

Xcellerex XDM Mixer

SINGLE-USE MIXING SYSTEMS

Xcellerex™ XDM Mixers are designed for convenient and efficient mixing of buffer, media, intermediates and product, as well as other process fluids. The single-use system eliminates the hassle of time-consuming and costly clean-in-place (CIP) and steam-in-place (SIP) procedures, as well as cleaning validation. The result is efficient processing and rapid batch-to-batch turnover time. The Xcellerex XDM Mixer is available in single-wall stainless steel (Fig 1), jacketed stainless steel (for heating and cooling applications), or polypropylene (Fig 2).

- Reduce downtime and costs that would otherwise be needed for cleaning and cleaning validation procedures.
- Achieve noninvasive temperature control with real-time sensing and sampling capability via mixer window, bag probe ports, sampling port, and thermowell.
- Ensure robust mixing via powerful integrated magnetic agitator with compact VFD and AC motor.
- Enhance mixing efficiency through square design with natural baffling effect.
- Maximize security with a user-friendly design.
- All mixers are CE and UL approved as well as GMP compliant.

The system comprises an integrated rigid container, complete with an agitation system and controls that use an irradiated USP Class VI single-use bag. The system delivers flexibility with the availability of two standard bag types that include varying numbers of tubing lines and connections, and sampling and sensing capabilities to accommodate a wide array of applications. Custom bag configurations are also available on request. Key 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 3). The engagement between motor and disposable impeller is via a robust magnetic coupling, imparting high torque and rapid mixing capability to the system.



Fig 1. Xcellerex XDM stainless steel mixers are available in 50, 100, 200, 500, and 1000 L sizes.



Fig 2. Xcellerex XDM polypropylene mixers are available in 50, 100, 200, and 500 L sizes.

Recommended applications

The mixers are designed for process development, as well as clinical and commercial production of biopharmaceuticals, vaccines, and other biologics. Xcellerex mixers support upstream and downstream applications for preparation of buffer, media, product and intermediates, as well as other process fluids.

Bag assembly details

Two bag types (Standard and Plus) are available for XDM 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. Alternate versions of these bags are available to optimize their use with different equipment, including plugged ended and unique sterile connector configurations. Custom bag configurations and filtration assemblies are available on request. Features of the bag and rigid container also permit seamless transitioning between powder-liquid and liquid-liquid mixing applications. A disposable impeller is welded into the bottom of the bag assembly (Fig 3). The engagement between motor and disposable impeller is via a robust magnetic coupling, imparting high torque and rapid mixing capability to the system.

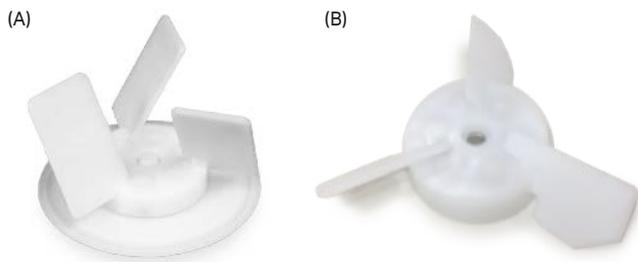


Fig 3. The disposable impeller assembly is welded to the bottom of the bag. (A) Impeller for the 100, 200, and 500 L bags, and (B) the impeller for the 50 L bags.

Single-use mixer product range

Xcellerex single-use mixers are available as XDM and XDUO configurations and in a range of sizes to cover many bioprocessing applications. In terms of mixing capability, the XDM and XDUO are identical. XDUO, however, offers more powerful automation capabilities. The XDM mixers range in size from 50 to 1000 L, while XDUO mixers are available from 100 to 2500 L. All configurations provide robust mixing performance and ease of use.

