Xcellerex™ XDUO mixers

SINGLE-USE MIXING SYSTEMS

Xcellerex™ XDUO mixers are single-use mixer systems for clinical and commercial production of biopharmaceuticals, vaccines, and other biologics (Fig 1). Use these intelligent, plug-and-play systems in upstream and downstream applications for automated mixing of buffer, media, product and intermediates, as well as other process fluids. Achieve robust mixing and ease of use with Xcellerex XDUO mixers, which feature powerful onboard automation capabilities, including in-line sensing, load cells, and process control. Xcellerex XDUO mixers integrate with existing biomanufacturing production lines as well as with the FlexFactory™ automation platform.

- Reduce downtime and costs that would otherwise be needed for cleaning and cleaning validation procedures.
- Achieve quick start-up of unit operations and mixing processes via the onboard instrument panel.
- View live process data and trends that are automatically displayed on the instrument panel.
- Control Xcellerex XDUO mixers locally, or via FlexFactory automation platform to minimize manual intervention.
- Achieve greater accuracy and significant time savings with automated titration.
- Eliminate the need for manual logging, as Xcellerex XDUO mixers log process data and events for input into batch records.

Fig 1. Xcellerex XDUO mixers are available in sizes of 50, 100, 200, 500, 1000, and 2500 L in either stainless steel or jacketed stainless steel (for heating and cooling applications). Xcellerex XDUO 2500 mixers are described separately in data file 29153543.

Application advantages

The range of in-process monitoring and control capabilities of the Xcellerex XDUO mixers allow precise configuration for a wide range of application needs. This flexibility reduces capital equipment requirements and maximizes plant efficiency.

- **Automated viral inactivation** with in-line sensors, programmable logic control (PLC), and pumps saves time and minimizes errors.
- **Automated pH adjustment** enables equilibration of cell culture media and buffer preparation, without sampling or manual addition of titrants.
- **Formulation** in the closed system provides processing with reduced risk of contamination.

Recommended applications include:

- Media preparation
- Buffer preparation
- pH adjustment
- Resuspension
- Chromatography pooling
- Homogenization of protein solutions
- Homogenization of vaccine adjuvants
- Viral inactivation
- Intermediate storage and pooling
- Ultrafiltration/diafiltration (UF/DF)
- Final formulation
- Cell harvest

Onboard capabilities:

- Data trending and recording
- Remote operation interface with FlexFactory automation
- Configurable with either dual pH monitoring, or single pH and conductivity monitoring
- pH control
- Temperature monitoring and control
- Weight monitoring

Bag assembly details

Two bag types (Standard and Plus) are available for Xcellerex XDUO single-use mixers. Both bag types have tubing lines and connections, as well as sampling and sensing capabilities to accommodate a wide array of applications. FlexFactory versions of these bags are available to optimize their use with other FlexFactory equipment (see ordering information). Custom bag configurations and filtration assemblies are also available on request. Features of the bag and rigid container permit seamless transitioning between powder-liquid and liquid-liquid mixing applications. A disposable impeller is welded into the bottom of the bag assembly (Fig 2). The engagement between motor and disposable impeller is via a robust magnetic coupling, imparting high torque and rapid mixing capability to the system.

Fig 2. The disposable impeller assembly is welded to the bottom of the bag for robust and reliable performance.

Single-use mixer product range

Xcellerex XDUO single-use mixers are available in a range of sizes from 50 to 2500 L to cover many bioprocessing applications. All configurations provide robust mixing performance and ease of use. The mixers are designed for process development, clinical and commercial production of biopharmaceuticals, vaccines, and other biologics. They support upstream and downstream applications for preparation of buffer, media, product and intermediates, as well as other process fluids.

