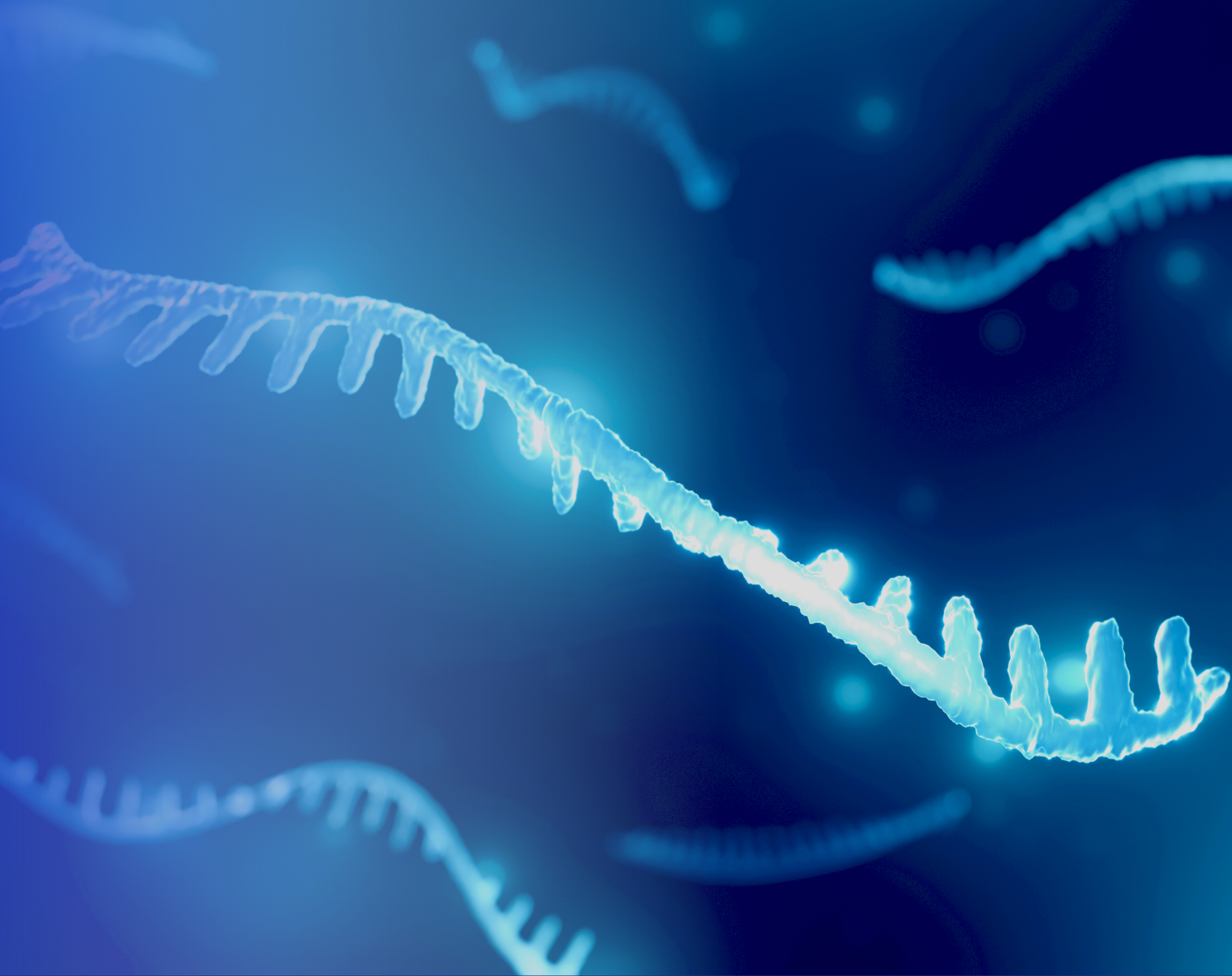




Duoning Biotech

Precision-Engineered Bioprocessing for High-Quality mRNA Manufacturing

ONE-STOP
BIOPROCESSING PLATFORM

www.duoningbio.com





mRNA technology has demonstrated tremendous potential in both vaccine and therapeutic applications due to its flexible design, rapid development timelines, and high *in vivo* expression efficiency. Beyond its widespread use in vaccines for infectious diseases and oncology, mRNA is rapidly expanding into emerging areas such as protein replacement therapy, immunomodulation, regenerative medicine, and *in vivo* gene editing. As these applications continue to diversify, mRNA manufacturing faces increasing demands on template quality, process controllability, delivery system stability, and overall scalability and consistency, driving the evolution of mRNA production toward more integrated, scalable, and single-use-based manufacturing platforms.

Leveraging its mature bioprocess technology platform, Duoning provides end-to-end process support for mRNA manufacturing, from template preparation to final drug product. In the upstream template preparation stage, we offer a

comprehensive portfolio of fermenters for the production of high-quality plasmid DNA templates. These are complemented by tangential flow filtration and chromatography purification solutions that enable efficient clarification, concentration, and impurity removal, meeting the stringent requirements for plasmid purity and structural integrity required for *in vitro* transcription (IVT).

For the IVT process, Duoning provides wave-type single-use bioreactor solutions designed to support the mild and well-controlled reaction conditions required for mRNA synthesis. These systems deliver precise control of mixing and temperature, helping to maintain mRNA integrity and capping efficiency while enabling smooth scale-up from laboratory to pilot and larger production scales. The integrated single-use design also minimizes the risk of cross-contamination and reduces the burden of cleaning validation.



DNA Template Preparation

Glass fermenter + stainless-steel fermenter + Chromatography resins + TFF



In-vitro Transcription IVT

Wave-type reactor



mRNA Purification

Hollow fiber/flat-sheet cassette-based TFF + Chromatography resins + SU Chromatography/TFF Assemblies (optional)



mRNA-LNP Encapsulation

Microfluidic system



UF/DF

Hollow Fiber Filter + TFF system + SU TFF Assemblies



Sterile Filtration/Filling

Sterile Filter + Single-use Filling Assemblies + Filling Peristaltic Pump

Duoning's Bioprocessing Solutions for mRNA Production

In the formulation of delivery systems, Duoning offers microfluidic devices for the encapsulation of mRNA into lipid nanoparticles (LNPs). By precisely controlling flow rate ratios and mixing conditions, these systems enable the production of mRNA-LNP formulations with narrow particle size distributions and high reproducibility, supporting the stringent performance and stability requirements of both vaccine and therapeutic applications.

In downstream purification, Duoning addresses the need for high purity and high recovery of both post-transcriptional mRNA and formulated mRNA-LNP products through a

comprehensive portfolio of tangential flow filtration (TFF) and chromatography technologies. TFF systems can be flexibly configured with hollow fiber or flat-sheet cassettes for the removal of small-molecule impurities, buffer exchange, and concentration. In parallel, chromatography resins with different working modes, combined with single-use chromatography assemblies, further enhance purification efficiency and process consistency. By integrating fermentation, IVT, microfluidic encapsulation, and downstream purification into a cohesive bioprocess workflow, Duoning continues to support the scalable and industrial development of mRNA technologies for vaccines and a broad range of therapeutic applications.

DuoMix® Mini Benchtop Magnetic Mixing System

The mixing system is mainly used for the mixing and storage steps in the preparation of culture media, buffers, intermediates, and semi-finished products. Duoning has independently developed the 2 L–20 L DuoMix® benchtop mixing system, along with compatible 3D mixing bags and other products, providing a one-stop overall mixing solution suitable for process development and small-scale GMP production applications.

The DuoMix® Mini benchtop magnetic mixing system consists of three parts: a control system, a base with a magnetic drive motor and weighing module, and a support container. The controller can connect to three mixing bases, driving three mixing units simultaneously to maximize efficiency. The drive unit transmits power to the mixing bag via magnetic coupling, making operation simple and easy. Optional modules include pH and conductivity sensors, temperature sensors, temperature control units, and peristaltic pumps.

The software interface of the DuoMix® Mini benchtop magnetic mixing system is user-friendly and supports at least three levels of authorizations, recipe editing, alarm functions, sensor calibration, data recording and export, and audit trail functions.



DuoMix® Mini Benchtop Magnetic Mixing System

- Equipped with a 13" color multi-point HD touchscreen for easy user operation.
- Two I/O channels, allowing easy expansion of input and output functions.
- Easy operation:
 - Mistake-proof quick connectors: pumps and sensors can be connected to the DuoMix® Mini via cables for plug-and-play, without complex installation, setup, or wiring.
 - Intelligent sensor disconnection detection.
- Provides USB and RJ45 network interfaces.
- Supports commonly used protocols such as Modbus and OPC UA for easy data integration.
- Software interface is simple and user-friendly, with comprehensive data management, multi-level user management, and customizable user group authorizations.
- DuoMix® Mini has powerful data processing capabilities; with the weighing module and optional modules such as pH and conductivity sensors, temperature sensors, and temperature control units, it allows real-time monitoring and viewing of prepared samples or buffers, parameter setting, and recipe editing, as well as trend analysis. Generates RPM-time curves, weight-time curves, pH-time curves, conductivity-time curves, and temperature-time curves to visually display dynamic changes of sample data. Process data can be viewed in three formats: dashboard, table, and curve graph.
- Historical data, batch data, alarm data, and audit data can be viewed online.
- Supports calibration of weighing modules, pH sensors, conductivity sensors, and temperature sensors, with records saved for review.
- DuoMix® Mini supports data upload, backup, and recovery: built-in storage over 100 GB, enabling long-term data storage and ensuring data security and reliability.
- Data export function: data reports can be exported in PDF format.
- "One-to-three" efficient mixing: modular structure allows one main unit to support 2 L, 5 L, 10 L, and 20 L support containers. The controller can connect to three stirring bases to drive three mixing units simultaneously, maximizing efficiency.
- Equipped with a dot-matrix printer for convenient real-time data printing and analysis.

