SINGLE USE SUPPORT.

PIONEERING BIOPHARMA

PATENTED

RoSS® shell

Robust cold chain packaging
for every single-use bag.

Bag independent.
Reduced risk of product loss.
Enables controlled freezing.

www.susupport.com

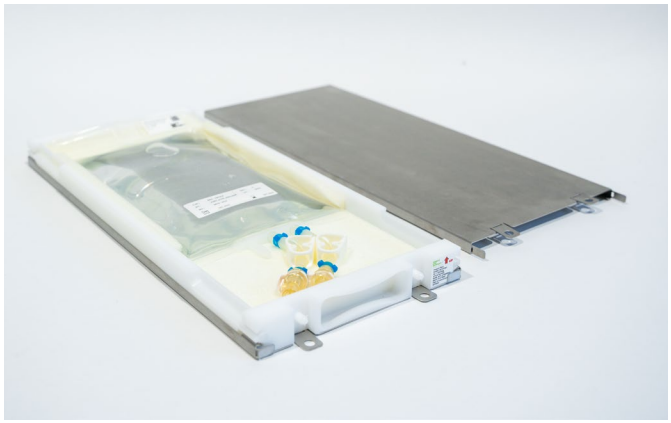
RoSS® shell

PROTECTING SINGLE-USE BAGS.

With over 300,000 shells sold worldwide, RoSS® shell ensure reliable protection for reduced product loss.

The RoSS® shell offers a **robust & safe protection for bioprocess containers during freezing, transportation, storage & thawing**.

With over 300.000+ RoSS® shells sold worldwide, the product provides a tamper-proof and contamination-free system. **It can be used with all available 2D bioprocess containers**, making it a vendor-independent protective shell that unifies the cold chain logistics process.

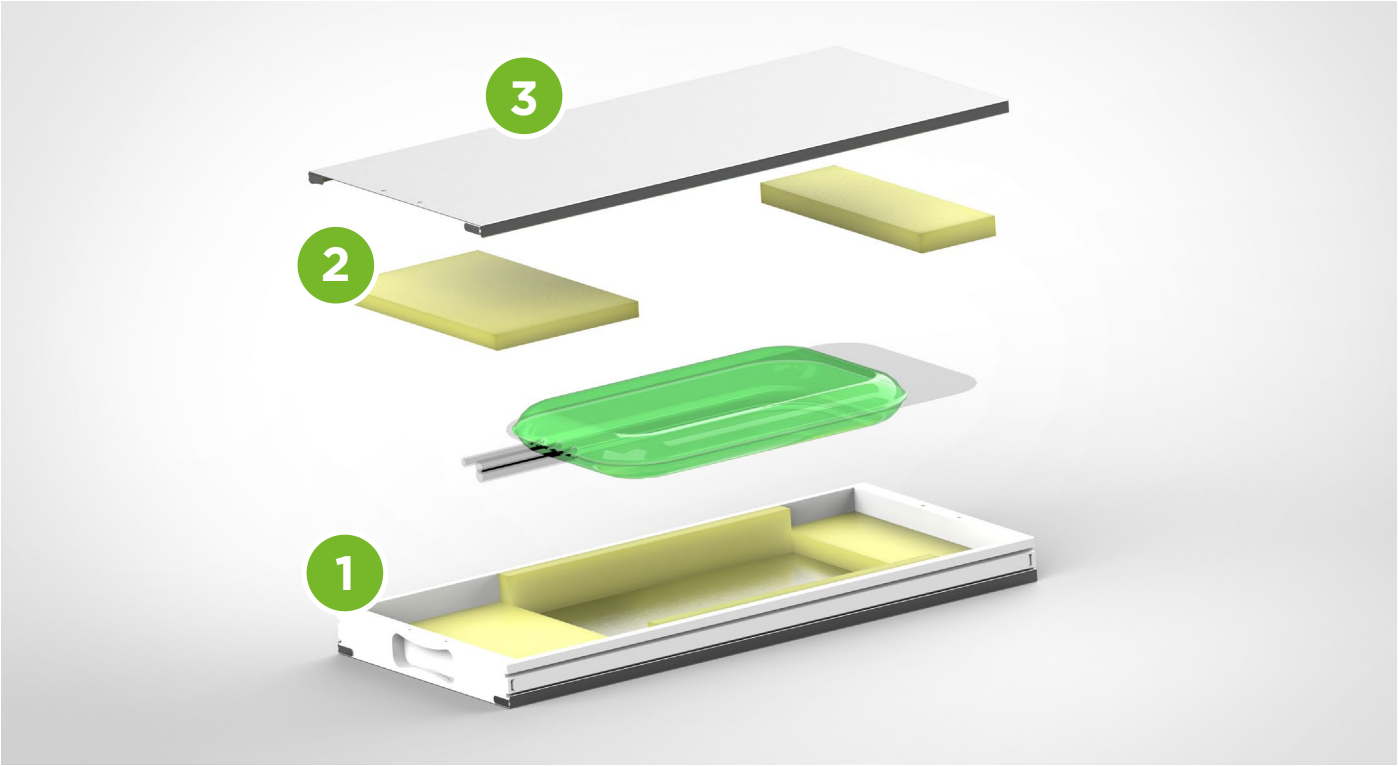


Facts:

- Unique functionality and patented system
- Adjustable for all 2D single-use bioprocess container
- Outside: Robust, closed and tamper-proof construction
- Inside: 3D cryo foam-inlays for complete immobilization of the sensitive bag and its attachments
- Stainless-steel lids on top and bottom for consistent and best possible freezing and defrosting performance (optimized coolness and heat transfer)
- High storage density during freezing, storage and transportation
- Easy handling during the recycling process

THE SETUP FOR BAG PROTECTION

The RoSS® shell is composed of a stainless-steel top and bottom lid, a robust plastic frame and 3D foam inlays. These components provide unparalleled advantages in the handling of liquids in single-use bags. The composition of elements that embed the bioprocess containers is simple, easy to recycle, validated for use in cleanroom environment, and it offers significant cost-efficiency and process flexibility.



1 **PE frame** provides robustness

2 **3D foam inlays** ensures immobilization

3 **Stainless-steel lids** enables plate freezing

1. Validated robustness

All types of RoSS® shells manufactured by Single Use Support are subjected to rigorous testing and validation to ensure their robustness. The aim of the tests is to simulate real-life handling under standardized conditions, thereby verifying the shells protective ability in cryogenic conditions. The RoSS® shell has been proven to reduce bag rupture down to 0 % and protects frozen single-use bags down to -90 °C or -190 °C for small volumes.

2. Full immobilization of single-use bags

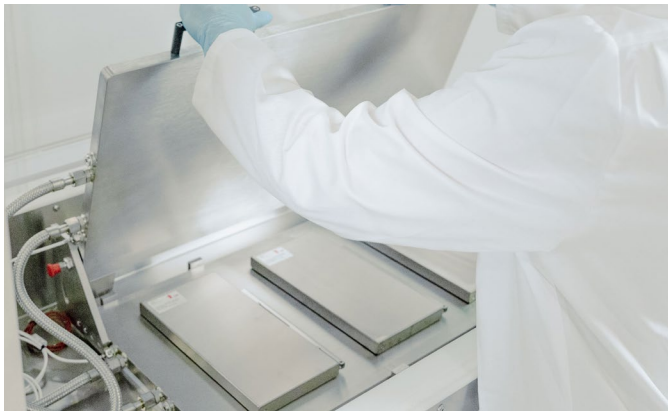
While the outer shell is constructed from durable stainless steel and robust plastic elements, the interior is lined with specialized foam inlays that provide additional stabilization. The 3D foam offers a protective enclosure for the single-use bag and its attachments. But it also absorbs the bag's/liquid's expanding energy caused by the density drop during freezing. At sub-zero temperatures, when the bag is already frozen, the foam hardens. The bag is fully immobilized in the hardened foam setup, making it safe to handle during storage and shipping.

3. Enabling plate freezing

The RoSS® shell enables plate-based freezing of single-use bags which is an advanced method for cooling biologics. The stainless-steel lid serves as the sole barrier between the bag and the cooling medium, facilitating **efficient heat transfer**. This direct cold exposure between the cooling plates and the single-use bag accelerates the freezing process, resulting in homogeneous freezing with controlled ice front growth from the bottom and top preventing the effects of cryoconcentration.

LIMITLESS SCALABILITY

Scaling up biopharmaceutical production presents challenges in achieving consistent freezing results. Single Use Support addresses this by standardizing ice front growth speed across all scenarios. Therefore, the RoSS® shell is designed **for single-use bags ranging from 250 mL to 50 L**, while the **RoSS.KSET is ideal for bags under 250 mL**. This ensures reproducible freezing, regardless of bag type or freezing platform size.