Thermal and mixing characterization

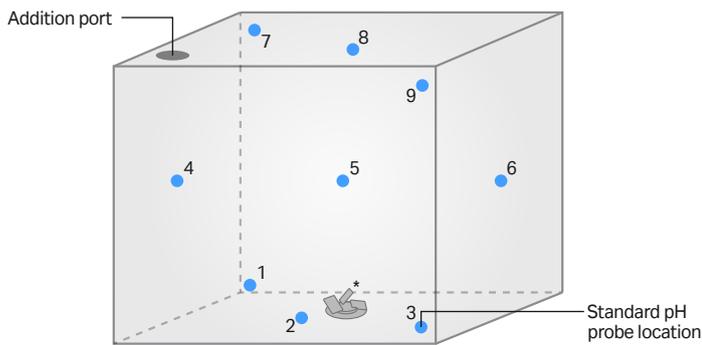
In a typical biopharmaceutical plant, a substantial amount of time is spent on mixing or hydration. A mixing vessel is required for operations spanning preparation of cell culture media and buffers to mixing of product in the intermediate storage steps and even during viral clearance. Single-use mixers have been used in the past two decades in biopharmaceutical plants to replace the use of stainless steel vessels. XDM and XDUO mixers from Cytiva offer equivalent mixing capabilities, with XDUO exhibiting a higher level of automation. Heating-cooling and mixing properties are the two key parameters important for mixing applications. Information about these properties is needed when comparing the performance between stainless steel and single-use mixers. Two parameters—heating-cooling time and liquid-liquid mixing time—were characterized for a range of volumes and impeller speeds in the XDM 50 as well as in the XDM/XDUO 200 and 500 mixers.

Mixing time to 95% homogeneity (t_{m95}) was measured by acid pulse addition at nine different pH probe locations in the bags (Fig 4). Figure 5 shows heating-cooling times at maximum working volumes for the three different mixer sizes. Figure 6 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 7.

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 contents was observed for all mixer sizes tested.

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

Parameters	Settings:	Settings:
	heating-cooling	liquid-liquid mixing
Liquid volumes (min, mid., max. [L])	17, 33.5, 50 (XDM 50) 44, 122, 200 (XDUO 200) 110, 305, 500 (XDUO 500)	
Temperature intervals, heating	5°C to 20°C, 20°C to 37°C	20°C ± 0.1°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 position
- 4. Middle of wall
- 5. Middle of tank
- 6. Middle of wall
- 7. Top corner
- 8. Top of tank, centered
- 9. Top corner

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

Fig 4. Distribution of the nine pH probes (blue points) deployed in the mixing time characterization of XDM/XDUO mixers.

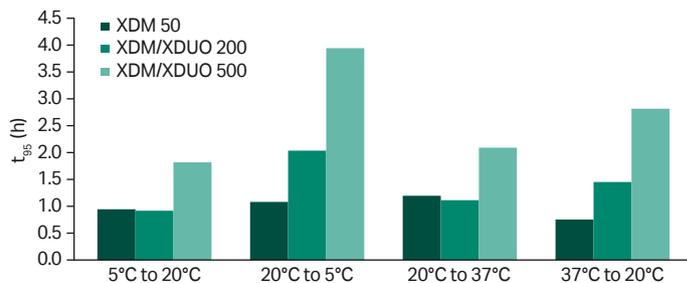


Fig 5. Heating and cooling times (t_{95}) for different temperature ranges. Measured at max. working volume for the 50, 200, and 500 L mixers.

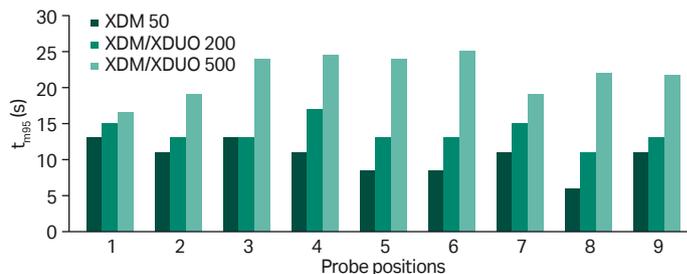


Fig 6. Liquid-liquid mixing time (t_{m95}) at each of the nine probe positions at maximum volume, 10cP viscosity, and 175 rpm impeller speed.

