



MIXED4SURE™ BOTTOM MOUNT

FIRST BOTTLE MIXING SYSTEM FOR
COMMERCIAL BIOMANUFACTURING

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MIXED4SURE™

FIRST BOTTLE MIXING SYSTEM

for commercial biomanufacturing.

Changing the standards of small-volume mixing:

- **Reducing the risk of undesirable shear effects in mixing**
- **Less financial investment**
- **Reduced set-up time**
- **Enhanced flexibility in mixing processes between 500 mL – 20 L**

MIXED4SURE™ FEATURES



Powder Funnel

- Dedicated inlet for addition of solid components.
- Wide opening to optimise ergonomics.
- Powder transfer bags available



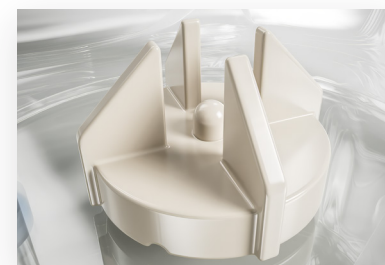
pH & conductivity sensor

- High accuracy Hamilton pH and conductivity sensors enabling online process monitoring.
- Pre-calibrated for ease of use.
- Integrated temperature sensor.



Heating/Cooling Finger

- Heat or cool your process solution within the range 2–40 °C.
- Large surface area to optimise heat transfer kinetics.



4-Blade Impeller

- Excellent performance for liquid/liquid and powder/liquid mixing.
- Exceptional low volume mixing performance.
- Generates very low shear forces to protect sensitive proteins.



MIXED4SURE[™] BENEFITS

120x

**LOWER MINIMUM MIXING VOLUME
THAN IN BAG MIXING SYSTEMS. (50 mL VS. 6 L)**

No matter what volume your mixing step requires, Mixed4Sure[™] offers the ability to continuously mix at all process volumes from 50 mL – 20 L. Furthermore, you can maintain mixing and fluid homogeneity during offload down to 50 mL, which ensures the consistency of your drug is maintained to the last drop.

