

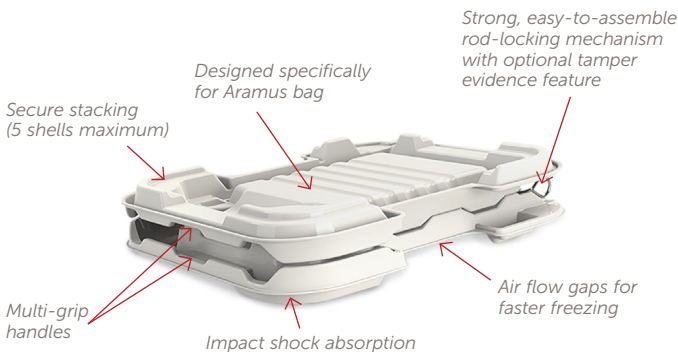
# Freezing Shells

*Reusable plastic shell solution for use with Aramus™ assemblies in bioprocess and cold-chain applications*

Entegris Freezing Shells are ideal for those looking to improve handling, efficiency, throughput, and total cost of ownership in bulk-drug substance and cold-chain applications. Our shells are designed for use with Aramus™ bag assemblies to provide a high-purity, easy-to-use, robust solution. Each shell is comprised of two halves and a rod-locking mechanism. Shell halves may be used as trays for ergonomic bag handling and can accommodate standard tubing lengths with varying connectors. Shell design and assembly supports filling or draining in multiple configurations allowing our solution to be easily integrated into your existing process. Entegris Freezing Shells are optimized for a more rapid and efficient freeze performance in controlled rate freezers that utilize forced air convection, but also accommodate freezing in general lab freezers (static, blast, cold-wall). The shells interlock while stacked, significantly improving space efficiency and stability throughout your cold-chain process. Our standard size offerings are optimal for scale-up and reduce your product loss by assuring your high-value material and intermediates are protected.

## APPLICATIONS

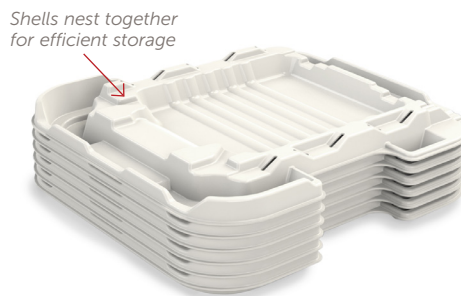
- Tray for handling Aramus bag assemblies
- Bulk-drug filling and draining
- Bulk-drug freezing and storage
- Bulk-drug shipment
- Cold-chain support



*Samples available for advanced application testing.*

## FEATURES & BENEFITS

<b>Robust design</b>	Provides protection down to -80°C (-111°F)
<b>Versatile</b>	Accommodate up to 12" of tubing with most aseptic connectors. Ability to fill and drain in multiple configurations
<b>Stackable design</b>	Interlocking design provides stability and storage efficiency, saving valuable freezer space
<b>Infrastructure compatibility</b>	Designed for performance optimization in forced air convection freezers, but also fit in most commercially available lab freezers
<b>Ergonomic handle</b>	Multiple handle locations and easy-to-use rod-locking mechanism designed for use with cryogenic gloves
<b>Reuse</b>	Designed for 3x reuse and easy cleaning. Composed of materials with existing recycling streams
<b>Shipping</b>	Designed and tested for use with cold chain shipping containers. Contact Entegris Applications team member for support in configuring your solution