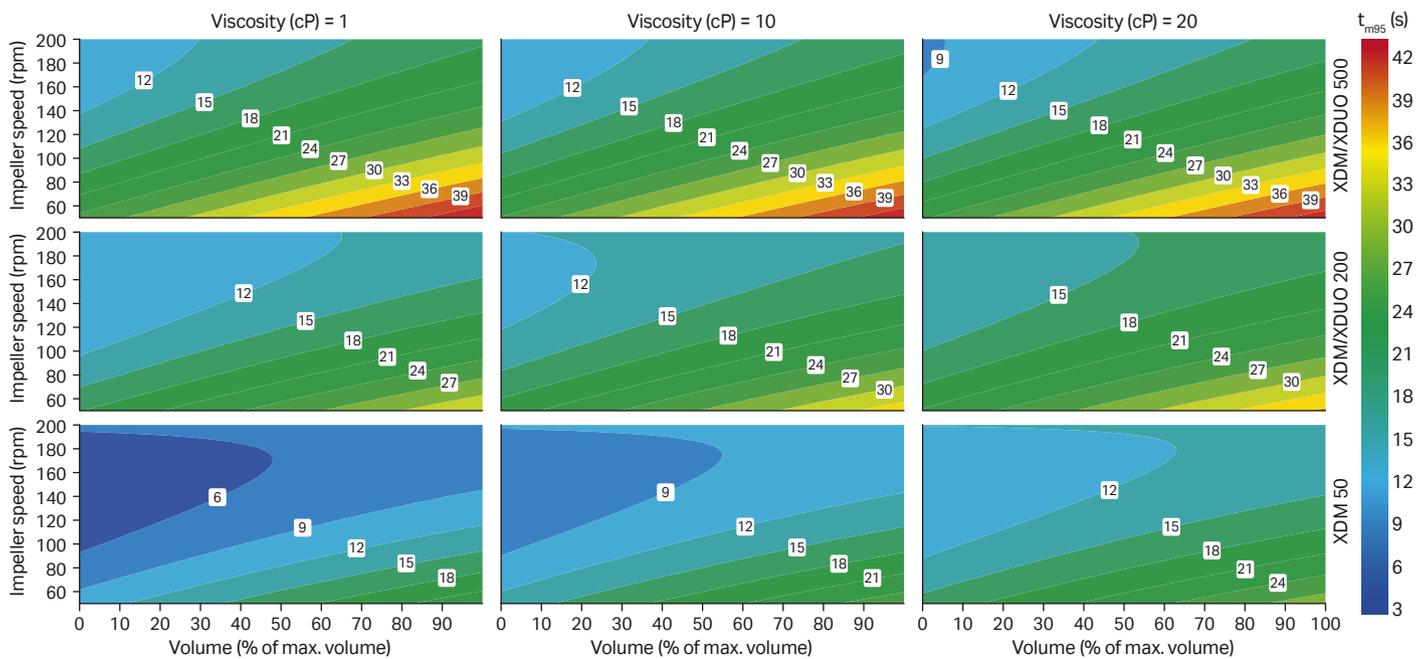


Fig 7. Contour plot showing mixing time (t_{m95}) in seconds of XDM 50 and XDM/XDUO 200 and 500 mixers under different settings (impeller speed, volume, and viscosity). The plot was generated from the probe positions resulting in the longest mixing time (t_{m95}) for each run.