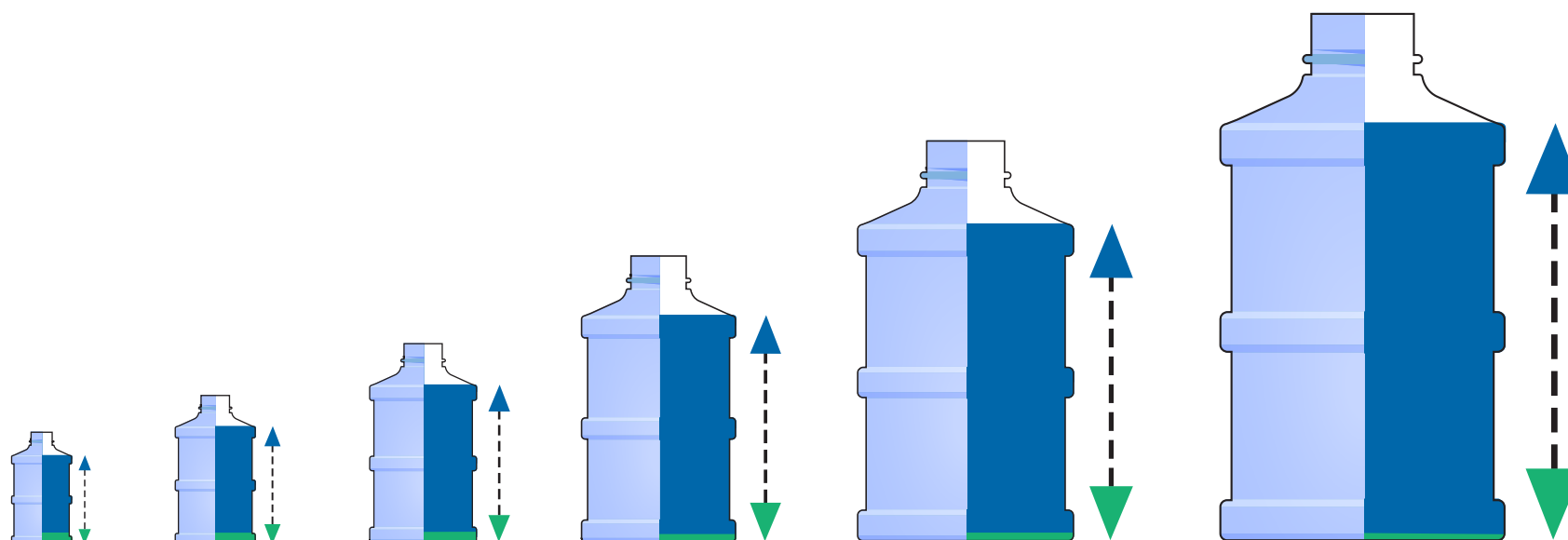


MINIMUM MIXING VOLUME

CONTINUOUS VOLUME 50 mL – 20 L

MAXIMUM MIXING VOLUME PER BOTTLE

0.5 L	L	2 L	5 L	10 L	20 L
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MINIMUM MIXING VOLUME PER BOTTLE SIZE:

50 mL	85 mL	123 mL	217 mL	302 mL	560 mL
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2-10% nominal volume

Minimum Mixing Volume <4%

MIXED4SURE[™] BENEFITS

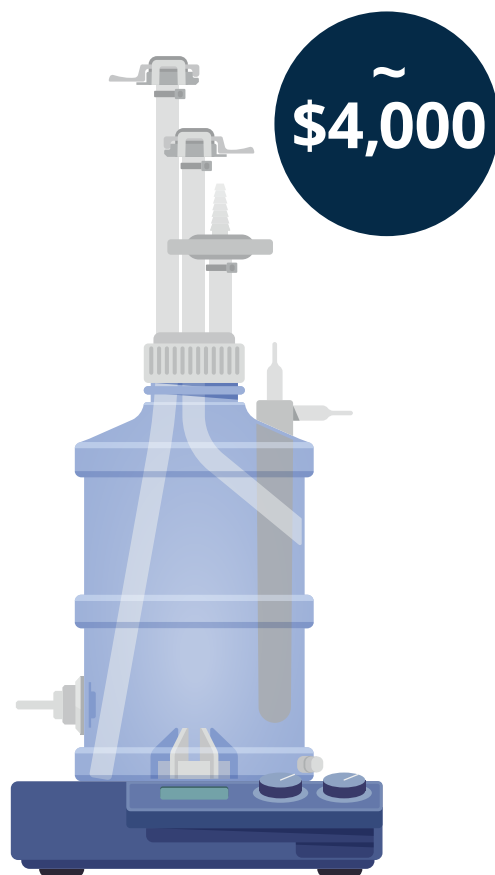
10x

LOWER CAPEX COMPARED TO A MIXING SYSTEM.

Double-walled or jacketed stainless-steel containers can cost many tens of thousands of dollars, and the corresponding mixing drive can further increase the capital expenditure associated with a mixing step. Mixed4Sure[™] dramatically reduces the hardware cost by integrating with common, standard mixing plates and is the only hardware required for the system.