Single-use bag manufacturer	Single-use bag name	Product number	Outer dimensions (LxWxH)	Target volume freezing
SINGLE USE SUPPORT	0.5 L IRIS	RoSS_3005	423.6x168x31.6 mm	0.45 - 0.5 L
	1 L IRIS	RoSS_3010	528.6x213x31.6 mm	0.95 - 1.0 L
	2 L IRIS	RoSS_3020	613.6x259x41.6 mm	1.95 - 2.0 L
	5 L IRIS	RoSS_3050	714.1x343x56.6 mm	4.2 - 4.4 L
	10 L IRIS	RoSS_3101	783.1x460x61.6 mm	9.2 - 9.4 L
AVANTOR	20 L Pillow Bag™	RoSS_1060	782.6x460x81.6 mm	
CHARTER MEDICAL	10 L Freeze-Pak™	RoSS_1076	882.6x362.4x60.8 mm	
	20 L Freeze-Pak™	RoSS_1075	882.6x463x86.6 mm	
CYTIVA	0.5 L Allegro™	RoSS_1021	412.6x173x36.6 mm	
	1 L Allegro™	RoSS_1032	482.6x208x41.6 mm	
	2 L Allegro™	RoSS_1051	532.6x273x41.6 mm	
	5 L Allegro™	RoSS_1049	712.6x333x56.6 mm	
	10 L Allegro™	RoSS_1041	725x459.4x69.6 mm	
	10 L Allegro™	RoSS_1074	725x459.4x69.6 mm	
	20 L Allegro™	RoSS_1039	882.6x502.4x69.6 mm	
ENTEGRIS	1 L Aramus™	RoSS_1017	482.6x208x36.6 mm	
	2 L Aramus™	RoSS_1019	532.6x288x36.6 mm	
	5 L Aramus™	RoSS_1018	642.6x357.4x51.6 mm	
	10 L Aramus™	RoSS_1015	703x407.4x69.6 mm	
	15 L Aramus™	RoSS_1059	752.6x502.4x69.6 mm	
	20 L Aramus™	RoSS_1016	882.6x502.4x69.6 mm	
LEPURE	20 L LePure™	RoSS_1057	882.6x460x69.6 mm	
	50 L LePure™	RoSS_1064	984x620x70 mm	
MEISSNER	5 L Pillow Bag	RoSS_1079	582.6x357.4x56.6 mm	
SAINT GOBAIN	1 L Saint Gobain	RoSS_1070	573.6x183x36.6 mm	
	5 L Saint Gobain	RoSS_1071	643.6x333x56.6 mm	
	10 L Saint Gobain	RoSS_1072	882.6x333x69.6 mm	

Single-use bag manufacturer	Single-use bag name	Product number	Outer dimensions (LxWxH)
MERCK	1 L Mobius™	RoSS_1043	462.6x183x41.6 mm
	5 L Mobius™	RoSS_1042	489.6x333x69.6 mm
	10 L Mobius™	RoSS_1077	822.6x333x69.6 mm
	20 L Mobius™	RoSS_1040	782.6x459.4x69.6 mm
REPLIGEN	1 L ProConnex®	RoSS_1092	521,8x208x46,6 mm
	5 L ProConnex®	RoSS_1091	658,6x347,4x69,6 mm
	10 L ProConnex®	RoSS_1087	882.6x347.4x69.6 mm
	20 L ProConnex®	RoSS_1090	842,6x459,4x81,6 mm
SARTORIUS	0.5 L Flexboy™	RoSS_1084	481.8x208x51.6 mm
	1 L Flexboy™	RoSS_1044	482.6x208x36.6 mm
	2 L Celsius™ PAK	RoSS_1053	532.6x288x36.6 mm
	5 L Flexboy™	RoSS_1073	610x365.4x69.6 mm
	6 L Biopharm™	RoSS_1031	712.6x303x69.6 mm
	8.3 L Celsius™ PAK	RoSS_1054	882.6x372.4x69.6 mm
	10 L Flexsafe™	RoSS_1055	882.6x357.4x36.6 mm
	10 L Flexboy™	RoSS_1046	771.8x303x69.6 mm
	12 L Celsius/Biopharm™	RoSS_1056	730x459.4x69.6 mm
	16.6 L Celsius™ PAK	RoSS_1066	882.6x452.4x69.6 mm
	20 L Flexsafe™	RoSS_1065	882.6x502.4x69.6 mm
	20 L Flexboy™	RoSS_1036	725x459.6x81.6 mm
THERMO FISHER	5 L Labtainer™	RoSS_1073	610x365.4x69.6 mm
	5 L Labtainer™ Pro	RoSS_1089	582.6x362.4x61.6 mm
	10 L Labtainer™	RoSS_1046	771.8x303x69.6 mm
	10 L Labtainer™ Pro	RoSS_1082	802.6x362.4x61.6 mm
	20 L Labtainer™	RoSS_1036	725x459.4x81.6 mm
	20 L Labtainer™ Pro	RoSS_1067	842.6x459.4x81.6 mm

** Single Use Support's RoSS® shell is suitable for all single-use bags available on the market. If your desired bag is not listed please contact sales@susupport.com.*