Thermal and mixing characterization

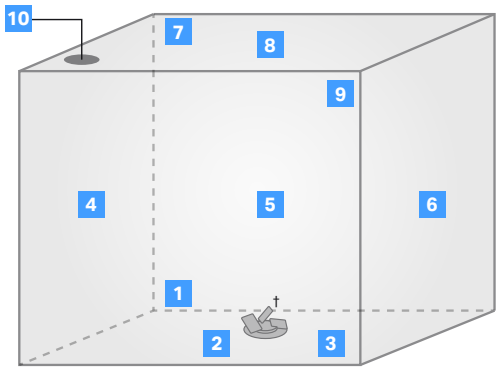
In a typical biopharmaceutical plant, a substantial amount of time is spent on mixing or hydration. A mixing vessel is required for operations spanning preparation of cell culture media and buffers to mixing of product in the intermediate storage steps and even during viral inactivation. Heating-cooling and mixing properties are the two key parameters for mixing applications, and these have been characterized for a range of volumes and impeller speeds in the Xcellerex XDUO mixers.

Mixing time to 95% homogeneity (t_{m95}) was measured by acid pulse addition at nine different pH probe locations in the bags (Fig 3). Figure 4 shows heating-cooling times at maximum working volumes for the three different mixer sizes that were tested (50 L, 200 L, and 500 L). Figure 5 displays mixing times measured at the different probe positions for the highest settings of volume and impeller speed. Contour plots describing the effect of impeller speeds, volumes, and viscosities on liquid-liquid mixing are shown in Figure 6.

The results show homogeneous mixing across all probe locations. Excellent comparability in terms of liquid-liquid mixing time and time to heat-cool the mixer content was observed for all mixer sizes tested.

Table 1. The heating-cooling and liquid-liquid test conditions

Parameters	Settings: heating-cooling	Settings: liquid-liquid mixing
Liquid volumes (min, mid., max. [L])	17, 33.5, 50 (XDUO 50 L*)	
	44, 122, 200 (XDUO 200 L)	
	110, 305, 500 (XDUO 500 L)	
Temperature intervals, heating	5°C to 20°C, 20°C to 37°C	20°C
Temperature intervals, cooling	37°C to 20°C, 20°C to 5°C	N/A
Impeller speed	125 rpm	50, 75, 125, 175, 200 rpm
Impeller direction	Up flow	Up flow
Liquid	0.1 M NaCl (aq.) solution	0.1 M NaCl (aq.), sucrose for viscosity, 0.2 M HCl/0.2 M NaOH for pH shifts



1 Bottom corner, opposite standard position (3)
2 Bottom between impeller and wall
3 Standard pH probe location, standard position
4 Middle of wall
5 Middle of tank
6 Middle of wall
7 Top corner
8 Top of tank, centered
9 Top corner
10 Addition port

Fig 3. Distribution of the nine pH probes (blue points) deployed in the mixing time characterization of Xcellerex XDUO mixers.

† The impeller assembly is welded to the bag. The impeller shown is for Xcellerex XDM/XDUO-100 L, 200 L, and 500 L mixers; the equivalent impeller for XDUO/XDM-50 L is not shown.

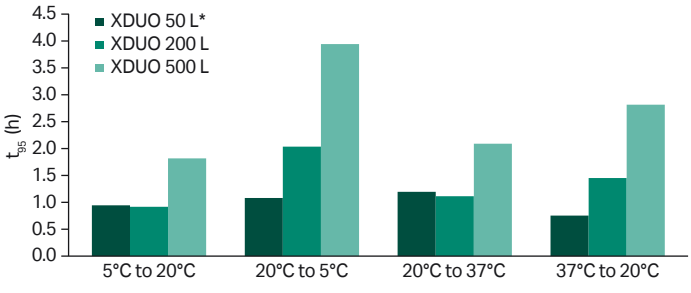


Fig 4. Heating-cooling times (t_{95}) at maximum working volumes for three different mixer sizes.

The 100 L Xcellerex XDUO mixer will have similar performance to the 50 L and 200 L Xcellerex XDUO mixers, and the 1000 L Xcellerex XDUO mixer will have similar performance to the 500 L Xcellerex XDUO mixer due to the contact area of the jacket versus media volume. Note that the performance of the tanks will heavily be dependent of the chosen temperature control unit (TCU).