CAPEX SAVING



MIXING PLATE
\$4,000



DRIVE UNIT ~\$13,000
JACKETED TANK ~\$29,000

MIXED4SURE[™] BENEFITS

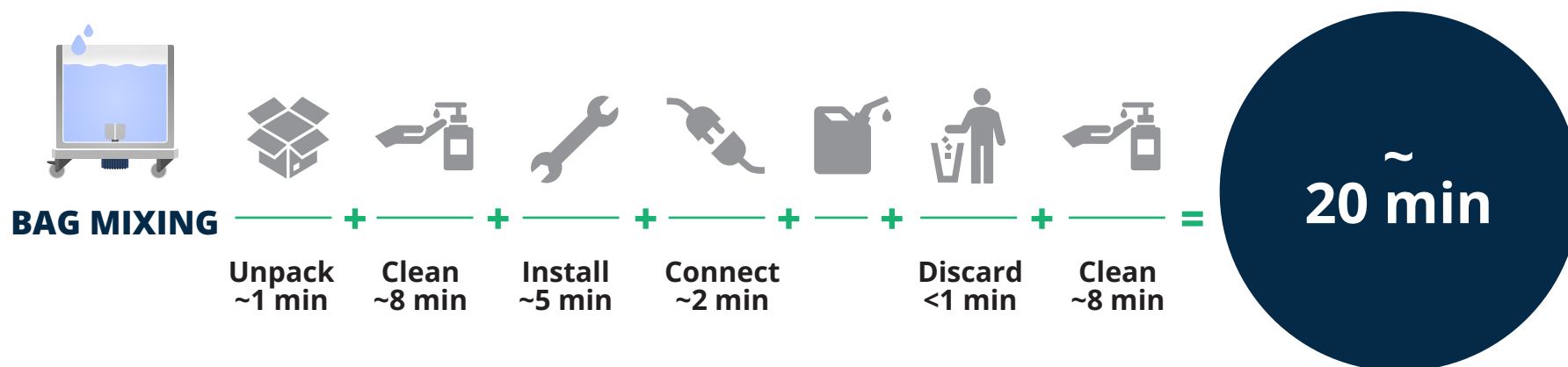
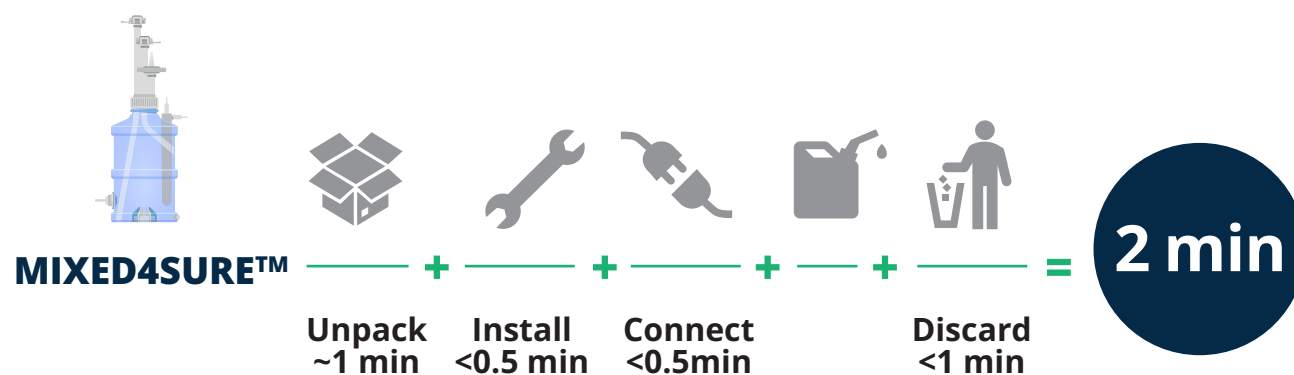
10x

**QUICKER SET-UP TIME THAN BAG
MIXING SYSTEMS. (~20 MIN VS. 2 MIN)**

Cycle-time optimization is a key requirement in all biomanufacturing unit operations. Mixed4Sure[™] represents the next step in single-use implementation by offering true out-of-the-box operation. The Mixed4Sure[™] is unpacked, placed on the mixing plate, connected to the fluid inlet, and optionally connected to the heating/cooling finger. It is ready for filling in under 2 minutes.



TIME SAVING



MIXED4SURE[™] BENEFITS

2X

**LOWER SHEAR FORCES THAN IN
COMPARABLE BAG MIXING SYSTEMS.**

In downstream mixing steps, shear forces can have undesirable effects on your sensitive protein, such as degradation and aggregate formation. Mixed4Sure[™] has been demonstrated to create shear forces that are ½ that of a comparable mixing system, and a magnitude of 4 lower than the forces leading to protein degradation.



