel evaluations
- Accelerate your gene therapy development process with the Gibco™ Viral Vector HEK Media Panel, which covers a broad variety of suspension HEK cell types without being tied to specific transfection reagents or techniques
- Determine the nutrients driving productivity in your cell culture process with Gibco™ CHO Media and Feed Panels
- Upon completion of your panel evaluation, you can scale up into Gibco Rapid Prototyping or cGMP manufacturing, or easily customize a formulation to further optimize your process

Bioproduction analytics

Gibco PD-Express Services offer a full suite of bioproduction analytical capabilities globally. These services provide powerful and insightful data to help you to save time and money throughout your process—starting with media and protein analysis in the development phase and continuing through scale-up with our manufacturing support analytics. We also offer investigative analytical support to troubleshoot any challenges you encounter, helping you to determine the cause and resolve them.

Shorten your time to market today by allowing our experienced team of analytical scientists to help you understand how to get the most from your cell culture.

We offer the following analytical services:

- Media analytics, such as a spent media analysis
- Protein analytics—including glycan analysis and charge variant analysis
- Manufacturing support analytics (includes stability studies and raw material characterization)
- Investigative and troubleshooting analytical support

Gibco Rapid Prototyping Service

Gibco Rapid Prototyping Service offers small-batch, custom media manufacturing solutions for research and process development. Utilizing our dedicated non-cGMP labs and cGMP-quality raw materials and processes, the Gibco Rapid Prototyping Service team provides media manufacturing expertise in liquids, DPM, and AGT media format.

Dedicated non-cGMP facilities provide the opportunity to:

- Test manufacturability and scalability of a formulation prior to GMP scale-up
- Modify existing formulations by adding novel components or reducing and removing components not driving cell culture performance
- Source and test unique raw materials
- Convert media to a new format such as AGT media
- Identify a secondary source for assurance of supply

Viral Vector HEK Media Panel

Your cell line is unique. Your medium should be, too

The Gibco™ Viral Vector HEK Media Panel provides a diverse media library to accelerate gene therapy development and production. Covering a broad variety of HEK293 cell lines and not tied to specific transfection reagents or techniques, the ready-to-use formulations will help you identify an optimal medium for your target cell line.

Benefits

- Simplicity—ready-to-use formulations
- Diversity—distinct formulations to match each cell lineage's nutritional requirements
- Productivity—improved titers over industry standard

A dedicated scientist will work with you, and if needed, can help customize media formulations for your cells' nutritional needs and your process.

Find out more at **thermofisher.com/hekpanel**

Gibco PD-Express Services

Media and feed development

For fully customized media solutions, we can collaborate with you to develop formulations to achieve your unique process goals using our broad media and process development capabilities across cell lines and biological platforms. You can either use the traditional media development workflow or take advantage of our new multi-omics workflow to gain a deeper understanding of nutritional requirements of your clone to fully characterize your process and improve performance. You also have the option of having a media development project completed at your facility or any of our sites across the globe. We ensure that resulting formulations are scalable, and able to be manufactured in multiple formats.

Cell line development

Our custom cell line development projects can go from sequence optimization to archiving in a master cell bank. We offer the testing and documentation needed to support your regulatory filings—all for a one-time licensing fee.

Multi-omics media development

The Gibco™ multi-omics media development workflow can help you create media and/or feeds that unlock the true potential of your cell line. Our multi-omics workflow combines spent media and cellular component analyses of up to 8,000 molecules, including 7,000 proteins and 1,000 metabolites. The result is deeper insights into nutritional requirements of cell lines, providing you with greater opportunities for potentially increased cell line productivity/titer, enhanced protein quality, and improved processes and cost efficiencies.