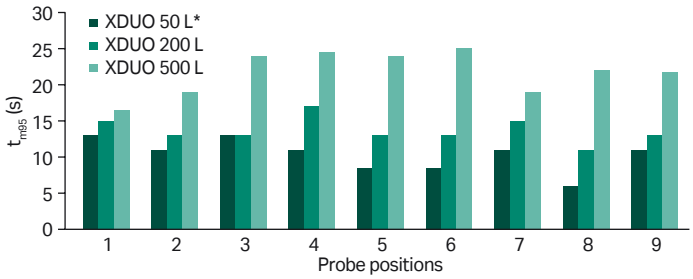


Fig 5. Liquid-liquid mixing time (t_{m95}) at each of the nine probe positions at maximum volume, 10 cP viscosity, and 175 rpm impeller speed.

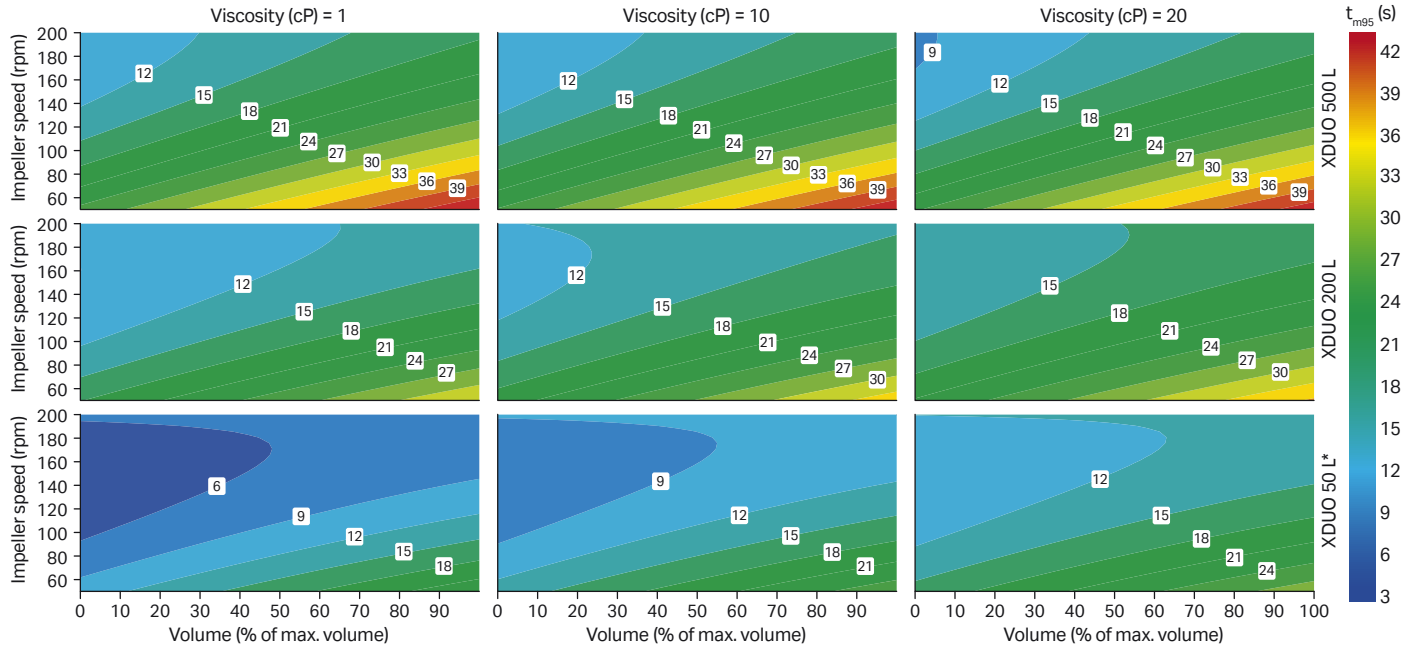


Fig 6. Contour plot showing mixing time (t_{m95}) in seconds of the Xcellerex XDUO 50 L*, 200 L and 500 L mixers under different settings (impeller speed, volume, and viscosity). The plot was generated from the probe positions resulting in the longest mixing time (t_{m95}) for each run.

* Note that at the time of the characterization studies, the now-discontinued XDM 50 L was used, not the Xcellerex XDUO 50 L mixer. Whilst the XDM did not have the same automation capabilities as the Xcellerex XDUO range, all parameters that would affect the study (geometry, physical components, sensors, etc.) are the same.