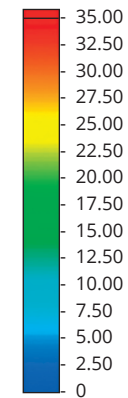
SHEAR FORCES

COMPUTATIONAL FLUID DYNAMICS

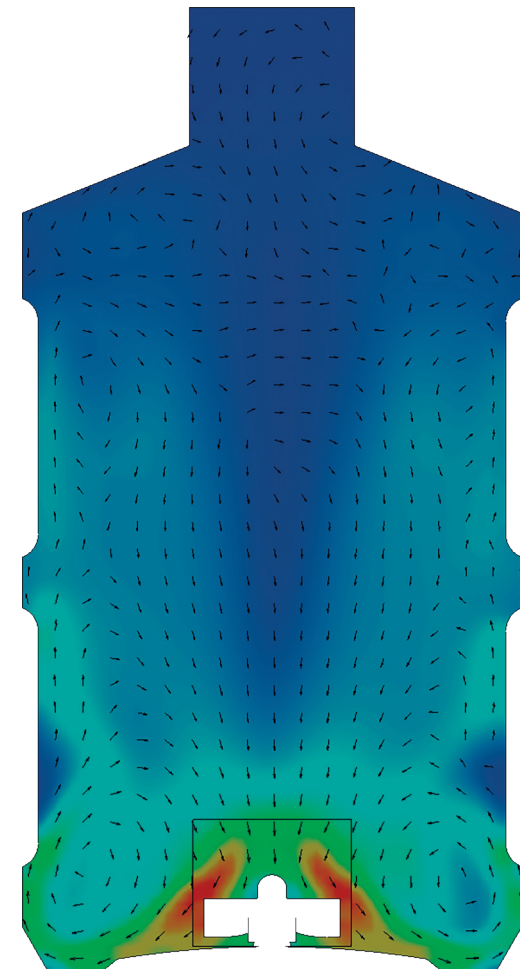
- Provides a mathematical simulation of fluid flows in a system.
- CFD demonstrated enhanced turnover in the corners of the vessel.
- All volumes and speeds resulted in shear forces $\sim 10^3 \text{ s}^{-1}$ (significantly lower than the $10^7\text{--}10^8$ where protein degradation occurs).*

* Thomas, C. R, and D. Geer. 2011. "Effects of shear on proteins in solution." Biotechnology Letters, 443–456.

Mixer SHEAR RATE S^{-1}			
RPM	200	450	600
5 L	1.710×10^3	6.335×10^3	9.536×10^3
10 L	1.419×10^3	5.103×10^3	7.687×10^3
20 L	1.385×10^3	5.126×10^3	8.631×10^3



Velocity (in/s)
Cut Plot 7: contours



ORDERING INFORMATION

Product Code	MOC	Volume	Check valve/ sample port	Powder Port	Heating/ Cooling Finger	Sensors (pH & Conductivity)
SS64004S	PC	500 mL	✓			
SS64039S	PET	500 mL	✓			
SS64020S	PC	1 L	✓			
SS64049S	PET	1 L	✓			
SS64021S	PC	2 L	✓			
SS64050S	PET	2 L	✓			
SS64000S	PC	5 L	✓			
SS64035S	PET	5 L	✓			
SS64001S	PC	5 L	✓	✓		
SS64036S	PET	5 L	✓	✓		
SS64003S	PC	5 L	✓		✓	✓
SS64038S	PET	5 L	✓		✓	✓