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 specifications¹

XDM Jacketed Mixer	50 L	100 L	200 L	500 L	1000 L
Vessel					
Vessel interior dimensions (W × H × D)	394 × 394 × 394 mm (15.5 × 15.5 × 15.5 in)	508 × 498 × 508 mm (20 × 20 × 20 in)	635 × 636 × 635 mm (25 × 25 × 25 in)	838 × 851 × 838 mm (33 × 33 1/2 × 33 in)	1040 × 1023 × 1040 mm (41 × 38 × 41 in)
Vessel overall dimensions with I/O panel (W × H × D)	850 × 1090 × 760 mm (33 1/2 × 43 × 30 in)	970 × 1090 × 870 mm (38 1/4 × 43 × 34 1/4 in)	1100 × 1120 × 1000 mm (43 3/8 × 44 1/8 × 39 3/8 in)	1300 × 1480 × 1200 mm (51 1/4 × 58 3/8 × 47 1/4 in)	1500 × 1590 × 1410 mm (59 1/8 × 62 5/8 × 55 5/8 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				
Slope to drain	~ 41.7 mm (1.64 in) per meter (3.28 ft) cross-section				
Mobility (casters)	Mounted on four clean room 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)	100 kg (220 lb)	140 kg (310 lb)	185 kg (410 lb)	300 kg (660 lb)	425 kg (940 lb)
Bag tubing gate	Side port (front face) for bag lines and sensor access				
Easy bag access	Two side ports (short face) for bag handling	Two side ports (short face) for bag handling	Two side ports (short face) 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 L	> 9 L
Jacket (max. design working pressure/test pressure)	6.9 / 9.0 bar				
Burst disk rating	0.59 MPa, 5.9 bar, 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				
XDM Non-jacketed Mixer					
Vessel					
Vessel interior dimensions (W × H × D)	394 × 394 × 394 mm (15.5 × 15.5 × 15.5 in)	508 × 498 × 508 mm (20 × 20 × 20 in)	635 × 636 × 635 mm (25 × 25 × 25 in)	838 × 851 × 838 mm (33 × 33 1/2 × 33 in)	1040 × 1023 × 1040 mm (41 × 38 × 41 in)
Vessel overall dimensions with I/O panel (W × H × D)	740 × 1090 × 530 mm (29 1/4 × 43 × 20 7/8 in)	860 × 1090 × 640 mm (33 7/8 × 43 × 25 1/4 in)	990 × 1120 × 770 mm (39 × 44 1/8 × 30 3/8 in)	1190 × 1480 × 970 mm (46 7/8 × 58 3/8 × 38 1/4 in)	1390 × 1590 × 1180 mm (54 1/4 × 62 5/8 × 46 1/2 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				
Slope to drain	~ 41.7 mm (1.64 in) per meter (3.28 ft) cross-section				
Mobility (casters)	Mounted on four clean room 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)	85 kg (190 lb)	100 kg (220 lb)	125 kg (280 lb)	185 kg (410 lb)	295 kg (650 lb)
Bag tubing gate	Side port (front face) for bag lines and sensor access				
Easy bag access	Two side ports (short face) for bag handling	Two side ports (short face) for bag handling	Two side ports (short face) for bag handling	One side port for bag handling	One side port for bag handling

XDM Polypropylene Mixer	50 L	100 L	200 L	500 L
Vessel				
Vessel interior dimensions (W × H × D)	394 × 381 × 394 mm	508 × 514 × 508 mm	635 × 590 × 635 mm	838 × 787 × 838 mm
Vessel overall dimensions with I/O panel (W × H × D)	673 × 1126 × 695 mm	743 × 1088 × 887 mm	811 × 1057 × 1012 mm	1030 × 1256 × 1232 mm
Geometry	Cube with sloped bottom for full drainability			
Vessel main construction material	Polypropylene			
Vessel surface finish	RA ≤ 35 µin ≤ 1.0 µm			
Slope to drain	~ 41.7 mm (1.64 in) per meter (3.28 ft) cross-section			
Mobility (casters)	Mounted on four clean room casters and push handles			
Caster dimensions (ø × W)	100 × 35 mm			
Weight (empty)	54 kg	68 kg	78 kg	144 kg
Bag tubing gate	Side port (front face) for bag lines and sensor access			

¹ All specifications are subject to change without notice.

Table 3. System specifications¹

	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 - Stainless Steel: Allen-Bradley™ PowerFlex™ 525; Polypropylene: Allen-Bradley PowerFlex 525				
Motor drive functionality	Run/stop, forward/break/reverse, 10 to 200 rpm				
Ingress protection					
IP code	IP 45				
Process analytics					
Data monitoring	Real-time instantaneous				
Integrated process monitoring					
RTD temperature sensor	Burns Engineering TE-01/A/B ²				
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	55 L	110 L	220 L	550 L	1010 L
Maximum closed-top mixing bag pressure	0.005 MPa (0.05 bar, 0.7 psig)				
Continuous operating time	5 d (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.

² Not with polypropylene mixers.

Table 4. Site preparation guide

		50 L	100 L	200 L	500 L	1000 L
1. Containers						
Minimal door aperture	XDM Jacketed	700 mm (27.6 in)	840 mm (33.1 in)	980 mm (38.6 in)	1240 mm (48.8 in)	1400 mm (55.1 in)
	XDM Non-jacketed	700 mm (27.6 in)	840 mm (33.1 in)	980 mm (38.6 in)	1240 mm (48.8 in)	1400 mm (55.1 in)
	XDM Polypropylene	964 mm (38 in)	964 mm (38 in)	964 mm (38 in)	1234 mm (49 in)	N/A
Total crate and unit weights	XDM Jacketed	180 kg (397 lb)	237 kg (523 lb)	314 kg (693 lb)	460 kg (1062 lb)	643 kg (1500 lb)
	XDM Non-jacketed	160 kg (353 lb)	212 kg (468 lb)	264 kg (582 lb)	375 kg (878 lb)	533 kg (1315 lb)
	XDM Polypropylene	109 kg	123 kg	133 kg	218 kg	N/A
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	XDM Jacketed	570 mm (22.4 in)	684 mm (26.9 in)	813 mm (32.0 in)	1016 mm (40.0 in)	1220 mm (48.0 in)
	XDM Non-jacketed	460 mm (18.1 in)	574 mm (22.6 in)	700 mm (27.6 in)	903 mm (35.6 in)	1105 mm (43.5 in)
	XDM Polypropylene	675 mm	745 mm	810 mm	1030 mm	N/A