Specifications

Vessel specifications are given in Table 2, and system specifications are listed in Table 3. Site preparation guide is shown in Table 4.

Table 2. Vessel specifications[1]

Xcellerex XDUO jacketed mixer	**50 L**	**100 L**	**200 L**	**500 L**	**1000 L**
Vessel					
Vessel interior dimensions (W × H × D)	394 × 382 × 394 mm (15½ × 15 × 15½ in.)	508 × 498 × 508 mm (20 × 19⅝ in × 20 in.)	635 × 636 × 635 mm (25 × 25 × 25 in.)	838 × 851 × 838 mm (33 × 33½ × 33 in.)	1040 × 1023 × 1040 mm (41 × 40⁵⁄₁₆ × 41 in.)
Vessel overall dimensions with I/O panel (W × H × D)	900 × 1090 × 760 mm (35½ × 43 × 30 in.)	1010 × 1090 × 870 mm (39⅞ × 43 × 34¼ in.)	1140 × 1120 × 1000 mm (44⅞ × 44⅛ × 39⅜ in.)	1350 × 1480 × 1200 mm (53¼ × 58⅜ × 47¼ in.)	1550 × 1590 × 1410 mm (61⅛ × 62⅝ × 55⅝ in.)
Geometry	Cube with sloped bottom for full drainability				
Vessel main construction material	ASME II SA-240 304 L (stainless steel)				
Vessel surface finish	Ra 0.8 µm				
Slope to drain	2.5°				
Mobility (casters)	Mounted on four cleanroom casters and push handles				
Caster dimensions (ø × W)	100 × 35 mm	100 × 35 mm	125 × 40 mm	125 × 40 mm	160 × 45 mm
Weight (empty)	130 kg (287 lb)	155 kg (342 lb)	200 kg (441 lb)	315 kg (695 lb)	440 kg (970 lb)
Bag tubing gate	No tubing gate required for bag line and sensor access			Side port (front face) for bag lines and sensor access	Side port (front face) for bag lines and sensor access
Easy bag access	No side ports required for bag handling			One side port for bag handling	One side port for bag handling
Jacket					
Jacket type	Four sided dimple style				
Insulation type	PAROC Pro Wired Mat 70 or similar				
Jacket volume	2.5 L	3.8 L	4.0 L	8.0 L	9.0 L
Jacket (max design working pressure)	6.9 bar (100 psi)				
Burst disk rating/pressure relief valve rating	5.86 barg (85 psig)				
Compliance	ASME sec VIII Div 1 - 2015				
Heat transfer fluid supply/return connections	Parker quick couplings 316 SS (FS-1002-16FP/FS-1001-16FP)				
Drain ports	Capped with ball valve				
Xcellerex XDUO non-jacketed mixer	**50 L**	**100 L**	**200 L**	**500 L**	**1000 L**
Vessel					
Vessel interior dimensions (W × H × D)	394 × 382 × 394 mm (15½ × 15 × 15½ in.)	508 × 498 × 508 mm (20 × 19⅝ × 20 in.)	635 × 636 × 635 mm (25 × 25 × 25 in.)	838 × 851 × 838 mm (33 × 33½ × 33 in.)	1040 × 1023 × 1040 mm (41 × 40⁵⁄₁₆ × 41 in.)
Vessel overall dimensions with I/O panel (W × H × D)	790 × 1090 × 600 mm (31⅛ × 43 × 23⅝ in.)	910 × 1090 × 640 mm (35⅞ × 43 × 25¼ in.)	1030 × 1120 × 770 mm (40⅝ × 44⅛ × 30⅜ in.)	1240 × 1480 × 970 mm (48⅞ × 58⅜ × 38¼ in.)	1440 × 1590 × 1180 mm (56¾ × 62⅝ × 46½ in.)
Geometry	Cube with sloped bottom for full drainability				
Vessel main construction material	ASME II SA-240 304 L (stainless steel)				
Vessel surface finish	Ra ≤ 0.8 µm (32 µin)				
Slope to drain	2.5°				
Mobility (casters)	Mounted on four cleanroom casters and push handles				
Caster dimensions (ø × W)	100 × 35 mm	100 × 35 mm	125 × 40 mm	125 × 40 mm	160 × 45 mm
Weight (empty)	110 kg (242 lb)	115 kg (254 lb)	140 kg (309 lb)	200 kg (441 lb)	310 kg (684 lb)
Bag tubing gate	Side port (front face) for bag lines and sensor access				
Easy bag access	No side ports required for bag handling			One side port for bag handling	One side port for bag handling

[1] All specifications are subject to change without notice.