DuoMix® Mini Benchtop Magnetic Mixing System

Performance/Parameters

Item	Description
Controller Dimensions (L × W × H, mm)	410 × 450 × 250
Base Dimensions (L × W × H, mm)	400 × 370 × 150
Controller & Base Material	ABS
Holder Material	PMMA (Acrylic) or SUS304 Stainless Steel
Rated Voltage	220V / 50Hz or 110V / 50Hz
Rated Current	2.4A
Rated Power	200W
Weighing Range (Net/kg)	0–20 kg
Weighing Accuracy	3‰ (Full Scale)

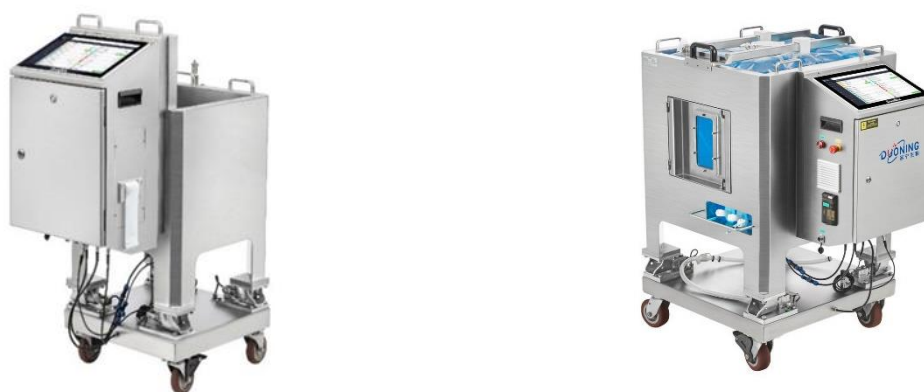
Ordering Information

Catalog Number	Unit	Name	Description	Remarks
DM-87901	pc	Benchtop Mixing Controller	Includes industrial computer, buzzer, emergency stop, PLC, dot-matrix printer, etc.	Standard
DM-68001	pc	Benchtop Mixing Base	Includes weighing base, drive motor, data cable to connect main unit, etc.	Standard
DM-43000	set	2, 5, 10, 20L Holder Set	Sold as a complete set, includes four holder sizes	Optional
DM-43002	pc	2L Holder	2L Holder	Optional
DM-43005	pc	5L Holder	5L Holder	Optional
DM-43010	pc	10L Holder	10L Holder	Optional
DM-43020	pc	20L Holder	20L Holder	Optional
DM-44005	pc	5L Jacket Holder	5L Jacket Holder	Optional
DM-44010	pc	10L Jacket Holder	10L Jacket Holder	Optional
DM-44020	pc	20L Jacket Holder	20L Jacket Holder	Optional
DM-260MP	pc	pH Module / Mettler (with data cable)	pH Module / Mettler (includes data cable)	Optional
DM-260HP	pc	pH Module / Hamilton (with data cable)	pH Module / Hamilton (includes data cable)	Optional
DM-260MC	pc	Cond Module / Mettler (with data cable)	Cond Module / Mettler (includes data cable)	Optional
DM-260HC	pc	Cond Module / Hamilton (with data cable)	Cond Module / Hamilton (includes data cable)	Optional
DM-26SHP	pc	Disposable pH Transmitter / Hamilton (with data cable)	Disposable pH transmitter / Hamilton (includes data cable, electrode not included)	Optional
DM-260PT	pc	PT100 Temperature Sensor	Temperature sensor	Optional
DM-130PA	roll	Printing Paper	Printing paper	Consumable

DuoMix® Floor-Standing Magnetic Mixing System

The mixing system is mainly used for the mixing and storage steps during the preparation of culture media, buffer solutions, intermediates, and semi-finished products. Duoning independently developed the DuoMix® floor-standing mixing systems (50 L–3000 L) along with compatible 3D mixing bags, providing a one-stop integrated mixing solution suitable for process development and large-scale production.

The DuoMix® floor-standing magnetic mixing system consists of a control cabinet, tank, and drive motor. The control cabinet is mounted on the tank in an integrated design, while the drive motor and magnetic coupling are located at the bottom of the tank. A weighing module is positioned above the casters. The system is compatible with commonly used impeller types and can be equipped with optional modules such as pH and conductivity sensors, temperature sensors, a temperature control unit, and a peristaltic pump. Additionally, the appearance, dimensions, and shape can be highly customized to meet diverse process and workflow requirements.



DuoMix® Floor-Standing Magnetic Mixing System and Compatible 3D Mixing Bags

The software interface of the DuoMix® benchtop and floor-standing magnetic mixing systems is user-friendly, supporting at least three levels of access authorization, recipe editing, alarm functions, sensor calibration, data recording and export, and audit trail capabilities.

- Equipped with a 13" full-color multi-touch HD screen, providing convenient user operation;
- Features two I/O channels, allowing easy expansion of input and output functions;
- Easy to operate:
 - Anti-misplug quick connectors: Pumps and sensors can be connected to the DuoMix® via cables for plug-and-play operation, without complex installation, setup, or wiring;
 - Intelligent detection of sensor disconnection;
- Provides USB and RJ45 network interfaces;
- Supports common communication protocols such as Modbus and OPC, enabling easy data exchange deployment;
- The software interface is simple and user-friendly, featuring comprehensive data management, multi-level user management, and customizable user group authorizations;
- DuoMix® offers powerful data processing capabilities - with the weighing module and optional pH and conductivity sensors, temperature sensors, and temperature control unit - enabling real-time monitoring and display of samples or buffer solutions, parameter setting, recipe editing, and trend analysis. It can generate visual graphs such as speed - time, weight - time, pH - time, conductivity - time, and temperature - time curves. Process data can be viewed in dashboard, table, or trend chart formats;
- Supports online viewing of historical data, batch data, alarm logs, and audit trails;
- Allows calibration and record storage for weighing, pH, conductivity, and temperature sensors;
- DuoMix® features data upload, backup, and restore functions with over 100 GB of built-in storage, supporting long-term data retention to ensure data security and reliability.
- Data export function: Data reports can be exported in PDF format.

DuoMix® Floor-Standing Magnetic Mixing System

Performance/Parameters

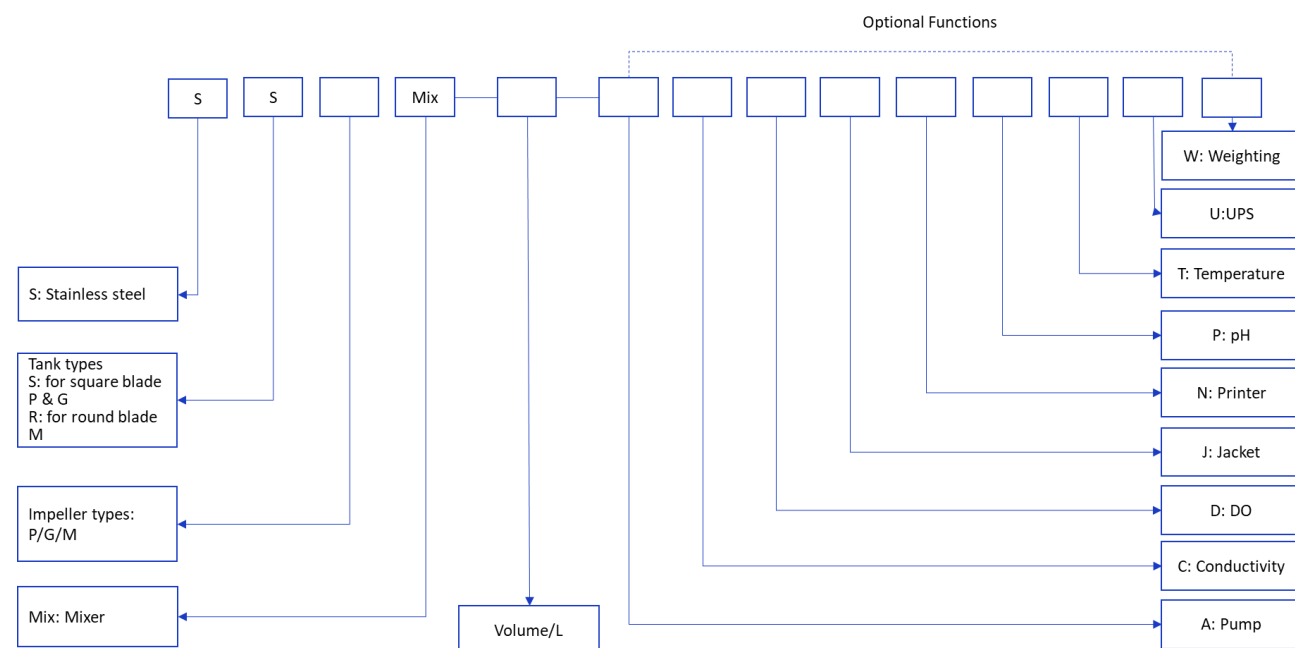
Item	Description
Maximum Working Volume	50L, 100L, 200L, 300L, 500L, 1000L, 1500L, 2000L, 2500L, 3000L
Maximum Speed	220 RPM*
Main Material	SUS304
Surface Polishing	Ra ≤ 0.8 μm
Rated Voltage	220V/50 Hz or 110V/50 Hz
Rated Current	4.8 A
Rated Power	750 W
Standard Function	Mixing
Optional Functions	Weighing, pH Monitoring, Conductivity Monitoring, Dissolved Oxygen, Temperature Monitoring, Printing, Data Integrity, UPS
Weighing Accuracy	3‰ (Full Scale)