Work with your local account manager or field application scientist to request a consultation, or go to **thermofisher.com/pdexpress**

Cell therapy systems

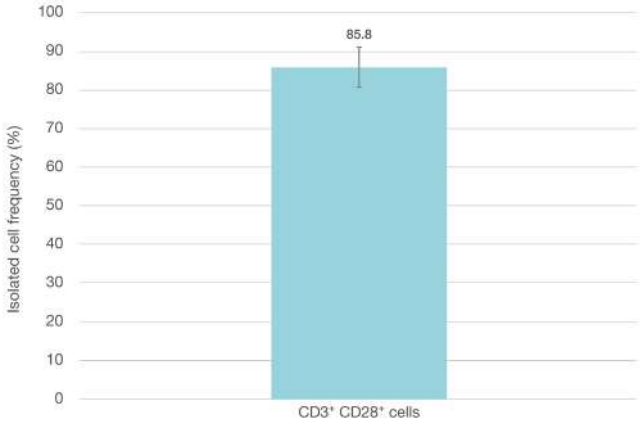
CTS DynaCellect Magnetic Separation System

The Gibco™ CTS™ DynaCellect™ Magnetic Separation System offers exceptional cell recovery, purity, and viability; high throughput; and process flexibility. The operator-independent system will help you isolate the right cells, minimize failures in manufacturing, and reduce contamination while providing increased robustness and precision.

Designed to be used with magnetic beads, the instrument utilizes an integrated magnet-rocker and fluidics panel for targeted cell separation and bead removal in a closed, automated system. The programmable interface, sterile single-use consumables, and software upgrade for 21 CFR Part 11 compliance allows the system to seamlessly scale with your cell therapy workflow.

Key features

- **Isolation efficiency, purity, and viability:** enables >80% isolation efficiency of target cells with >95% purity with no effect on cell viability
- **Process flexibility:** user-programmable software enables optimization and creation of a range of protocols
- **Processing time:** 70–100 min with Gibco™ CTS™ Dynabeads™ CD3/CD28
- **Reproducibility:** CV 3%
- **Modular:** use independently or as part of your workflow



Strong isolation efficiency. Using CTS Dynabeads CD3/CD28 and the CTS DynaCellect Magnetic Separation System, isolation efficiency was greater than 85% (n=4).

Ordering information

Product	Quantity	Cat. No.
CTS™ DynaCellect Magnetic Separation System, SmartStart™ Orientation at Installation, 2-Year Warranty with Planned Maintenance (PM) in Second Year	1	A55867
CTS™ DynaCellect Magnetic Separation System, SmartStart™ Orientation and IQ OQ at Installation, 2-Year AB Qualification with OQ post-PM and/or repair	1	A55868
CTS DynaCellect Cell Isolation Kit	5 pack	A52300
CTS DynaCellect Bead Removal Kit	5 pack	A52301

CTS Dynabeads products

Gibco™ CTS™ Dynabeads™ CD3/CD28 magnetic beads

CTS Dynabeads CD3/CD28 beads are intended for *ex vivo* isolation, activation, and expansion of human T cells in translational research. The technology has been used in a number of clinical studies. By combining anti-CD3 and anti-CD28 antibodies on Dynabeads magnetic beads, the beads provide both the primary and co-stimulatory signals that are required for activation and expansion of T cells. CTS Dynabeads CD3/CD28 are manufactured aseptically, and the manufacturing facility is in compliance with 21 CFR 820 Quality System Regulation and certified to ISO 13485 and ISO 9001. A Drug Master File is held with the FDA for cross-referencing in IND applications, and a CoA is available on request. A Letter of Authorization can be obtained to reference the Drug Master File.

Product details

The product contains CTS Dynabeads CD3/CD28 supplied as a sterile, nonpyrogenic suspension containing 4 x 10^8 beads/mL in phosphate-buffered saline (PBS), pH 7.4, with 0.1% recombinant human serum albumin (rHSA). Store at: 2–8°C.

Ordering information

Product	Quantity	Cat. No.
CTS Dynabeads CD3/CD28	10 mL	40203D
CTS Dynabeads Treg Xpander	10 mL	46000D

For research use or noncommercial manufacturing of cell-based products for clinical research. CAUTION: Not intended for direct administration into humans or animals.