Table 3. System specifications[1]

	50 L	100 L	200 L	500 L	1000 L
Agitation					
Motor quantity/type	1 × Groschopp AC motor (2414597-1013)				
Motor mounting	Bottom integrated with vessel				
Motor drive type	Variable frequency drive (Allen-Bradley PowerFlex 525)				
Motor drive functionality	Run/stop, forward/break/reverse, 10 to 200 rpm				
Ingress protection					
IP code	IP 45				
Smart control unit					
Control panel	Integrated cabinet				
Dimensions (W × H × D)	285 × 600 × 450 mm (11 × 24 × 18 in.)	285 × 600 × 450 mm (11 × 24 × 18 in.)	285 × 600 × 450 mm (11 × 24 × 18 in.)	285 × 600 × 450 mm (11 × 24 × 18 in.)	285 × 600 × 450 mm (11 × 24 × 18 in.)
Constructions material and surface finish	ASME II SA-240 304 L (stainless steel); Ra 0.8 µm				
Automation hardware	Siemens S7-1200 PLC				
Automatic pH control pump	Watson-Marlow 313 OEM peristaltic pump				
Automatic pH control transmitter	Rosemount analytical model 1056 Dual Input Analyzer				
Automatic temperature control	Jacketed only: external temperature control unit optional				
HMI	Siemens SIMATIC HMI TP700				
Alarms	Factory set and user defined				
Communication ports	USB, Ethernet, Profibus				
Remote connectivity	FlexFactory using M-Station. Other biomanufacturing platforms using X-Station (custom)				
E-stop	Integrated safety circuit for pH pumps				
Automation compliance	21 CFR Part 11 and EU Annex 11 compliance enabled				
Process analytics					
Data monitoring	Real-time instantaneous and trending of all variable				
Data recording	Long-term data recording of all variable				
Data storage	HMI SD card				
File formats	CSV				
Data security	Three-level security (administrator, super-user and operator)				
Data exporting	Local via USB flash drive. Remote via PC (with Ethernet and web browser capabilities)				
Audit log	21 CFR Part 11 and EU Annex 11 compliance enabled				
Integrated process monitoring					
RTD temperature sensor	Burns Engineering TE-01/A/B2				
pH probe	Hamilton EasyFerm Plus VP 225. P/N 238634/00				
Conductivity probe	Hamilton Conducell 4USF-PG-120, P/N 23899-4047/99				
Load cells	Mettler Toledo 0745A				
Sensor installation time	< 30 min				
Recommended operating conditions					
Ambient operating temperature	5°C to 30°C				
Jacketed operating temperature	2°C to 60°C				
Motor speed	50 to 200 rpm				
Absolute min. volume	17 L	28 L	44 L	76 L	119 L
Absolute max. volume	57 L	110 L	220 L	550 L	1010 L
Maximum closed-top mixing bag pressure	0.05 bar (0.7 psig)				
Continuous operating time	5 days (for bag)				
Relative humidity	20% to 85%, noncondensing				
Cleaning agents	External surfaces of the system components are compatible with commonly used cleaning methods in GMP and lab environments				

[1] All specifications are subject to change without notice.