* The rotation speed depends on the type of impeller in the corresponding mixing bag, with a default speed of 220 rpm.



Ordering Information

The product number is assigned according to the following naming rule, with optional function codes filled in sequentially according to their order.



For example:

- A 100 L mixing system equipped with a P-type impeller, single impeller, square tank, and no optional functions has the product number: SSPMix-100L.
- A 2500 L mixing system equipped with a G-type impeller, dual impellers, and optional conductivity, jacket, label printing, temperature, and weighing functions has the product number: SSGGMix-2500L-CJNTW.
- A 500 L mixing system equipped with an M-type impeller, single impeller, and optional dissolved oxygen, jacket, and UPS functions has the product number: SRMMix-500L-DJU.

(Optional code letters follow alphabetical order to avoid confusion. Include the corresponding code only if the related function is selected; otherwise, leave it blank.)

Note: Appearance dimensions, volume, shape, and functional parameters can be customized. For details, please contact your local sales or technical representative.

DuoMix® Single-use Mixing Bag

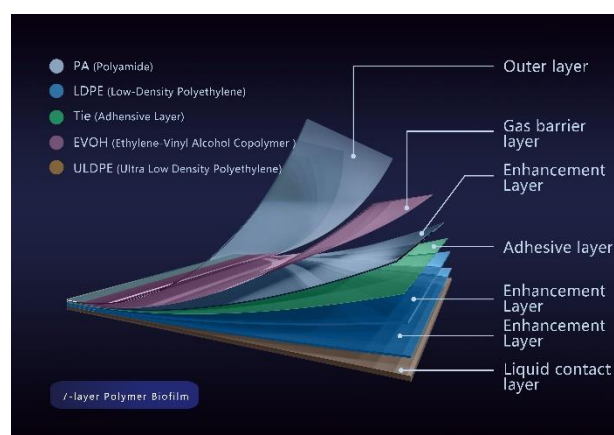
3D mixing bag from Duoning can be used with Duoning mixing systems, and bags fit for other industry mixing systems are also available. It is a product specially developed for liquid-liquid and liquid-solid mixing in the biopharmaceutical process. The bags are available from 2 L to 3,000 L, and can be customized according to customers' requirements. The DuoFilm-001 film used in these bags is 7-layer laminated bio-specific film with a thickness of 0.3 mm, and the liquid contact layer of ULDPE provides excellent physicochemical and biocompatibility properties. Duoning 3D liquid storage bag fully complies with cGMP and biopharmaceutical operation requirements in terms of raw materials, product assembly, and sterilization processes.

Applications

- Preparation of buffers and media
- Temporary storage, mixing and temperature control of intermediates
- Low pH incubation/virus inactivation
- Preparation of semi-finished products
- Adjuvant addition and mixing

Features

- Comply with USP<85>, USP<87>, USP<88>, USP<661>, ISO10993, etc.
- Wide size ranges from 2 L to 3,000 L
- Customizable
- Excellent mixing quality in short time
- Quick response, short lead time



DuoFilm-001 Structure Diagram

Function Design

Item	Description
Volume	2 L, 5 L, 10 L, 20 L, 100 L, 200 L, 500 L, 1,000 L, 1,500L, 2,000L, 2,500L, 3,000 L
Configuration	Mixer, feeding ports, with temperature, pH and conductivity monitor
Material	Main body: PE; Connectors and other parts: PP; Tubing: Platinum cured silicone, TPE
Options	Configurable for size, shape, inlet and outlet tubing, connectors, etc.

Note: For more customized design, please contact Duoning technical support team or your local Duoning sales representatives.

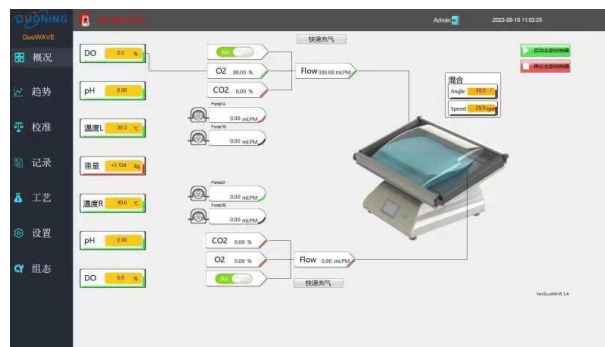
DuoWave® Wave-type Single-use Bioreactor

The DuoWave® wave-type bioreactor features a unique mixing mechanism that provides a gentler growth environment for cells. Its newly designed process control software offers rich functionality with a clean and intuitive interface, making it easy for users to operate and master. The DuoWave® system supports a working volume range of 100 mL to 25 L, making it suitable for rapid expansion of various cell types, seed preparation, process development, and quick laboratory-scale sample production.

Key Features

The DuoWave® wave-type bioreactor adopts a brand-new modular design, consisting of four modules: base unit, tray, I/O module, and server. It enables quick installation, easy operation, and space-saving integration.

- The base module provides temperature control, rocking agitation, weighing, and exhaust gas heating functions. The tray features a quick-connect design for fast replacement.
- The tray is available in 20 L and 50 L specifications and adopts a dual-zone heating plate design, allowing independent temperature control of two cell culture bags.
- The I/O module integrates single-use optical pH and DO sensors, gas mixing, and high-precision peristaltic pump functions, enabling easy implementation of process parameter feedback control.
- The server module includes DuoWave® control software and a computer, allowing users to perform process control, audit trail management, data recording, four-level user access control, and batch report generation. The DuoWave® wave-type bioreactor system complies with GMP and 21 CFR Part 11 regulatory requirements.



Applications:

Depending on the mode of operation, DuoWave® wave-type bioreactors can be applied to

- Seed Expansion
- Fed-Batch
- Perfusion
- Microcarrier-based Culture

Depending on different applications, DuoWave® wave-type bioreactors can be applied to

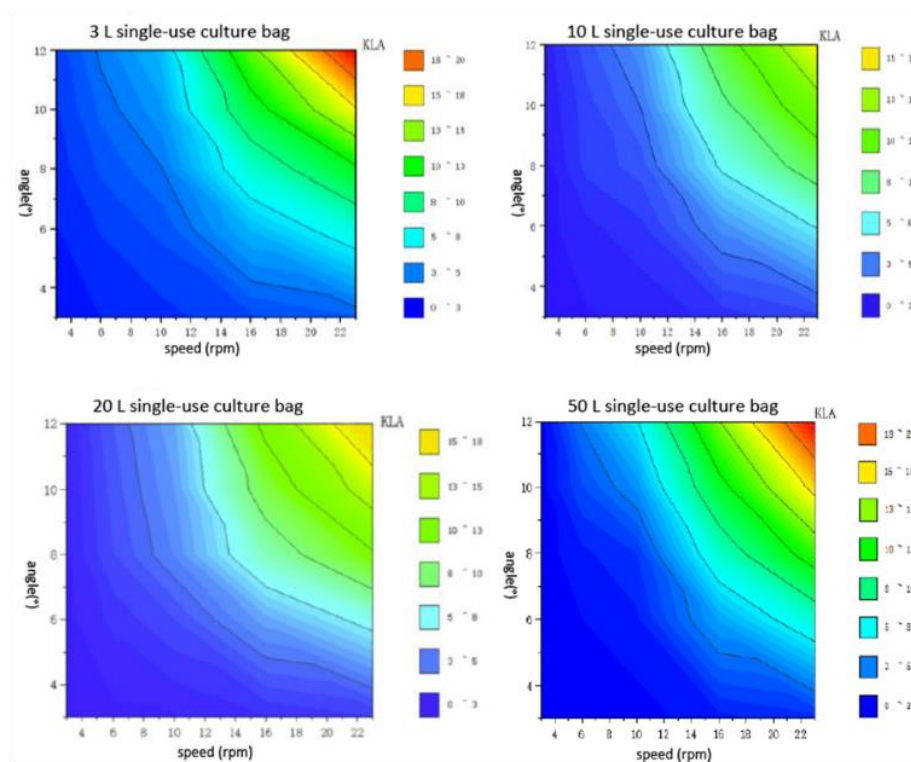
- Antibody and recombinant proteins
- Vaccine
- Gene therapy
- Cell therapy
- Other biologics or macro molecular

