

Fast-track your path to commercialization

Streamline process development with Thermo Scientific single-use technologies

thermo scientific

Bioprocessing solutions to help meet the challenges of process development

Ensuring that process development labs can consistently scale to production levels without loss of yield or quality can be a challenge. Variability in results can cause delays and setbacks. You need reliability and support to develop a scalable solution.

The Thermo Scientific[™] Single-Use Bioreactor (S.U.B.) family offers exceptional productivity and automation, with sizes ranging from 50 L to 5,000 L.

Together with our single-use harvesting and mixing equipment and knowledgeable application support, easy scale-up can be achieved from process development to production. At each step, experience the confidence that comes with using high-quality, reliable film in our single-use bioprocessing containers, designed for outstanding strength and leak resistance to minimize product loss.

Single-use bioreactor

The Thermo Scientific[™] DynaDrive[™] Single-Use Bioreactor (S.U.B.) supports robust production across scales and has the flexibility to accommodate a variety of cell lines and processing modalities.

High-quality bioprocess consumables

- Made with Thermo Scientific[™] Aegis[™] 5-14 film, offering superior reliability and biocompatibility, backed by decades of experience
- Drilled-hole sparge specifically designed to optimize k, a performance
- Preinstalled impeller reduces setup time
- Innovative drive train for impressive power input per volume and improved mixing times while delivering minimal shear

Reproducibility

- Experience consistent cell culture performance from small to large volumes with the same film technology across the workflow from bioreactor bags to media bags
- Supports strong and consistent production across scales

Productivity

- Available in 50 L, 500 L, 3,000 L, and 5,000 L sizes
- Offers exceptional performance to accommodate larger volumes

Flexibility

- Diverse production output with easy content turnover
- A large range of parameters ideal for a wide range of cell lines
- Support for denser cell cultures

Design and automation

- Lift-supported bag installation for easy user experience and reduced risk of damage
- Simplify tech transfer with one standard control and automation platform that scales from clinical through production phases



≥10:1 in-vessel turndown ratio

Scalability

- Same bioreactor design means seamless scale-up with the same process
- Production can be scaled up or down between the Ambr[™] 250 bioreactor and 50 L DynaDrive S.U.B. (Figure 1)

Α



Figure 1. Production scalability using a fed-batch process with CHO-K1 cells and Gibco[™] Efficient-Pro[™] Medium and Feed 1. Maximum working volumes were 230 mL for the Ambr 250 bioreactor, 2,000 mL for the 3 L bioreactor, and 50 L for the DynaDrive S.U.B. (A) Similar trends in cell growth and viability were maintained at all production volumes. (B) IgG titers ranging between 4.5 g/L and 5.2 g/L were achieved at all scales.

Day

Single-use centrifuge

The Thermo Scientific[™] DynaSpin[™] Single-Use Centrifuge provides a robust single-use solution for cell separation and removal during harvest applications. By reducing the number of depth filters required during harvest, the DynaSpin Single-Use Centrifuge is designed to maximize process simplicity.

High-quality bioprocess consumables

- Flexible bioprocess connections feature the Thermo Scientific[™] BioTitan[™] Retention Device, providing secure connections for high flow and highpressure centrifugation
- Robust packaging and slide-in-place Magnetic Coupling Rotor



Process efficiency with fewer filters

- Reduces depth-filter surface area requirements across all scales
- Replaces primary filtration and reduces burden on secondary filtration
- Helps mitigate bottlenecks in large-scale bioreactors
- High efficiency helps make harvesting less labor-intensive



Risk mitigation and quality control

- Simple installation and operation
- Closed system reduces process risk
- Plug-and-play automation functionalities allow for increased process
 monitoring and quality control
- Single-use consumable rotor for convenience and safety



Process sustainability

- Smaller operational footprint requirement than traditional approaches
- Reducing filter usage helps reduce the amount of plastic waste generated by each batch
- Fewer filters mean that less water for injection (WFI), buffer, and NaOH are required for each batch



25%

harvest cost savings and 70% less filter waste relative to traditional depth filtration workflows*

* Internal data on file.

74% less liquid waste relative to traditional depth filtration workflows*

* Internal data on file.

Single-use mixers

Our two primary mixing technology platforms are the Thermo Scientific[™] HyPerforma[™] Single-Use Mixer (S.U.M.) and Thermo Scientific[™] imPULSE[™] S.U.M. Both mixers are designed for scalability across multiple applications, including powder media preparation, buffer hydration, and advanced downstream harvest and intermediate pooling steps.

HyPerforma S.U.M.

- Designed using a proven top-down stirred-tank approach
- Ergonomic and efficient user experience for upstream and downstream mixing applications
- Available in 50, 100, 200, 500, 1,000, and 2,000 L sizes
- Linear scalability to enable consistent results across sizes
- Touchscreen Console for integrated sensor monitoring, automated mixing recipes, and pump control for pH and saline titration and for automatic fill and harvest of the S.U.M.





imPULSE S.U.M.

- Innovative bottom-mounted disc-mixing technology, configurable high-end controls, and monitors to fit specific process requirements
- Available in 30, 100, 250, 500, 1,000, 2,000, 3,000, and 5,000 L sizes
- Enables uniform mixing, scalable from 30 L to 5,000 L
- Touchscreen Console provides integrated sensor monitoring and pump control for pH and saline titration and for automatic fill and harvest of the S.U.M.

Bioprocessing containers

Advanced single-use containers are the basis of single-use bioprocessing equipment. High-quality processing, storage, transport, and sampling options include Thermo Scientific[™] BioProcess Containers (BPCs) and Thermo Scientific[™] Nalgene[™] containers.

Reliability

- Experience consistent cell culture performance from small to large volumes within the same film technology across the workflow from bioreactor bags to media bags with Aegis5-14 bioprocessing film
- Products and services designed to enhance performance and provide consistency and reliability for your application workflows and processes
- Minimize risk of leaks and simplify setup with the BioTitan Retention Device, an innovative replacement for traditional cable ties that enhances the reliability and integrity of assemblies with a 360° seal

Quality film

• Biocompatibility and low cytotoxicity support healthy cell growth, while low leachable and extractable profiles support end-product purity and quality

A comprehensive product portfolio

- A portfolio of BPCs, tubing assemblies, Nalgene bottles, and carboys
- A wide range of products in stock and ready to ship
- Available in low-particulate format (compliant with USP <788>) and ultralow-particulate format (certified to one-third of the allowable USP <788> particulate limits)



Experience the advantage of using Thermo Scientific single-use technologies

As leaders in the single-use bioreactor space with over 25 years of experience and over 1,500 bioreactor placements worldwide, Thermo Fisher Scientific offers in-region technical support and application experience across the workflow. Our leading global manufacturing network enables supply assurance and quick lead times, and we offer equipment loaner programs and financing options. Our end-to-end portfolio of single-use equipment and consumables is designed to offer confidence in every step of your process development.

Ready to get started? Learn more at thermofisher.com/PDLab

thermo scientific

For Research Use or Further Manufacturing. Not for diagnostic use or direct administration into humans or animals. © 2024 Thermo Fisher Scientific Inc. All rights reserved. All trademarks are the property of Thermo Fisher Scientific and its subsidiaries unless otherwise specified. Ambr is a trademark of Sartorius AG. COL28691 0924