Table 4. Site preparation guide

		50 L	100 L	200 L	500 L	1000 L
1. Containers						
Minimal door aperture	Jacketed	820 mm (33.1 in.)	840 mm (33.1 in.)	980 mm (38.6 in.)	1240 mm (48.8 in.)	1400 mm (55.1 in.)
	Non-jacketed	820 mm (33.1 in.)	840 mm (33.1 in.)	980 mm (38.6 in.)	1240 mm (48.8 in.)	1400 mm (55.1 in.)
Total crate and unit weights	Jacketed	175 kg (386 lb)	220 kg (485 lb)	280 kg (618 lb)	420 kg (926 lb)	570 kg (1257 lb)
	Non-jacketed	155 kg (342 lb)	180 kg (397 lb)	220 kg (485 lb)	310 kg (684 lb)	440 kg (970 lb)
2. Uncrating the system						
Tools required		Forklift or pallet jack, screwdriver with #2 Phillips bit, small pry bar or large flat-head screwdriver				
3. Power requirements						
I/O cabinet supply voltage		100-120 VAC, 50 or 60 Hz, 1 phase, 4.5 A; 200-240 VAC, 50 or 60 Hz, 1 phase, 3.0 A				
Unit maximum power consumption		720 VA				
4. Transportation route						
Minimal door aperture	Jacketed	600 mm (23.6 in.)	684 mm (26.9 in.)	813 mm (32.0 in.)	1016 mm (40.0 in.)	1220 mm (48.0 in.)
	Non-jacketed	560 mm (22.0 in.)	574 mm (22.6 in.)	700 mm (27.6 in.)	903 mm (35.6 in.)	1105 mm (43.5 in.)

Single-use bags

Specifications of the single-use bags are listed in Table 5. Xcellerex Plus bag assembly connections are described in Table 6 below and in Figure 7.

Table 5. Specifications[1]

	50 L	100 L	200 L	500 L	1000 L
Single-use bags					
Dimensions (W × H × D)	394 × 380 × 394 mm (15½ × 15 × 15½ in.)	508 × 483 × 508 mm (20 × 19 × 20 in.)	635 × 610 × 635 mm (25 × 24 × 25 in.)	838 × 813 × 838 mm (33 × 32 × 33 in.)	1041 × 940 × 1041 mm (41 × 37 × 41 in.)
Hold-up volume	< 20 mL				
Fluid contact layer (film material)	ULDPE (USP Class VI) for bags with PL-1026/PL-1077 film, LDPE (USP Class VI) for Fortem film bags				
Tubing material	C-Flex 374 for bags with PL-1026/PL-1077 film, AdvantaFlex for Fortem film bags				
Sterilization	Dosed at 27.5 to 45 kGy for bags with PL-1026/PL-1077 film, 27.5 to 44 kGy for Fortem film bags				
Product recovery	> 99.9%				
Bag set-up time	< 5 min for one person				
Impeller					
Material	Marlex 0918 HDPE				
Number of blades	3				
Diameter	191 mm (7.5 in.)				
Blade (W × H)	64 × 107 mm (2.5 × 4.2 in.)				
Blade pitch	57°				

[1] All specifications are subject to change without notice.

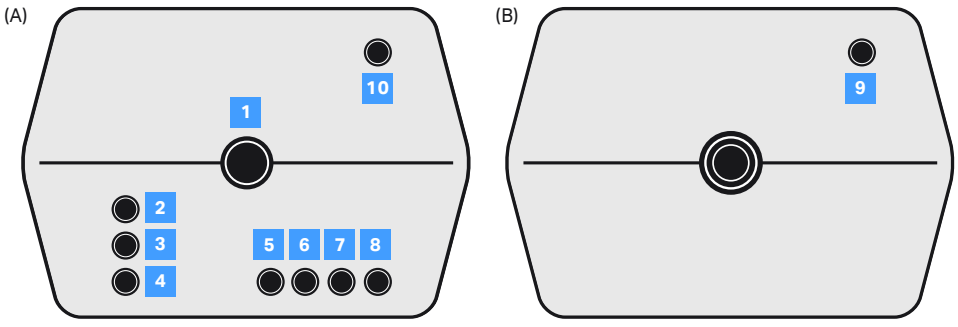


Fig 7. The (A) top and (B) bottom of Xcellerex XDM/XDUO 500 Plus bags. Port positions 1 to 10 are described in Table 6.