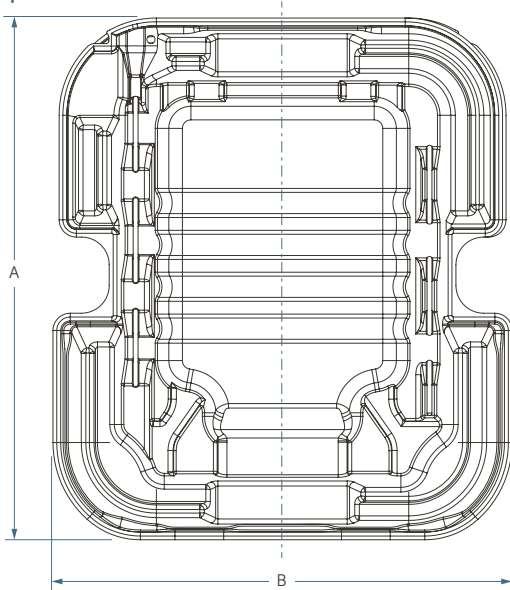
## SPECIFICATIONS

<b>Materials of construction</b>	Polycarbonate (PC), stainless steel	
	Materials are compliant with TSE/BSE, GMO, REACH, RoHS, Latex and Phthalates free Cleaned and double bagged in ISO Class 8 cleanroom	
<b>Estimated operating temperature</b>	-80° to 40°C (-112° to 104°F)	
<b>Fill volume range</b>	2 L shell	Infinitely adjustable from 1 L to 2 L without additional accessories required
	5 L shell	Infinitely adjustable from 2.5 L to 5 L without additional accessories required
<b>Shell weight (empty)</b>	2 L	1.5 kg (3.4 lb)
	5 L	2.2 kg (4.9 lb)

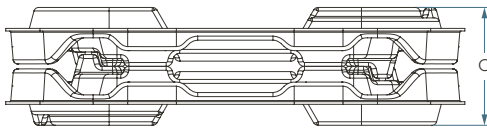
## DIMENSIONS

2 L Freezing Shell

Top View

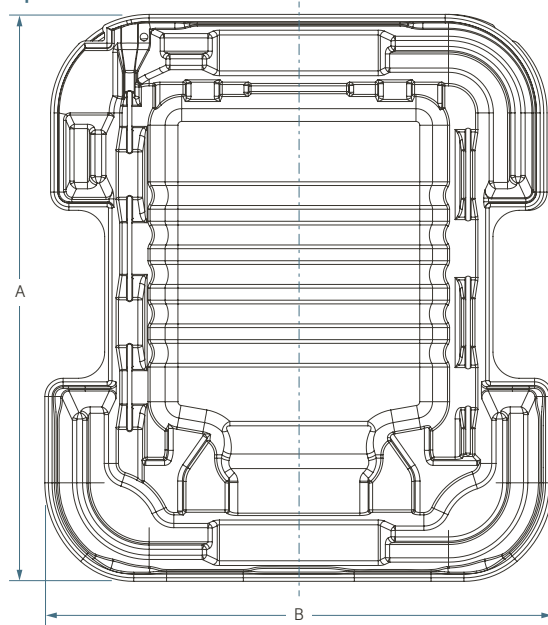


Side View

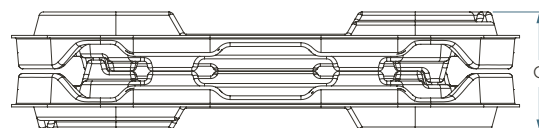


5 L Freezing Shell

Top View



Side View



Size	A	B	C
2 L	505 mm (19.9")	445 mm (17.5")	114 mm (4.5")
5 L	584 mm (23.0")	523 mm (20.6")	122 mm (4.8")

## THERMAL PERFORMANCE

### 2 L Shell Thermal Performance

FREEZER	FLUID VOLUME	TIME 20°C TO -80°C
<b>Forced Air</b>	2 L	5 H
<b>Convection</b>	10 L	8 H
<b>Freezer</b>	18 L	8 H
<b>Cold Wall</b>	2 L	11 H
<b>Freezer 1</b>	10 L	17 H
	48 L	65 H
<b>Cold Wall</b>	2 L	14 H
<b>Freezer 2</b>	10 L	23 H
	22 L	33 H
<b>Cold Wall</b>	2 L	13 H
<b>Freezer 3</b>	10 L	24 H
	22 L	33 H

### 5 L Shell Thermal Performance

FREEZER	FLUID VOLUME	TIME 20°C TO -80°C
<b>Forced Air</b>	5 L	10 H
<b>Convection</b>	25 L	13 H
<b>Freezer</b>	45 L	12 H
<b>Cold Wall</b>	5 L	17 H
<b>Freezer 1</b>	25 L	36 H
	50 L	56 H
<b>Cold Wall</b>	5 L	22 H
<b>Freezer 2</b>	25 L	44 H
	50 L	89 H
<b>Cold Wall</b>	5 L	23 H
<b>Freezer 3</b>	25 L	41 H
	50 L	68 H

## ORDERING INFORMATION

Part number	Shell size	MOQ
SU-PB-000S1	2 L	10 shells
SU-PB-000S1-SAMP	2 L	1 shell
SU-PB-000M1	5 L	5 shells
SU-PB-000M1-SAMP	5 L	1 shell

## FOR MORE INFORMATION

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