Gibco™ CTS™ Dynabeads™ Treg Xpander

CTS Dynabeads Treg Xpander (Treg Xpander) is intended for *ex vivo* activation and expansion of human regulatory T cells (Tregs) for cell-based therapy. Treg Xpander is a magnetic bead conjugated with anti-CD3 and anti-CD28 antibodies at a specific ratio. Treg Xpander is manufactured at an FDA-registered site (21 CFR Part 820 – medical devices) that also operates an ISO 13485 certified quality management system. Tregs activated with Treg Xpander can be expanded 100–1000 fold over a 9–14 day culture period with the option of a re-stimulation step during the process. A Drug Master File (DMF) is held with the FDA for cross referencing in IND applications, and a CoA is available on request. A Letter of Authorization can be obtained to reference the Drug Master File.

Product details

CTS Dynabeads Treg Xpander contains 2 × 10^8 beads/mL in phosphate-buffered saline (PBS), pH 7.4, with 0.1% recombinant human serum albumin (recombinant HSA), sufficient for activating and expanding 500 × 10^6 T regulatory cells (Tregs). Store at 2˚C to 8˚C.

Dynabeads Human T-Expander CD3/CD28

Gibco™ Dynabeads™ Human T-Expander CD3/CD28

Dynabeads Human T-Expander CD3/CD28 is intended for isolation, activation, and expansion of human T cells. Dynabeads Human T-Expander CD3/CD28 is the research-grade version of CTS Dynabeads CD3/CD28. Containing the same amount and ratio of antibodies from the same clones as CTS Dynabeads CD3/CD28, Dynabeads Human T-Expander CD3/CD28 ise intended for small-scale preclinical research. Dynabeads Human T-Expander CD3/CD28 offers a simple method for activation and expansion of T cells that does not require antigen-presenting cells or antigen. By combining anti-CD3 and anti-CD28 antibodies on Dynabeads beads, the beads provide both the primary and co-stimulatory signals that are required for activation and expansion of T cells.

Product details

This product contains Dynabeads CD3/CD28 supplied as a suspension containing 1 x 10^8 beads/mL in phosphate-buffered saline (PBS), pH 7.4, with 0.1% human serum albumin (HSA). Store at: 2–8°C.

For Research Use Only. Not for use in diagnostic procedures.

Ordering information

Product	Quantity	Cat. No.
Dynabeads Human T-Expander CD3/CD28	10 mL	11141D

CTS DynaMag Magnet

Gibco™ CTS™ DynaMag™ Magnet

The CTS DynaMag Magnet is suitable for use with commercially available sterile blood/culture bags, tubing, and connectors.

Benefits

- Ideal for magnetic isolation in closed, sterile blood bags
- Scalable volumes: 50 to 330 mL in static separations and >10 L in continuous flow separations following T cell expansion protocols
- Residual beads that escape initial magnetic capture are retained on a secondary magnet

Applications

- Positive isolation of CD3+ T cells for subsequent stimulation/expansion with CTS Dynabeads CD3/CD28 and removal of CTS Dynabeads CD3/CD28 following T cell expansion
- The CTS DynaMag Magnet is intended for use with the CTS Dynabeads product portfolio in clinical research and manufacturing such as CTS Dynabeads CD3/CD28 (Cat. No. 40203D)

Storage conditions

Protect the device from vibration and keep out of direct sunlight.

Ordering information

Product	Quantity	Cat. No.
CTS DynaMag Magnet*	1 unit	12102

* For Research Use or Manufacturing of Cell, Gene, or Tissue-Based Products.
CAUTION: Not intended for direct administration into humans or animals.

CTS OpTmizer T Cell Expansion SFM

Gibco™ CTS™ OpTmizer™ T Cell Expansion SFM

CTS OpTmizer T Cell Expansion SFM supports the growth and expansion of human T lymphocytes. It is a complete serum-free, xeno-free medium consisting of Gibco™ CTS™ OpTmizer™ T Cell Expansion Basal Medium and Gibco™ CTS™ OpTmizer™ T Cell Expansion Auxiliary Concentrated Medium, which are mixed together prior to use. CTS OpTmizer T Cell Expansion SFM is available with and without phenol red and is available in both bottle and bag format.