Table 6. Xcellerex single-use bag assembly connections[1]

Port	Description	50 L	100 L	200 L	500 L	1000 L
Fortem bag assembly						
1	Fill port: 3 in. sanitary clamp powder addition port, capped	✓	✓	✓	✓	✓
2	AdvantaFlex tubing, 152 cm (5 ft) with clamp, plugged, ReadyMate, or AseptiQuik G (i.d. indicated)	12.7 mm (½ in.)	12.7 mm (½ in.)	12.7 mm (½ in.)	19.1 mm (¾ in.)	19.1 mm (¾ in.)
3	⅛ in. i.d. AdvantaFlex tubing, 91 cm (3 ft) with clamp, plugged	NA	NA	NA	NA	NA
4	⅛ in. i.d. AdvantaFlex tubing, 91 cm (3 ft) with clamp, plugged	NA	NA	NA	NA	NA
5, 6	Probe port: AseptiQuik G connector port for probe connection	NA	NA	NA	NA	NA
7	Thermowell: for noninvasive temperature sensing	NA	NA	NA	NA	NA
8	Sample line: ⅛ in. i.d. sample line with clamp, and swabbable valve connection	✓	✓	✓	✓	✓
9	Harvest/drain: AdvantaFlex tubing, 183 cm (6 ft) with clamp and plugged, ReadyMate, or AseptiQuik G (i.d. indicated)	12.7 mm (½ in.)	12.7 mm (½ in.)	12.7 mm (½ in.)	19.1 mm (¾ in.)	19.1 mm (¾ in.)
10	AdvantaFlex tubing, 152 cm (5 ft) with clamp, plugged, ReadyMate, or AseptiQuik G (i.d. indicated)	NA	NA	NA	NA	NA
Fortem plus bag assembly						
1	Fill port: 3 in. sanitary clamp powder addition port, capped	✓	✓	✓	✓	✓
2	AdvantaFlex tubing, 152 cm (5 ft) with clamp, plugged, ReadyMate, or AseptiQuik G (i.d. indicated)	12.7 mm (½ in.)	12.7 mm (½ in.)	12.7 mm (½ in.)	19.1 mm (¾ in.)	19.1 mm (¾ in.)
3	⅛ in. i.d. AdvantaFlex tubing, 91 cm (3 ft) with clamp, plugged	✓	✓	✓	✓	✓
4	⅛ in. i.d. AdvantaFlex tubing, 91 cm (3 ft) with clamp, plugged	✓	✓	✓	✓	✓
5, 6	Probe port: AseptiQuik G connector port for probe connection	✓	✓	✓	✓	✓
7	Thermowell: for noninvasive temperature sensing	✓	✓	✓	✓	✓
8	Sample line: ⅛ in. i.d. sample line with clamp, and swabbable valve connection	✓	✓	✓	✓	✓
9	Harvest/drain: AdvantaFlex tubing, 183 cm (6 ft) with clamp and plugged, ReadyMate, or AseptiQuik G (i.d. indicated)	12.7 mm (½ in.)	12.7 mm (½ in.)	12.7 mm (½ in.)	19.1 mm (¾ in.)	19.1 mm (¾ in.)
10	AdvantaFlex tubing, 152 cm (5 ft) with clamp, plugged, ReadyMate, or AseptiQuik G (i.d. indicated)	NA	NA	NA	NA	NA
Standard bag assembly (PL-1026/PL-1077 film)						
1	Fill port: 3 in. sanitary clamp powder addition port, capped	✓	✓	✓	✓	✓
2	C-Flex 374 tubing, 122 cm (4 ft) with clamp, plugged or ReadyMate (i.d. indicated)	12.7 mm (½ in.)	12.7 mm (½ in.)	12.7 mm (1½ in.)	12.7 mm (½ in.)	19.1 mm (¾ in.)
3	½ in. i.d. C-Flex 374 tubing, 122 cm (4 ft) with clamp, female MPX connector, plugged	NA	NA	NA	NA	NA
4	⅛ in. i.d. C-Flex 374 tubing 91 cm (3 ft) with luer lock connection	NA	NA	NA	NA	NA
5, 6	Probe port: female Kleenpak™ connector port for probe connection	NA	NA	NA	NA	NA
7	Thermowell: for noninvasive temperature sensing	NA	NA	NA	NA	NA
8	Sample line: ⅛ in. i.d. sample line with clamp, and luer lock connection	✓	✓	✓	✓	✓
9	Harvest/drain: C-Flex 374 tubing, 183 cm (6 ft) with clamp, plugged or ReadyMate (i.d. indicated)	12.7 mm (½ in.)	12.7 mm (½ in.)	12.7 mm (½ in.)	12.7 mm (½ in.)	19.1 mm (¾ in.)
10	C-Flex 374 tubing, 122 cm (4 ft) with clamp, plugged or ReadyMate (i.d. indicated)	NA	NA	NA	NA	NA
Plus bag assembly (PL-1026/PL-1077 film)						
1	Fill port: 3 in. sanitary clamp powder addition port, capped	✓	✓	✓	✓	✓
2	C-Flex 374 tubing, 122 cm (4 ft) with clamp, plugged or ReadyMate (i.d. indicated)	19.1 mm (¾ in.)	19.1 mm (¾ in.)	19.1 mm (¾ in.)	19.1 mm (¾ in.)	19.1 mm (¾ in.)
3	½ in. i.d. C-Flex 374 tubing, 122 cm (4 ft) with clamp and luer lock connection	✓	✓	✓	✓	✓
4	⅛ in. i.d. C-Flex 374 tubing 91 cm (3 ft) with clamp and luer lock connection	✓	✓	✓	✓	✓
5, 6	Probe port: female Kleenpak connector port for probe connection	✓	✓	✓	✓	✓
7	Thermowell: for noninvasive temperature sensing	✓	✓	✓	✓	✓
8	Sample line: ⅛ in. i.d. sample line with clamp, and luer lock connection	✓	✓	✓	✓	✓
9	Harvest/drain: C-Flex 374 tubing, 183 cm (6 ft) with clamp, plugged or ReadyMate (i.d. indicated)	12.7 mm (½ in.)	12.7 mm (½ in.)	12.7 mm (½ in.)	12.7 mm (½ in.)	19.1 mm (¾ in.)
10	C-Flex 374 tubing, 122 cm (4 ft) with clamp, plugged or ReadyMate (i.d. indicated)	12.7 mm (½ in.)	12.7 mm (½ in.)	12.7 mm (½ in.)	12.7 mm (½ in.)	12.7 mm (½ in.)