Mass Transfer and Mixing Performance:

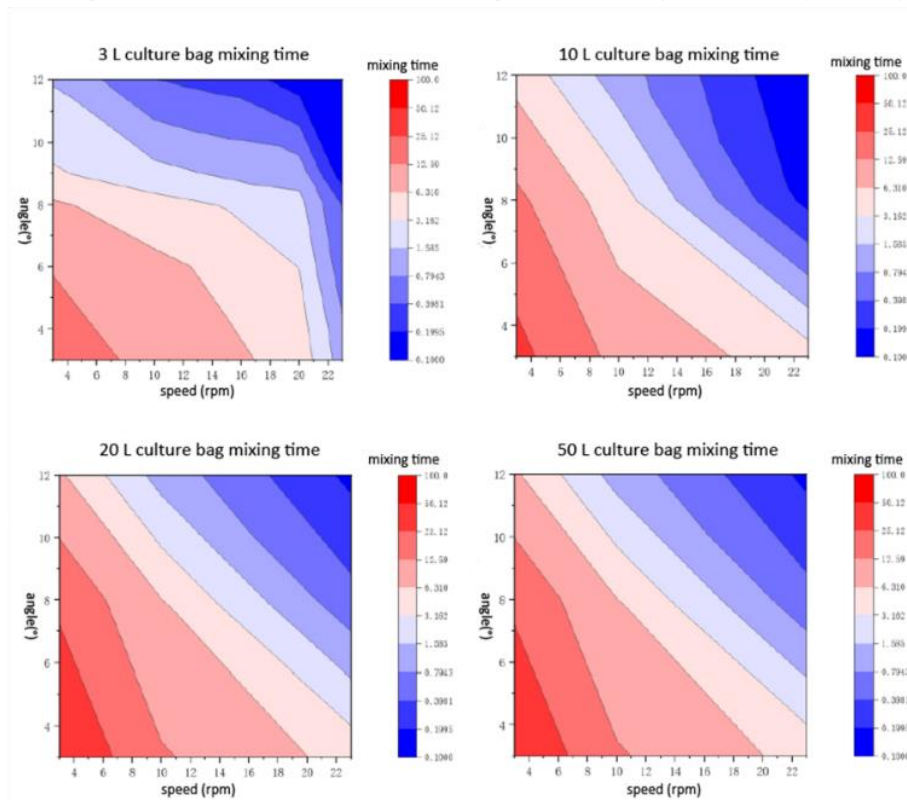
DuoWave® wave-type bioreactor system not only has excellent mass transfer and mixing performance but also brings extremely low shear force and suitable growth environment for cell culture due to its unique non-sparging aeration and non-stirring design.

DuoWave® Wave-type Single-use Bioreactor

K_{La} at different rocking speeds and angles



Mixing time test with full load of culture bags of different specifications (minutes)



DuoWave® Wave-type Single-use Bioreactor

Configuration

Module	Main Module Model	Configuration	Parameters
Base		Temperature Control Module	Dual-plate independent temperature control; continuously adjustable from RT to 42°C; PID closed-loop control; optional customizable water-cooled base plate
		Rocking Mixing Module	Rocking angle continuously adjustable from 0–12°; speed continuously adjustable from 0–40 rpm
		Weighing Module	0–50 kg; can be integrated with peristaltic pumps
		Exhaust Gas Heating Units (2 units)	Automatic constant temperature control at 60 ± 10°C
Tray	Tray20 	Dual Independent Temperature Measurement & Heating Plates with Lid	Suitable for DuoWave® 3 L (2 L), 10 L, and 20 L cell culture bags
	Tray50 	Dual Independent Temperature Measurement & Heating Plates with Lid	Suitable for DuoWave® 22 L and 50 L cell culture bags
I/O Module	I/O Module 	Two variable-speed peristaltic pumps Optical DO and pH sensors Gas mixing unit Oxygen and carbon dioxide concentration sensors	Peristaltic pump flow rate ranges: 0–5 mL/min (#13), 0–22 mL/min (#14), 0–80 mL/min (#16), 0–200 mL/min (#25). DO measurement range: 0–250%; pH measurement range: 4.5–8.5. Gas flow range: 0–1.0 L/min; fast gassing: 2 L/min; CO ₂ range: 0–20%; O ₂ range: 0–80%.
Server Module	Microsoft Surface 	Microsoft Surface Pro 7 (with built-in DuoWave® control software)	i5, 8 GB RAM + 128 GB storage, standard configuration with original Surface Pro keyboard
	Laptop 	Dell Laptop (with built-in DuoWave® control software)	Ultra 5 processor, 16 GB or above RAM, 512 GB or above SSD
	User-supplied computer 	User-provided computer (DuoWave® control software installed by manufacturer)	i5 or above processor, 16 GB or above RAM, 512 GB or above SSD; Windows 10 or Windows 11 Pro

DuoWave® Wave-type Single-use Bioreactor

	Dimension	Weight
Base	470*560*264 mm	27.7 kg
20L Tray	792*535*62 mm	10.7 kg
50L Tray	904*688*74 mm	16.9 kg
20L Tray (w/ cooling)	792*535*65 mm	15.4 kg
50L Tray (w/ cooling)	904*688*77 mm	21.9 kg
20L top cover	832*549*274 mm	4.9 kg
50L top cover	904*688*307 mm	6.3 kg
I/O module	310*418*185 mm	10.8 kg
pH optical fiber	1.5 m	
DO optical fiber	1.5 m	

Base Unit	Specifications
Rocking Speed	0–40 rpm
Rocking Angle	0–12°
Weighing Range	0–50 kg
Weighing Accuracy	10 g
Temperature Sensor	Pt100
Temperature Measurement Range	0–80 °C
Temperature Measurement Accuracy	±0.1 °C
Temperature Control Range	Ambient to 42 °C
Temperature Control Accuracy	±0.2 °C

I/O Module	Specifications
Gas Flow Range	Air: 0–1.0 L/min (default max limit 2.0 L/min, adjustable); CO ₂ : 0–20%; O ₂ : 0–80%
Gas Flow Accuracy	0.5% of full scale
Fast Gas Fill Flow Rate	2.0 L/min
CO ₂ Control Range	0–20%
CO ₂ Measurement Accuracy	±5% of reading or ±0.1% CO ₂ (whichever is greater)
CO ₂ Control Accuracy	±0.5%
O ₂ Control Range	N ₂ mode: 0–80%; Air mode: 21%–80%
O ₂ Measurement Accuracy	±1.5% FS @ (5–55)°C
O ₂ Control Accuracy	±0.5%
pH Measurement Range	pH 4.5–8.5
pH Control Range	pH 6.0–8.0
pH Measurement Accuracy	±0.05 pH (within ±0.25 pH of calibration value); ±0.1 pH (within ±0.25 to ±0.5 pH of calibration value)
pH Control Accuracy	±0.05 pH
DO Measurement Range	0–250%
DO Control Range	0–100%
DO Measurement Accuracy	±5%

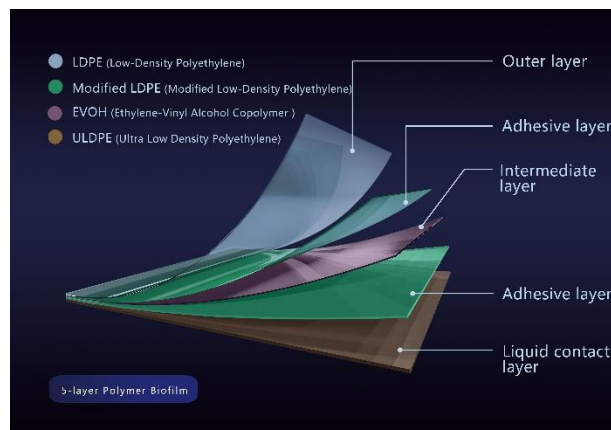
Peristaltic Pump	Specifications
Number of Pumps	2
Flow Rate Range	0–200 mL/min
Pump Accuracy	±5% of total volume
Supported Tubing Sizes	#13 (1/32 in–5/32 in); #14 (1/16 in–3/16 in); #16 (1/8 in–1/4 in); #25 (3/16 in–5/16 in)

DuoWave® Wave-type Single-use Bioreactor

DuoWave® Cell Culture Bag

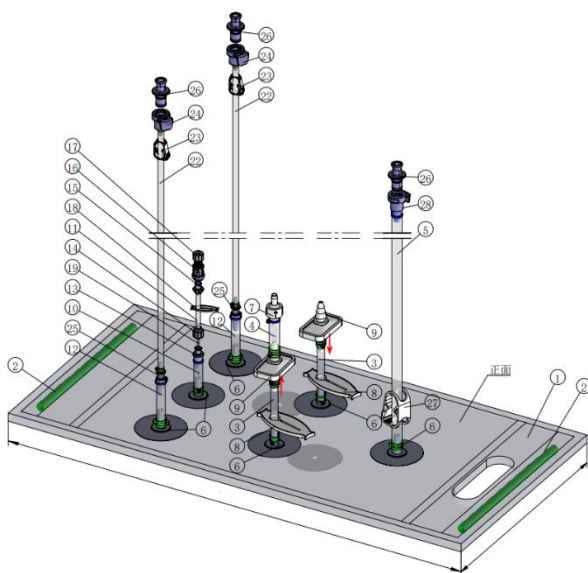
Features of DuoFilm®-003 film material: DuoFilm®-003 is a 5-layer coextruded film that withstands the harshest physical requirements while exhibiting excellent cell culture compatibility.