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 8.

Table 5. Specifications¹

	50 L	100 L	200 L	500 L	1000 L
Single-use bags					
Dimensions (W × H × D)	394 × 368 × 394 mm (15.5 × 14.5 × 15.5 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	220 mm (8.7 in)	191 mm (7.5 in)	191 mm (7.5 in)	191 mm (7.5 in)	191 mm (7.5 in)
Blade (W × H)	89 × 38 mm (3.5 × 1.5 in)	64 × 107 mm (2.5 × 4.2 in)	64 × 107 mm (2.5 × 4.2 in)	64 × 107 mm (2.5 × 4.2 in)	64 × 107 mm (2.5 × 4.2 in)
Blade pitch	40°	57°	57°	57°	57°

¹ All specifications are subject to change without notice.

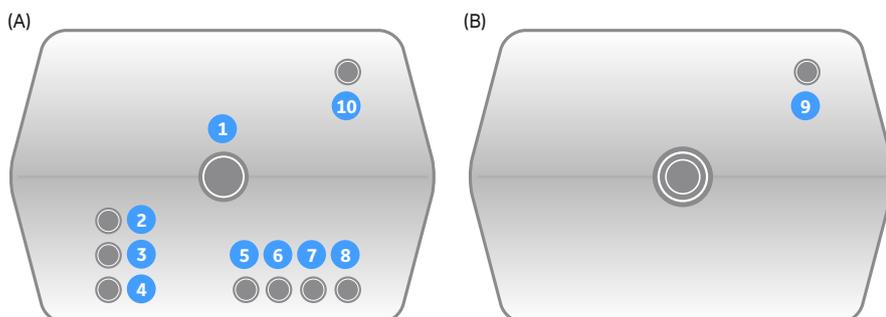


Fig 8. The (A) top and (B) bottom of Xcellerex XDM 500 Plus bags. Port positions 1 to 10 are described in Table 6.