[1] All specifications are subject to change without notice. Table refers to all bags.

Ordering information

	Product code				
Bags	**50 L**	**100 L**	**200 L**	**500 L**	**1000 L**
Fortem	29300460	29301275	29299915	29304524	29297664
Fortem Plus	29278691	29280674	29282860	29305463	29296403
Fortem with ReadyMate connectors	29394998	29395000	29395002	29395004	29395006
Fortem Plus with ReadyMate connectors	29394999	29395001	29395003	29395005	29395007
Fortem with AseptiQuik connectors	29395105	29395107	29395109	29395111	29395113
Fortem Plus with AseptiQuik connectors	29395106	29395108	29395110	29395112	29395114
Standard	888-0462-C	888-0164-C	888-0165-C	888-0166-C	888-0167-C
Standard with ReadyMate connectors	888-0462-F	888-0164-F	888-0165-F	888-0166-F	888-0167-F
Plus	888-0351-C	888-0154-C	888-0155-C	888-0156-C	888-0157-C
Plus with ReadyMate connectors	888-0351-F	888-0154-F	888-0155-F	888-0156-F	888-0157-F

Xcellerex XDUO mixers	**Product code**
Jacketed	29054862
Non-jacketed	29054861

Accessories	
Assure probe sheath (4)	29207815
Probe sheath (4)	29041158
Sample manifold (2)	29041165
Sample manifold (4)	29041166
Sample manifold (10)	29041167
5 kg Fortem film powder bag	29399774
10 kg Fortem film powder bag	29399775
5 kg powder bag	29041168
10 kg powder bag	29041169
Probe clamp pliers	29041784
XDM hopper*	29056423
pH sensor insert, 12 × 225 mm, Hamilton, VP	817-00144
Conductivity sensor insert, 12 × 225 mm	817-80003
Reusable probe stand autoclave	826-00304

* XDM hopper can be used with Xcellerex XDUO mixers.

cytiva.com

For local office contact information, visit cytiva.com/contact

CY51523-DDMon25-DF