- The outer layer is low-density polyethylene (LDPE), which has excellent chemical stability and elongation.
- The middle layer is ethylene-vinyl alcohol copolymer EVOH, which exhibits excellent barrier effect on gases, odors, solvents, etc., while maintaining flexibility and strength properties
- Liquid contact layer is ultra-low-density polyethylene (ULDPE) for excellent biocompatibility and low extractable levels while providing a clean, inert surface with no anti-blocking additive ingredients.



We provide DuoWave® cell culture bags with various sizes and configurations for different bioprocessing applications.

Configuration	Description
Tubing Material	Optional silicone tubing or weldable tubing
pH/DO	Optional with optical sensors or without sensors
Volume Options	Available in 3 L, 10 L, 15 L, 20 L, 22 L, and 50 L
Sampling Port	Luer sampling port
Film Material	DuoFilm®-003



28	1/4" Female CPC Quick Connector , PC	1	
27	Clamps 3/8"OD≤5/8 inch	1	
26	MPC Coupling Plug , PC	3	
25	Straight Through Reduction 1/4"-1/8" Polypropylene	2	
24	1/8" Female CPC Quick Connector , PC	2	
23	Clamps 1/8"OD≤1/4 inch	2	
22	1/8"×1/4" Platinum Silicone Tubing	2	1200
21	DO Single-use Sensor	1	
20	pH Single-use Sensor	1	
19	FEP Tubing, 1/32"ID x 1/16"OD	1	90
18	FortubingOD5.0mm-6.0mm Material:PP	1	
17	Non-Vented Luer Thread Cover	1	
16	Needlefree Swabable Valve Female Luer to Male Luer Lock, Polycarbonate	1	
15	3/32" HB tubing with female Luer Thread Style	1	
14	3/32" HB tubing with male luer plug	1	
13	1/4" HB to Female Luer Thread	1	
12	1/4"×3/8" Platinum Silicone Tubing	2	60
11	1/16"×3/16"Platinum Silicone Tubing	1	50
10	1/4"×3/8" Platinum Silicone Tubing	1	50
9	Air Filter 0.2μm	2	
8	FortubingOD8.0mm-9.0mm Material:PP	2	
7	1/4" Air stop valve	1	
6	1/4" Bag Port	6	
5	1/4"×7/16" Platinum Silicone Tubing	1	1200
4	1/4"×7/16" Platinum Silicone Tubing	1	50
3	3/16"×5/16" Platinum Silicone Tubing	2	80
2	180mm Fiberglass Stick	2	
1	3L Wave Single Use Storage Bag	1	
ITEM NO.	DESCRIPTION	QTY.	LENGTH (mm)

Hollow Fiber Filter

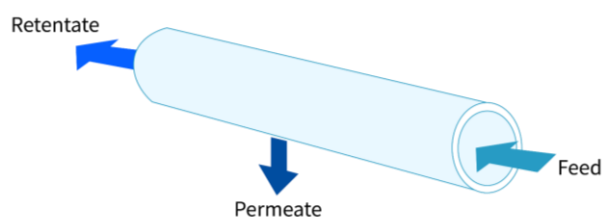
With the development of the global life science field, we have been striving to achieve innovation and breakthrough in membrane separation technology. As an important membrane filtration product, hollow fiber is used more and more in the production of drugs such as drug screening, process development, and biologics manufacturing. The application of hollow fibers covers many critical steps in biological products and pharmaceutical processes, including protein purification and concentration, virus purification and concentration, harvest of protein precipitates, harvest of bacteria, endotoxin removal, bioburden reduction, cell perfusion culture, adherent cell culture in fibers, graphene quantum dots process, and other special applications.

In hollow fiber tangential flow technology, the fluid flows parallel to the membrane, generating transmembrane pressure vertically, small molecules permeate through, and macromolecules or particles are sweep away by the tangentially moving fluid, thereby mitigating membrane fouling, prolonging process time and capacity. It is an effective method for concentration, desalination, and buffer exchange of biomolecular and virus solutions. The volumes processed can vary from a few milliliters to tens of thousands of liters.

Hollow fiber filters can be widely used in various areas of pharmaceuticals and life sciences industry, including antibodies, gene and cell therapy, mRNA, human & animal vaccines, blood products, albumin and islet recombinant proteins, traditional medicine injections, traditional small molecule drugs, biochemical and tissue extracts.

Advantages

- Localized service, quick response, cost-effective choice;
- Perfect hydrophilic modification, low protein adsorption and high product yield;
- Standard connection types, compatible with TFF systems



Structure Diagram of Hollow Fiber

- from various companies;
- Easy-to-use, excellent linear scalability;
- Anti-fouling, high process capacity.

Part No. Key: D-020-U-030-10-E as an example

<u>D</u> Family	<u>020</u> Effective Length	<u>U</u> Filtration Type	<u>030</u> Pore Size/MWCO		<u>10</u> Fiber ID	<u>E</u> Membrane Type
A	020: 20 cm	U: UF	U003: 3 KD	M010: 0.1 μm	10: 1 mm	E: mPES
B	025: 25 cm	M: MF	U005: 5 KD	M020: 0.2 μm	07: 0.75 mm	P: PVDF
D	050: 50 cm		U010: 10 KD	M045: 0.45 μm	05: 0.5 mm	C: CE
E	100: 100 cm		U030: 30 KD	M065: 0.65 μm		
F			U050: 50 KD			
H			U100: 100 KD			
J			U300: 300 KD			
			U500: 500 KD			
			U750: 750 KD			

DuoTFF™ Automatic Benchtop Tangential Flow Filtration System

DuoTFF™ is a fully automated benchtop-scale TFF solution, designed specifically for process development and small-scale study. The system features an integrated design, incorporating all core components required for tangential flow filtration operations, supporting both constant pressure and constant flow modes. Users can control TMP via an automatic backpressure valve on the retentate side or adjust permeate flow rate through a permeate-side backpressure valve, enabling stable and flexible process operation.

Equipped with automation software, DuoTFF™ enables real-time monitoring, recording, and storage of all critical process parameters, ensuring data integrity and traceability for every experiment. This standardization facilitates subsequent process scale-up and technology transfer. Optional online sensors for pH, conductivity, and other parameters can be integrated to provide comprehensive process monitoring, further enhancing understanding and control of the process window.

Regarding compatibility, DuoTFF™ supports both flat-sheet cassettes and hollow fiber modules, catering to diverse membrane materials and separation process development needs. Additionally, the system seamlessly integrates with single-use tubing sets to enable fully closed sterile operation, minimizing cross-contamination risks, and significantly improving operational safety and process efficiency. This helps customers meet current regulatory requirements for single-use aseptic bioprocessing.



System Advantages

- **Integrated Compact Design, Easy Operation**
 - Integrates core components including main feed pump, buffer-addition pump, weighing modules, pressure sensors, automatic backpressure valves, stirring module, and support frame. No external equipment is required to complete TFF operations such as concentration, diafiltration, and desalting.
 - Compact footprints suitable for laboratory and small-scale environments, saving space while improving operational efficiency.
- **Automated Control, Supports Constant Pressure and Constant Flow Modes**
 - Standard configuration includes an automatic backpressure valve on the retentate side; an optional automatic backpressure valve on the permeate side can be added. The system can be set to maintain constant transmembrane pressure (TMP) or constant permeate flow.
 - Peristaltic pump design accommodates various tubing sizes with a wide flow rate range, flexibly meeting different process requirements.
- **Comprehensive Process Monitoring and Data Logging**
 - Equipped with three single-use pressure sensors and two high-precision weighing modules for full collection of key process data.
 - Optional pH and conductivity/temperature sensors provide real-time monitoring of permeate parameters, assisting in determining diafiltration endpoints and improving process stability and consistency.
- **Strong Compatibility, Supports Multiple Filter Types and Single-Use Components**
 - System software automatically records all operating parameters, ensuring data integrity and traceability to support GMP compliance and process scale-up.
 - Compatible with hollow fiber modules (13 cm² - 3,700 cm²) and flat-sheet cassettes (88 cm² - 5,000 cm²), covering from small-scale development to pilot-scale scale-up.
 - Supports single-use reservoirs and tubing sets for fully closed sterile processing, meeting high-level sterility and low contamination risk requirements, particularly suited for cell therapy, viral products, and other high-risk product development.
- **Modular Options, Flexible for Various Scenarios**
 - All detection and control modules can be optionally configured, including pH sensor, conductivity/temperature sensors, and permeate flow control valves.
 - Optional IQQ (Installation and Operational Qualification) validation services available to support rapid deployment in GMP environments.