Table 6. Xcellerex single-use bag assembly connections¹

Port	Description	50 L	100 L	200 L	500 L	1000 L
Fortem bag assembly						
1	Fill port: 3" Tri-Clamp™ powder addition port, capped	x	x	x	x	x
2	Advantaflex tubing, 5' with clamp, plugged, ReadyMate™, or Aseptiquik G (ID indicated)	12.7 mm (1/2 in)	12.7 mm (1/2 in)	12.7 mm (1/2 in)	19.1 mm (3/4 in)	19.1 mm (3/4 in)
3	1/8" i.d. Advantaflex tubing, 3' with clamp, plugged	NA	NA	NA	NA	NA
4	1/8" i.d. Advantaflex tubing, 3' 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: 1/8" i.d. sample line with clamp, and swabbable valve connection	x	x	x	x	x
9	Harvest/drain: Advantaflex tubing, 6' with clamp and plugged, ReadyMate, or Aseptiquik G (i.d. indicated)	12.7 mm (1/2 in)	12.7 mm (1/2 in)	12.7 mm (1/2 in)	19.1 mm (3/4 in)	19.1 mm (3/4 in)
10	Advantaflex tubing, 5' with clamp, plugged, ReadyMate, or Aseptiquik G (ID indicated)	NA	NA	NA	NA	NA
Fortem plus bag assembly						
1	Fill port: 3" Tri-Clamp powder addition port, capped	x	x	x	x	x
2	Advantaflex tubing, 5' with clamp, plugged, ReadyMate, or Aseptiquik G (ID indicated)	12.7 mm (1/2 in)	12.7 mm (1/2 in)	12.7 mm (1/2 in)	19.1 mm (3/4 in)	19.1 mm (3/4 in)
3	1/8" i.d. Advantaflex tubing, 3' with clamp, plugged	x	x	x	x	x
4	1/8" i.d. Advantaflex tubing, 3' with clamp, plugged	x	x	x	x	x
5, 6	Probe port: Aseptiquik G connector port for probe connection	x	x	x	x	x
7	Thermowell: for noninvasive temperature sensing	x	x	x	x	x
8	Sample line: 1/8" i.d. sample line with clamp, and swabbable valve connection	x	x	x	x	x
9	Harvest/drain: Advantaflex tubing, 6' with clamp and plugged, ReadyMate, or Aseptiquik G (i.d. indicated)	12.7 mm (1/2 in)	12.7 mm (1/2 in)	12.7 mm (1/2 in)	19.1 mm (3/4 in)	19.1 mm (3/4 in)
10	Advantaflex tubing, 5' with clamp, plugged, ReadyMate, or Aseptiquik G (ID indicated)	12.7 mm (1/2 in)	12.7 mm (1/2 in)	12.7 mm (1/2 in)	19.1 mm (3/4 in)	19.1 mm (3/4 in)
Standard bag assembly (PL-1026/PL-1077 film)						
1	Fill port: 3" Tri-Clamp powder addition port, capped	x	x	x	x	x
2	C-Flex 374 tubing, 4' with clamp, plugged or ReadyMate (ID indicated)	12.7 mm (1/2 in)	19.1 mm (3/4 in)			
3	1/2" i.d. C-Flex 374 tubing, 4' with clamp, female MPX connector, plugged	NA	NA	NA	NA	NA
4	1/8" i.d. C-Flex 374 tubing (36") 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: 1/8" i.d. sample line with clamp, and Luer lock connection	x	x	x	x	x
9	Harvest/drain: C-Flex 374 tubing, 6' with clamp, plugged or ReadyMate (i.d. indicated)	12.7 mm (1/2 in)	19.1 mm (3/4 in)			
10	C-Flex 374 tubing, 4' 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" Tri-Clamp powder addition port, capped	x	x	x	x	x
2	C-Flex 374 tubing, 4' with clamp, plugged or ReadyMate (i.d. indicated)	19.1 mm (3/4 in)				
3	1/2" i.d. C-Flex 374 tubing, 4' with clamp, female MPX connector, plugged	x	x	x	x	x
4	1/8" i.d. C-Flex 374 tubing (36") with Luer lock connection	x	x	x	x	x
5, 6	Probe port: female Kleenpak connector port for probe connection	x	x	x	x	x
7	Thermowell: for noninvasive temperature sensing	x	x	x	x	x
8	Sample line: 1/8" i.d. sample line with clamp, and Luer lock connection	x	x	x	x	x
9	Harvest/drain: C-Flex 374 tubing, 6' with clamp, plugged or ReadyMate (i.d. indicated)	12.7 mm (1/2 in)	19.1 mm (3/4 in)			
10	C-Flex 374 tubing, 4' with clamp, plugged or ReadyMate (i.d. indicated)	12.7 mm (1/2 in)				

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

Ordering information

Product codes

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	29394998	29395000	29395002	29395004	29395006
Fortem Plus with ReadyMate	29394999	29395001	29395003	29395005	29395007
Fortem with Aseptiquik	29395105	29395107	29395109	29395111	29395113
Fortem Plus with Aseptiquik	29395106	29395108	29395110	29395112	29395114
Standard	888-0462-C	888-0164-C	888-0165-C	888-0166-C	888-0167-C
Standard with ReadyMate	888-0462-F ¹	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	888-0351-F ¹	888-0154-F	888-0155-F	888-0156-F	888-0157-F

Xcellerex XDM Mixers

Jacketed	29054862
Non-jacketed	29054861
Polypropylene	29048373

Accessories

Assure probe sheath (4)	29207815
Probe sheath (4)	29041158
XDM 50 basic tote	29041160
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
Insert pH, 12 × 225 mm, Hamilton, VP	817-00144
Insert conductivity, 12 × 225 mm	817-80003
Reusable probe stand autoclave	826-00304

¹ Compatible with Jacketed and Non-jacketed versions of Xcellerex XDM Mixers. Not compatible with Polypropylene version.

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ReadyMate: this product is covered by US patent number 6,679,529 B2 owned by Johnson & Boley Holdings, LLC and licensed to Cytiva.

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