Features

- Supports high-density T cell culture (>4 x 10^6 CD3+ T cells/mL)
- Supports T cell activation using Dynabeads magnetic beads, soluble antibodies, and stimulatory antibody-presenting cell protocols
- Similar phenotype, function (e.g., cytokine secretion profile), and viability to T cells cultured with conventional human AB serum-supplemented medium
- Supports a T cell phenotype similar to human serum-supplemented medium
- Demonstrates enhanced efficacy and persistence of CAR T-19 cells when grown in medium supplemented with CTS Immune Cell Serum Replacement (ICSR)

Product details

CTS OpTmizer T Cell Expansion SFM consists of CTS OpTmizer T Cell Expansion Basal Medium (1 L media bag) and CTS OpTmizer T Cell Expansion Supplement (1 x 26 mL). Store in the dark at 2–8°C.

CTS OpTmizer T Cell Expansion SFM, no phenol red, consists of CTS OpTmizer T Cell Expansion Basal Medium (1,000 mL bottle) and CTS OpTmizer T Cell Expansion Supplement (1 x 26 mL). Store in the dark at 2–8°C.

For human *ex vivo* tissue and cell culture processing applications.

CAUTION: When used as a medical device, Federal Law restricts this device to sale by or on the order of a physician.

Ordering information

Product	Quantity	Cat. No.
CTS OpTmizer T Cell Expansion SFM—bottle kit	1,000 mL	A1048501
CTS OpTmizer T Cell Expansion SFM—bag kit	1 L	A1048503
CTS OpTmizer T Cell Expansion SFM, no phenol red—bottle kit	1,000 mL	A3705001
CTS OpTmizer T Cell Expansion SFM, no phenol red—bag kit	1 L	A3705003

CTS OpTmizer Pro Serum Free Medium, No Phenol Red

The Gibco™ CTS™ OpTmizer™ Pro Serum Free Medium, No Phenol Red is a novel medium developed for the growth and expansion of human T lymphocytes. It helps improve central memory phenotype and cell growth by shifting the cellular metabolism. CTS OpTmizer Pro Serum Free Medium, No Phenol Red is a complete serum-free, xeno-free medium consisting of Gibco™ CTS™ OpTmizer™ Pro Basal Medium (No Phenol Red) with the addition of Gibco™ CTS™ OpTmizer™ T Cell Expansion Supplement. Each container is a sterile filtered single-use container.

Features

- Serum-free and xeno-free
- Supports high-density cell growth in static cultures
- New film (Aegis5-14) and bag design allow compatibility with closed systems
- Supports T cell activation using Dynabeads magnetic beads, soluble antibodies, and stimulatory antibody-presenting cell protocols

Product details

The CTS OpTmizer Pro Serum Free Medium, No Phenol Red kit contains CTS OpTmizer Pro Basal Medium (1,000 mL bottle) and CTS OpTmizer T Cell Expansion Supplement (1 x 26 mL). Store in the dark at 2–8°C.