DuoTFF™ Automatic Benchtop Tangential Flow Filtration System

System Technical Specifications

	Description	Specification	
Filter	Filter type	Hollow fiber	Flat-sheet cassette
	Surface area	13 cm ² - 3,700 cm ²	88 cm ² - 5,000 cm ²
Basic accessories	Main recirculation pump	Peristaltic pump, maximum flow rate up to 2.5 LPM; Compatible with tubing sizes #15, #24, #35, #36	
	Buffer-addition pump	Peristaltic pump, maximum flow rate up to 1.8 LPM; Compatible with tubing sizes #13, #14, #19, #16, #25, #17, #18	
	Pressure sensor	Single-use pressure sensor Pressure range: 0 - 5 bar	
	Display screen	10.1" IPC	
	Retentate automatic back pressure valve	Controls user-set process TMP (Transmembrane Pressure); Compatible with tubing sizes #13, #14, #16, #25, #17, #18	
	Load cell	Load cell with 20 kg range, readability 0.1 g	
	Magnetic stirrer	Integrated with weighing system, adjustable speed, real-time parameter recording	
	Stand	Integrated hollow fiber membrane holder	
Optional accessories	pH sensor	pH sensor with single-use flow cell, pH range 0 - 14	
	Conductivity/temperature sensor	Single-use conductivity/temperature sensor, 0.02 - 200 mS/cm	
	Permeate proportional clamp valve	Permeate flow rate adjustment	
	Reservoir	600 ml reservoir, PS One included as standard with the equipment	
Environmental requirement	Operating temperature	0-40 °C	
	Operating humidity	10%-90%	
	Enclosure design	Carbon steel with spray coating, wipe-clean design, protection rating IP33	
	Power supply	220VAC	

DuoTFF™ Automatic Benchtop Tangential Flow Filtration System

Ordering Information

Product Name	Product No.	Specification	Unit
DuoTFF™ tangential flow filtration system	DuoTFFLab3000	Tangential Flow Filtration (TFF) system main unit, with a maximum main pump flow rate of 2500 mL/min	Unit
Permeate back pressure valve	Lab3000PPCV	Control permeate flow rate	Piece
pH sensor	Lab3000PPH	pH sensor with single-use flow cell, measurement range: 0 - 14 pH; accuracy: ± 0.1 pH; communication: RS-485 interface	Set
Conductivity/Temperature sensor	Lab3000PCOND	Conductivity range: 0.02 - 200 mS/cm, $\pm 2\%$, with temperature calibration Temperature: range: -20 - 50°C, with RS-485 communication	Set
IOQ	DuoTFFIOQ	Installation and operation qualification	Session

Main Component Configuration List

Component Name	Specification	Unit	Quantity	Standard/Optional
Computer	IPC: 10.1" HD display, Intel i5, 8GB RAM, 10th generation, 512GB SSD	Unit	1	Standard
Main recirculation peristaltic pump	Maximum Flow Rate: 2.5 L/min	Unit	1	Standard
Buffer addition pump	Maximum Flow Rate: 1.8 L/min	Unit	1	Standard
Recirculation reservoir	Reservoir Volume: 600 ml, made of polysulfone (PSU)	Piece	1	Standard
Retentate automatic back pressure valve	Compatible tubing sizes: #13, #14, #16, #25, #17, #18	Piece	1	Standard
Permeate automatic back pressure valve	Compatible tubing sizes: #13, #14, #16, #25, #17, #18	Piece	1	Optional
pH and conductivity sensor board	pH, conductivity and temperature data collection, rs-485 communication	Set	1	Optional
Permeate pH Sensor	pH sensor with single-use flow cell: pH range 0 - 14, accuracy ± 0.1 pH	Set	1	Optional
Permeate conductivity/temperature sensor	Conductivity sensor: 0.02 - 200 mS/cm, accuracy $\pm 2\%$, with temperature compensation Temperature sensor: -20 - 50 °C, accuracy ± 0.5 °C	Set	1	Optional
Pressure sensor	0-5 bar	Piece	3	Standard
Load cell	Load capacity: 20 kg, with 1-meter cable	Piece	2	Standard

DuoSealer™ Tiny Next-Generation Aseptic Sealer

DuoSealer™ Tiny is a fully automated process device designed for aseptically disconnecting thermoplastic elastomer (TPE) tubing, ensuring product sterility.

Applications

- Aseptic disconnection of thermoplastic elastomer (TPE) tubing after connection for bioreactor feeding
- Aseptic disconnection of TPE tubing after connection to mixing or storage bags
- Aseptic disconnection after sampling from sampling bags using TPE tubing

Product Features

- **Wide Applicability:**
 - Supports outer diameters from 1/4" to 1", covering six commonly used tubing sizes in biopharmaceutical applications.
- **High Compatibility:**
 - Seals most mainstream TPE tubing on the market, including C-Flex® 374, AdvantaFlex®, and Duoning's self-developed I-Flex tubing.
 - Custom sealing processes can also be developed for other tubing brands.
- **User-Friendly Operation:**
 - Automatic tube size recognition with no need to select tubing brand—simple and intuitive.
 - "Place-to-seal" design: place the tubing into the slot and start sealing with a single button press—fully automated.
- **Compact and Lightweight:**
 - One of the lightest tube sealers on the market, weighing only 2 kg.
 - Footprint smaller than two smartphones—ideal for saving lab and production space.
- **Cost-Effective:**
 - No additional accessories needed when switching between different tubing sizes—one device meets all common requirements.
- **Intuitive Human-Machine Interface:**
 - Touchscreen control with real-time display of sealing progress, temperature profile, and start/stop times.
- **Outstanding Sealing Performance:**
 - Supports sealing both empty and fluid-filled tubing.
 - Tubing can undergo sterilization via irradiation or autoclave without compromising seal integrity.
 - Up to 20 mm sealing width with a clearly defined cutting guide in the center, ensuring accurate and reliable disconnection.
- **Optional Handheld Kit:**
 - Optional hanging accessories available for integration with bioreactors, mixing tanks, or storage systems, enabling convenient suspended operation.

Device Components

Item	Component Name
1	DuoSealer™ Tiny Main Body
2	Cover Plate
3	Heating Plates
4	Touchscreen
5	Power Cord
6	Power Interface

Operating Procedure

1. Connect the power supply.
2. Lift the cover and place the TPE tubing between the heating plates, then close the cover.
3. Press the "Start" button on the touchscreen.
4. Wait for the beep sound indicating the sealing is complete.
5. Open the cover and remove the sealed TPE tubing.
6. Cut along the guide line to complete the aseptic disconnection.



DuoSealer™ Tiny Next-Generation Aseptic Sealer



Product Parameters

Item	Description
Device Name	DuoSealer™ Tiny Aseptic Sealer
Input Voltage	100 VAC - 240 VAC
Input Current	2.5 A, 50/60 Hz
Rated Power	240 W
Net Weight	2.0 kg
Dimensions (L × W × H)	240 mm*80 mm*93 mm
Operating Temperature	+5 °C - + 40 °C
Operating Humidity	35% - 65%
Cooling Method	Air cooling
Sealing Duration	3–6 minutes (varies depending on tubing size)
Enclosure Material	ABS
Protection Rating	IP22

Ordering Information

Product Name	Product Number
DuoSealer™ Tiny Aseptic Sealer	DNSS0201
IOQ	DNSS0201-IOQ

Duoning Type I Tubing Welder

Overview

The Duoning Type I Aseptic Tubing Welder is a fully automatic device used for aseptic welding of thermoplastic tubing and PVC tubing. This fully automatic device can aseptically connect thermoplastic tubing with an outer diameter from 1/4 to 3/4 inch and PVC tubing of sizes 3.0–5.0.

Application

The Duoning Type I Aseptic Tubing Welder is used to connect TPE thermoplastic tubing and PVC tubing on single-use bags used in biopharmaceutical processes, such as C-flex and Advanta flex. It can connect individual bags or bag assemblies in non-sterile environments while maintaining product sterility.

Working Principle

Load the tube clamp, blade, and tubing into the Duoning Type I Aseptic Tubing Welder. The welding process is fully automated. The blade is heated to remove pyrogens ($\geq 400^{\circ}\text{C}$) and then cooled to the welding temperature. Throughout the welding process, the blade temperature is monitored by an infrared temperature sensor. When the blade reaches the welding temperature, it cuts the thermoplastic tubing, and the tubing is connected to form the desired fluid pathway.

Equipment Features

- Easy to operate: one-button reset, one-button welding.
- Supports connection of both TPE thermoplastic tubing and PVC tubing.
- High weld strength; supports both dry and liquid-filled (conditional) connections.
- Tubing connection data stored on SD card, with audit trail functionality.
- Simple validation; comprehensive validation documents available.
- Entire process takes only 1 minute 45 seconds; no leakage, no burrs.