ORDERING INFORMATION

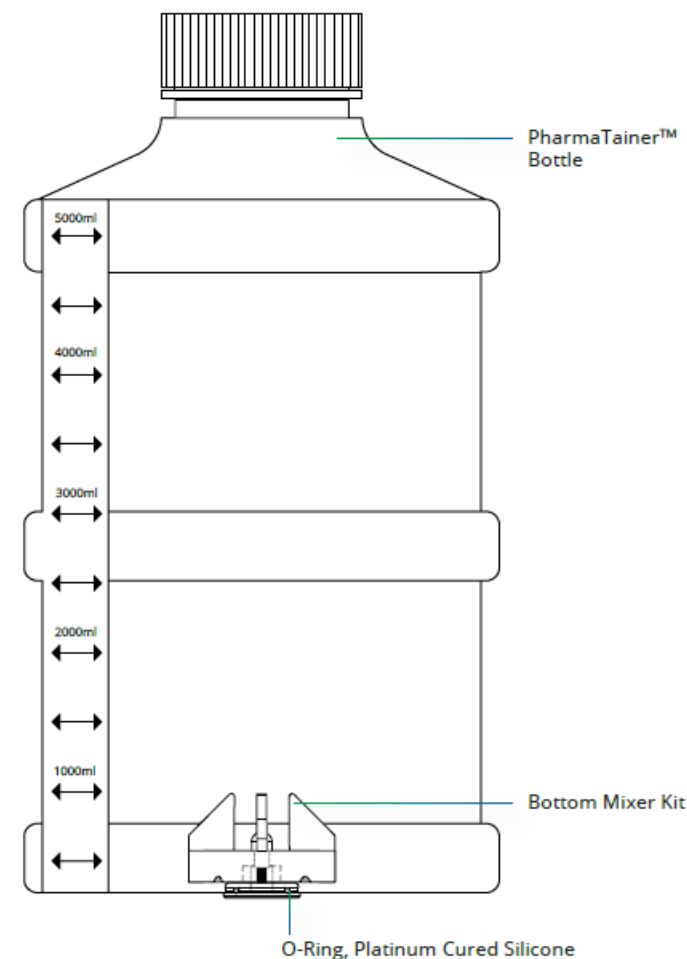
Product Code	MOC	Volume	Check valve/ sample port	Powder Port	Heating/ Cooling Finger	Sensors (pH & Conductivity)
SS64005S	PC	10 L	✓			
SS64040S	PET	10 L	✓			
SS64006S	PC	10 L	✓	✓		
SS64041S	PET	10 L	✓	✓		
SS64008S	PC	10 L	✓		✓	✓
SS64043S	PET	10 L	✓		✓	✓
SS64010S	PC	20 L	✓			
SS64045S	PET	20 L	✓			
SS64011S	PC	20 L	✓	✓		
SS64046S	PET	20 L	✓	✓		
SS64013S	PC	20 L	✓		✓	✓
SS64048S	PET	20 L	✓		✓	✓

MIXED4SURE™ BOTTOM MOUNT FOR EVALUATION

Quickly determine whether Mixed4Sure Bottom Mount is right for your application – the revolutionary Bottom Mount Impeller in a Pharmatainer bottle. Combining speed with simplicity.

- All the performance of the Mixed4Sure Bottom Mount in a simplified package.
- Superior lead times.
- Available gamma irradiated or non-sterile.

Product Code	MOC	Volume
SS64300S	PC	500 mL
SS64301S	PET	500 mL
SS64310S	PC	1 L
SS64311S	PET	1 L
SS64320S	PC	2 L
SS64321S	PET	2 L
SS64330S	PC	5 L
SS64331S	PET	5 L
SS64340S	PC	10 L
SS64341S	PET	10 L
SS64350S	PC	20 L
SS64351S	PET	20 L



MIXED4SURE™ 4 KEY COMPONENTS

SANISURE® MANUFACTURES 4 KEY COMPONENTS TO PROVIDE AN UNPARALLELED LEVEL OF QUALITY AND ASSURANCE OF SUPPLY FOR OUR ASSEMBLIES



PharmaTainer™ (PC/PET)

- 500 mL – 20 L
- PET for superior gas barrier
- PC for improved thermal resistance



Cellgyn®

- Exceptionally clear tubing with superior gas barrier properties. Our Cellgyn® TPE tubing is designed for the most demanding bio-pharmaceutical applications.



Fittings

- SaniSure mold a wide variety of the fluid contact fittings, including Bio-Ease clamps, instrument fittings, sanitary reducers, barbs and dip-tubes



Cap2V8®

- Continuous, uninterrupted fluid pathway
- Last Drop™ and high precision polypropylene dip tubes
- No barbs or cable ties on the cap ensuring a no leak design



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