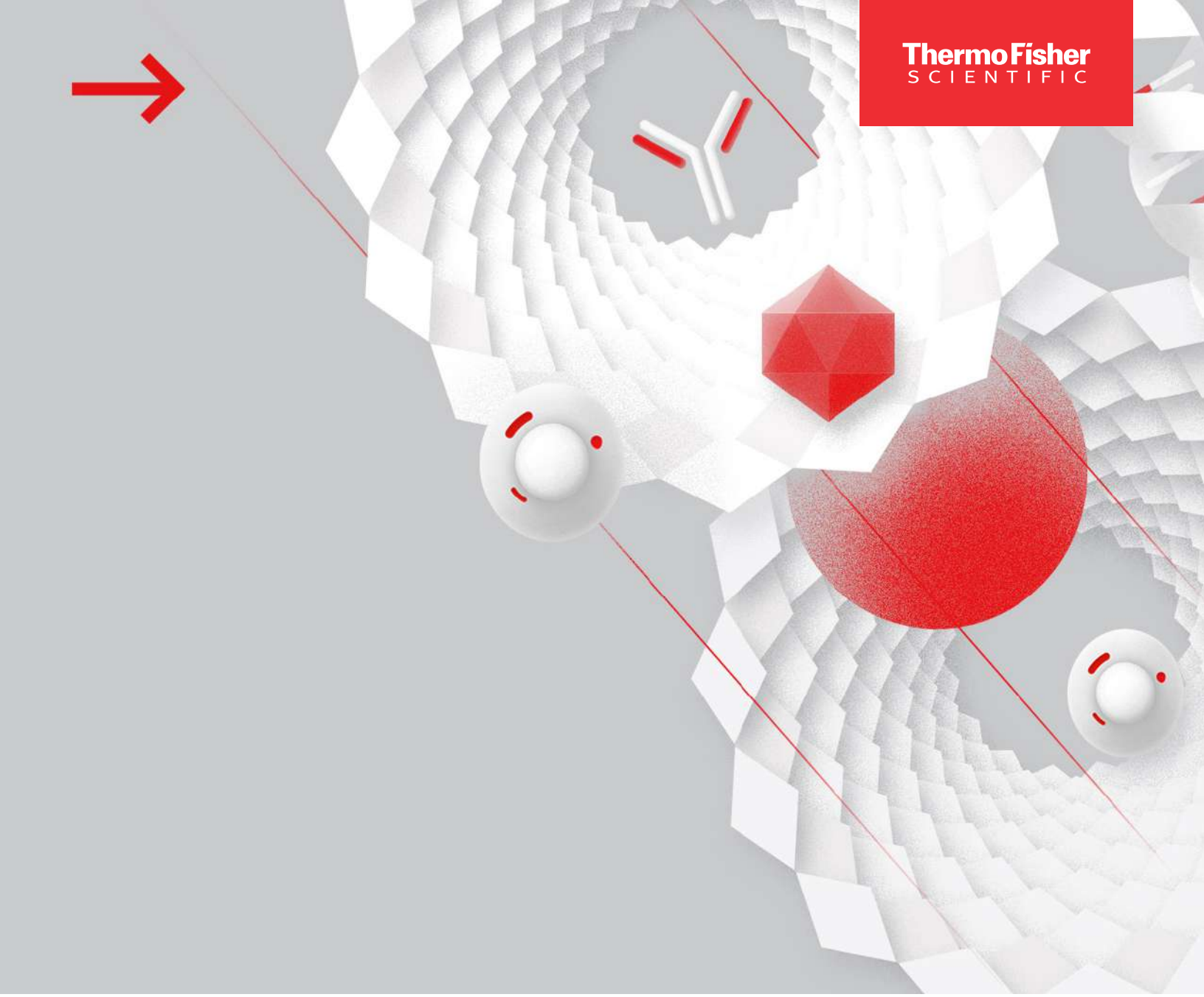
For Research Use or Manufacturing of Cell, Gene, or Tissue- Based Products. CAUTION: Not Intended for direct administration into humans or animals.

The CTS OpTmizer Pro Serum Free Medium, No Phenol Red kit contains CTS OpTmizer Pro Basal Medium (1 L bag) and CTS OpTmizer T Cell Expansion Supplement (1 x 26 mL). Store in the dark at 2–8°C.

For human *ex vivo* tissue and cell culture processing applications. CAUTION: When used as a medical device, Federal Law restricts this device to sale by or on the order of a physician.

Ordering information

Description	Quantity	Cat. No.
CTS OpTmizer Pro SFM, No Phenol Red, bottle kit	1 L (bottle)	A49661-01
CTS OpTmizer Pro SFM, No Phenol Red, bag kit	1 L (media bag)	A49661-01



Learn more at **thermofisher.com/bioprocessing**