Front View



Side View

Duoning Type I Tubing Welder

Technical Specifications

Item	Specification
Applicable Tubing Sizes	1/8"×1/4", 1/4"×7/16", 3/8"×5/8", 1/2"×3/4", customizable
Tubing Type	Applicable to TPE tubing such as C-FLEX, Advantaflex, and PVC tubing
Welding Cycle Time	1–2 min (depends on tubing size, brand, etc.)
Device Dimensions	265 mm x 260 mm x 245 mm
Weight	10 kg
Material	Stainless steel, can be disinfected with 75% alcohol
Welding Positioning Accuracy	5 μm
Blade Dimensions	83 mm x 25 mm x 0.4 mm
Operating Environment	Room temperature, relative humidity 35–65%
Cooling Method	Air cooling
Power Supply	100–240 V, 47–63 Hz

Ordering Information

Catalog Number	Description
DNDW0101	Duoning Type-I Aseptic Tube Welder (The configuration includes: the device body and power cord, 2 sets of standard tubing holders (specifications optional), and 1 box of blades.)
DNDW0101-IOQ	Welder IQ/OQ
Optional Accessories	
Tube Holder, 1/8" x 1/4"	DNDW-GT-1814
Tube Holder, 1/4" x 7/16"	DNDW-GT-1476
Tube Holder, 3/8" x 5/8"	DNDW-GT-3858
Tube Holder, 1/2" x 3/4"	DNDW-GT-1234
Tube Holder, 1/4" x 3/8"	DNDW-GT-1438
Tube Holder, 3/8" x 9/16"	DNDW-GT-3896
Tube Holder, 3/16" x 5/16"	DNDW-GT-3656
Blades (50 pcs/box)	DNDW-DP-01
Custom Holders	

SUS Welder

SUS aseptic tubing welder is a fully automatic equipment used for aseptic connection of TPE tubing outside laminar flow safety cabinet. It can be applied to automatic aseptic connections for disposable components, media storage bags and bioreactors.

Applications

- Aseptic welding of TPE tubing of fluid storage bag
- Aseptic welding of TPE tubing of feeding bag
- Aseptic welding of TPE tubing of sampling bag

Regardless of clean or non-clean area, the SUS welder can be used for aseptic connection of empty and liquid-filled tubing

Features:

- **Compatible with various tubing size:**
 - One device for all size, easy and quick holder exchange, automatic recognize the size, and executes corresponding procedures
 - 1/8" x 1/4", 1/4" x 3/8", 1/4" x 7/16", 3/8" x 5/8", 1/2" x 3/4", 3/4" x 1"
- **Excellent welding performance:**
 - 0.3mm firm and reliable welding, approximately equal to the mechanical strength of the tubing, with few burrs on the inner wall, and the length <0.3mm
- **Easy and safe operation:**
 - Support default welding program, automatically run according to the corresponding size of the tube holder; support custom welding temperature and time;
 - Fully automatic welding, support welding with liquid;
 - Recovery function after unexpected shutdown
- **Complete validation system and documentation:**
 - Complete IOQ validation documents;
 - Temperature correction function, improves system stability;
 - Provides user management, password management, access management, log and data export functions



SUS Welder

Mechanical Specifications

Item	Specification
Dimension	Length 635 mm x Width 290 mm x Height 356 mm
Weight	≤ 22 kg
System	Embedded Control System
Screen	Type: Touch screen; Size: 7"
Voltage	100 – 240 Vac 50/60 Hz 200 W
Over temperature protection	Yes
Working temperature	18-30 °C
Humidity	65% RH

Performance Specifications

Item	Specification
Compatible tubing size	1/8" x 1/4", 1/4" x 3/8", 1/4" x 7/16", 3/8" x 5/8", 1/2" x 3/4", 3/4" x 1", need corresponding holder
Welding status	Yes
Min. welding length	200 mm
Automatic welding	Yes
Temp. calibration	Yes
Crushing prevention	Yes
Cooling method	Air cooling
User management	Yes
Access management	3-level; One is factory
Log	USB export; U disk volume format requirement: FAT32; Interface requirement: USB3.0 or newer
Storage data volume	18000
Storage method	50

Ordering Information

Product Name	Specification	Part No.	Unit
SUS Welder	220V	DNSW0101	Set
Tube Holder 01	1/8" x 1/4" (Standard)	DNSW-GT-1814	Pair
Tube Holder 02	1/4" x 3/8"	DNSW-GT-1438	Pair
Tube Holder 03	3/16" x 5/16"	DNSW-GT-3656	Pair
Tube Holder 04	1/4" x 7/16"	DNSW-GT-1476	Pair
Tube Holder 05	3/8" x 5/8" (Standard)	DNSW-GT-3858	Pair
Tube Holder 06	1/2" x 3/4"	DNSW-GT-1234	Pair
Tube Holder 07	3/4" x 1"	DNSW-GT-3410	Pair
Blade	A box of 50 pieces (including 2 boxes of blades when the equipment is shipped)	DNSW-DP-01	Box
IQOQ		DNSW0101-IQOQ	

Single-use 2D Liquid Storage Bag

2D liquid storage bag from Duoning is a product specially developed for liquid storage and transfer in the biopharmaceutical environment. The bags are available from 5 mL to 50 L and can be customized according to customers' requirements.

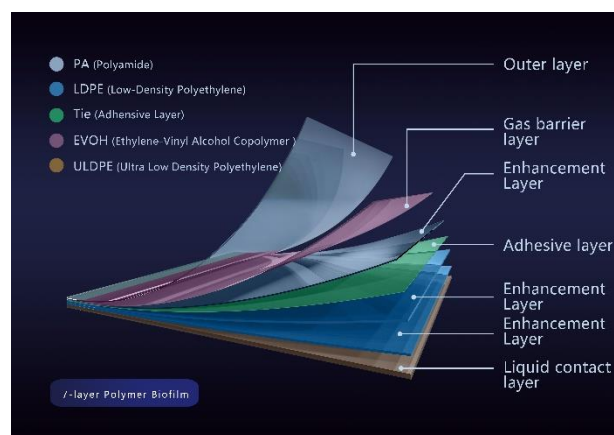
The DuoFilm-001 film used in these bags is 7-layer laminated bio-specific film with thickness of 0.3 mm, and the liquid contact layer of ULDPE provides excellent physicochemical and biocompatibility properties. Lianghei 2D liquid storage bag fully complies with cGMP and other biopharmaceutical operation requirements in terms of raw materials, product assembly, and sterilization processes.

Applications

- Sterile filtration and storage of buffer and media
- Bulk harvest
- Component collection
- Sample collection
- Storage of intermediates
- Shipment of final product

Features

- Comply with USP<85>, USP<87>, USP<88>, USP<661>, ISO10993, etc.
- Wide size ranges from 5 mL to 50 L
- Customizable
- Quick response, short lead time



DuoFilm-001 Structure Diagram

Single-use 3D Collapsible Cubic Liquid Storage Bag

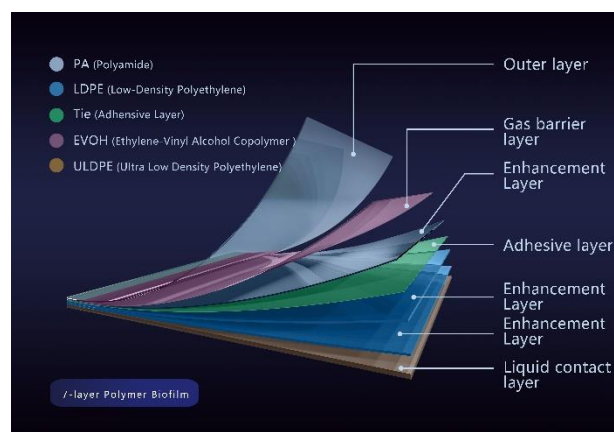
Collapsible cubic liquid storage bag/3D liquid storage bag from Duoning is a product specially developed for liquid storage and transfer in the biopharmaceutical environment. The bags are available from 50 L to 3000 L and can be customized according to customers' requirements. The DuoFilm-001 film used in these bags is 7-layer laminated bio-specific film with a thickness of 0.3 mm, and the liquid contact layer of ULDPE provides excellent physicochemical and biocompatibility properties. Duoning collapsible cubic liquid storage bag/3D liquid storage bag fully complies with cGMP and biopharmaceutical operation requirements in terms of raw materials, product assembly, and sterilization processes.

Applications

- Sterile filtration and storage of buffer and medium
- Bulk harvest
- Component collection
- Sample collection
- Storage of intermediates
- Shipment of final product

Features

- Comply with USP<87>, USP<88>, USP<661>, ISO10993, etc.
- Wide size ranges from 38 L to 568 L for barrel liquid storage bag, and 50 L to 3,000 L for cubic liquid storage bag
- Customizable
- Quick response, short lead time



DuoFilm-001 Structure Diagram

HPT Platinum Cured Silicone Tubing

Platinum cured silicone tubing (HPT, Highly Pure Tubing) is independently developed and produced by Duoning. It is designed to meet the requirement of high flexibility, durability, elasticity, and visibility of tubing in biopharmaceutical process fluid transferring. It features good flow stability, low extractables and leachables, and smooth inner surface, contributes to precise process control and high purity products. The product has undergone a lot of tests and complies with USP, FDA, CFR177.2600, ISO10993 and European Pharmacopoeia and other relevant standards. The extractables study is conducted by an international third-party laboratory in accordance with BPOG standards and provides validation documents to ensure that the overall quality is controllable and traceable.



Applications

- High-purity fluid transferring
- Buffer and medium preparation
- Cell culture and harvest
- Fermentation
- Filtration
- Filling
- Single-use system assembly

Features

- Complete size specifications, with inner diameter from 1/8" to 1"
- Working temperature range: -60°C~200°C
- Animal derived component free (ADCF)
- Flexible and elastic, easy to assemble
- Low extractables and leachables
- Sterilization by autoclave or gamma irradiation
- Complies with relevant regulations of RoHS, REACH and MSDS
- Documents of extractables study and validation are available on-demand

Relevant tests

Physical Properties	
Appearance	Semitransparent
Shore hardness	59
Tensile strength (psi)	860
Elongation at break (%)	280
Physical chemistry test	USP<661>, EP<3.1.9>, USP<381>, 21 CFR Part 177.2600

Biocompatibility and Particulates	
<i>In vitro</i> biocompatibility	USP<87>, ISO 10993-3, ISO 10993-4, ISO 10993-5
<i>In vivo</i> biocompatibility	USP<88>, ISO 10993-6, ISO 10993-10, ISO 10993-11
Bacterial endotoxin	USP<85>, USP<161>
Extractables	BPOG
Insoluble particles	USP<788>

HPT Platinum Cured Silicone Tubing

Ordering Information

Standard Tube #	Product Number	ID		OD		Wall Thickness		Working Pressure	Burst Pressure
		mm	Inch(″)	mm	Inch(″)	mm	Inch(″)	bar	bar
	SUS-HPT-0047-0173	1.2	3/64	4.4	11/64	1.59	1/16	1	2
14#	SUS-HPT-0063-0188	1.59	1/16	4.76	3/16	1.59	1/16	1	2
16#	SUS-HPT-0125-0250	3.18	1/8	6.35	1/4	1.59	1/16	1	2
15#	SUS-HPT-0188-0375	4.76	3/16	9.53	3/8	2.38	3/32	1	2
17#	SUS-HPT-0250-0375	6.35	1/4	9.53	3/8	1.59	1/16	1	2
24#	SUS-HPT-0250-0438	6.35	1/4	11.11	7/16	2.38	3/32	1	2
26#	SUS-HPT-0250-0500	6.35	1/4	12.7	1/2	3.18	1/8	1	2
35#	SUS-HPT-0313-0500	7.94	5/16	12.7	1/2	2.38	3/32	1	2
36#	SUS-HPT-0375-0563	9.53	3/8	14.3	9/16	2.38	3/32	1	2
73#	SUS-HPT-0375-0625	9.53	3/8	15.88	5/8	3.18	1/8	1	2
82#	SUS-HPT-0500-0750	12.7	1/2	19.05	3/4	3.18	1/8	1	2
91#	SUS-HPT-0750-1250	19.05	3/4	31.75	1-1/4	6.35	1/4	1	2
92#	SUS-HPT-1000-1375	25.4	1	34.92	1-3/8	4.76	3/16	1	2

* The standard tube length is 15 meters per roll (i.e., 50 feet).

* The product is double-layer vacuum-packed, with product identification and batch traceability information on the packaging.

* An irradiated version is available, with the item number adding a "G" to the existing code. For example, the irradiated version of tube #92 is SUS-HPT-1000-1375G.

* Non-standard tubing specifications and custom-made tubing are also available upon request. To confirm whether your required tubing specifications are available, please contact our sales representatives or the marketing email address below.

SheerTainer™ Single-use Bioprocess Polycarbonate (PC) Bottles & Assemblies

The SheerTainer™ single-use bioprocess polycarbonate (PC) bottles are independently developed by Duoning Biotech, with volumes ranging from 5 mL to 20 L. The bottle graduations are blow-molded as an integral part of the body, preventing peeling. The gamma-irradiated version is dosed at 25–45 kGy, with a sterility assurance level (SAL) of 10^{-6} . The robust threaded neck design effectively prevents leakage, ensuring a secure seal between the cap and container. With a temperature range of -80°C to 100°C , the bottles exhibit excellent thermal performance, making them suitable for freezing, thawing, and transporting biopharmaceutical products.

Additionally, accessories such as silicone tubing, thermoplastic tubing, integrated silicone injection-molded components, and aseptic connectors can be assembled in a Grade C clean environment, with optional gamma sterilization. This enables one-step product delivery tailored to customer requirements, effectively reducing assembly and cleaning/validation time.

- Complete size range, from 5 mL to 20 L
- Temperature range: -80°C to 100°C
- PC bottle body design, sturdy and impact-resistant under low-temperature conditions
- White PE cap with robust threaded neck design to prevent leakage and ensure a secure seal between the cap and container
- Injection-stretch-blow molding process ensures better product stability
- For bottles ≥ 125 mL, integrated blow-molded graduations resist peeling; molded handles make handling easier
- Gamma-irradiated sterilized version, dose 25–45 kGy; SAL confirmed to 10^{-6} according to ISO 11137 VDMAX25 method
- 2–4 port 48 & 70 mm Hose-Barbed PE caps available for customized tubing assemblies, with rapid response and extensive customization experience
- Non-cytotoxic and non-hemolytic
- BSE/TSE statement available
- Bacterial endotoxin < 0.25 EU/mL
- PC bottles comply with RoHS, REACH, SDS, and other relevant regulations
- Extractables study reports and validation documents available
- Shelf life: 2 years after irradiation

Applications

- Storage, thawing, and transport of high-value bulk solutions
- Storage and transport of cell culture media
- Component collection and storage/transport of intermediates
- Single-use system assembly

Relevant Testing

Chemical Compatibility	
Acidic, dilute/weak	Acceptable
Common organic solvents	Acceptable
Acidic, concentrated/strong	Test before use
Alkaline solutions	Test before use

* For further information on chemical compatibility, please contact our sales or technical team.

Physical Performance	
Irradiation resistance test	Pass
Repeated freeze–thaw test after irradiation	Pass
Drop test after freezing	ASTM D4169
Physicochemical tests	USP<661>

Biocompatibility and Particles	
<i>In vitro</i> biocompatibility	USP<87>, ISO 10993-4
<i>In vivo</i> biocompatibility	USP<88>
Bacterial endotoxin	USP<85>
Extractables	BPOG
Insoluble particles	USP<788>



SheerTainer™ Single-use Bioprocess Polycarbonate (PC) Bottles & Assemblies



Ordering Information

Product Name	Catalog Number	Cap Size (mm)	Shape and Size (mm)	Packaging Specification
SheerTainer™ single-use bioprocess PC bottle, 5 mL	SUS-COPC0005G	20	Cylindrical, 22 × 46	25 pieces/package, 20 packages/box
SheerTainer™ single-use bioprocess PC bottle, 20 mL	SUS-COPC0020G	20	Cylindrical, 30 × 69	25 pieces/package, 20 packages/box
SheerTainer™ single-use bioprocess PC bottle, 125 mL	SUS-COPC0125G	48	Cuboidal, 59 × 95	5 pieces/package, 10 packages/box
SheerTainer™ single-use bioprocess PC bottle, 500 mL	SUS-COPC0500G	48	Cuboidal, 83 × 152	2 pieces/package, 24 packages/box
SheerTainer™ single-use bioprocess PC bottle, 1 L	SUS-COPC001LG	48	Cuboidal, 101 × 187	2 pieces/package, 14 packages/box
SheerTainer™ single-use bioprocess PC bottle, 2 L	SUS-COPC002LG	48	Cuboidal, 120 × 240	1 piece/package, 20 packages/box
SheerTainer™ single-use bioprocess PC bottle, 5 L	SUS-COPC005LG	70	Cuboidal, 168 × 322	1 piece/package, 6 packages/box
SheerTainer™ single-use bioprocess PC bottle, 10 L	SUS-COPC010LG	70	Cuboidal, 212 × 395	1 piece/package, 3 packages/box
SheerTainer™ single-use bioprocess PC bottle, 20 L	SUS-COPC020LG	70	Cuboidal, 256 × 500	1 piece/package, 3 packages/box

*A non-irradiated version is available; the catalog number for the non-irradiated version is the same as above, with the "G" removed.

*For the non-irradiated version, the minimum order unit is "package"; for the irradiated version, the minimum order unit is "box."

*The product is double-layer vacuum-sealed, with product labeling on the package for batch traceability.

*The bottle body and cap are pre-assembled; the cap is a smooth, barb-free sealing cap.

*For inquiries about Hose-Barbed cap and manifold system assembly services, please contact your local sales or technical team.

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