



# Operator Manual

## Cryo-Shipper Extra Capacity Refrigerated Nitrogen Vapor Shipper with

# IATA / DOT / UN

# INFECTIOUS SUBSTANCE PACKAGING CERTIFICATION



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<b>Model</b>	<b>CryoShipper Extra Capacity with IATA</b>
PN	10777411
Maximum working cavity dimensions	8-1/2" dia * 12" deep
IATA secondary container dimensions	7-3/8" dia * 8 3/4" deep
<b>Maximum Storage Capacity</b>	
Number of secondary containers	1
Number of 1 ml vials	450 (5 level bulk)
Number of 2 ml vials	200 (4 level bulk)
Number of 3 ml vials	200 (3 level bulk)
Number of 4 ml vials	200 (3 level bulk)
Number of blood bags stored (in cassettes)	20
<b>Performance</b>	
Liquid Nitrogen Capacity (L)	9.9
Static evaporation rate (L/day)	0.70
Static holding time (days)	14
<b>Unit Dimensions</b>	
Neck Opening (in/mm)	8.5/216
Overall Height (in/mm)	23/584
Outside Diameter (in/mm)	15/381
Weight Empty (lbs/kg)	32.1 / 14.6
Weight Full (lbs/kg)	72.4 / 32.0
Weight Charged (lbs/kg)	72.4 / 32.0

## SECTION I: CERTIFICATION

### Periodic Retest of the Chart, Inc. CMD-20 Cryogenic Shipper for 20 Flexible Plastic Blood Bags

TEN-E Packaging Services, Inc. is a current DOT UN Third-Party Certification Agency under §107.403 and certifies that the Chart, Inc. packaging referenced above has passed the standards of the DEPARTMENT OF TRANSPORTATION'S TITLE 49 CFR; Performance Oriented Packaging Standards, Section 178. This package is also certified under IMDG, ICAO/IATA Regulations and the UN Recommendations on the Transport of Dangerous Goods. It is the responsibility of the end user to determine authorization for use under these regulations. The use of other packaging methods or components other than those documented in this report may render this certification invalid.

#### SUMMARY OF PERFORMANCE TESTS

UN / DOT TEST	CFR REFERENCE	TEST LEVEL	TEST CONTENTS	TEST COMPLETED	TEST RESULTS
Cold Temp Drop	178.609(d) & (f)	9 m	Methanol/Water Solution	June 28, 2016	PASS
Penetration	178.609(h)(1) & (2)	1 m	Methanol/Water Solution	June 28, 2016	PASS
Thermal Shock	173.196(a)(7)	-40°C to +55°C	Antifreeze	June 29, 2016	PASS
Pressure	173.196(a)(6)	28 In Hg – 30 Minutes	Water	June 28, 2016	PASS
Watertight	173.196(a)(1) & (2)	5 Minutes	Water	June 28, 2016	PASS
Vibration	173.24a(a)(5)	4.3 Hz – 1 Hour	Methanol/Water Solution	June 27, 2016	PASS
<b>TEST REPORT NUMBERS:</b>			16-MN20401, 14-2521		
<b>UN MARKING:</b> (CFR 49 – 178.503)			 1H2 / Class 6.2 / ** USA / +AA7309		
<b>PACKAGING IDENTIFICATION CODE:</b>			4G - Fiberboard Box (178.516)		
<b>YEAR OF MANUFACTURE:</b>			** Insert year the packaging is manufactured		
<b>STATE AUTHORIZING THE MARK</b>			USA		
<b>PACKAGING CERTIFICATION AGENCY:</b>			(+AA) TEN-E Packaging Services, Inc. (Newport, MN CAA #2006030022)		
<b>THIRD PARTY PACKAGING IDENTIFICATION:</b>			+AA7309		
<b>PERIODIC RETEST DATE:</b>			June 29, 2018		

ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY THAT THE PACKAGING TESTED IS MERCHANTABLE OR FIT FOR A PARTICULAR PURPOSE, ARE DISCLAIMED. In no event shall TEN-E Packaging Services, Inc. liability exceed the total amount paid by Chart, Inc. for services rendered. In the event of future changes to the above referenced test standards, it is the responsibility of Chart, Inc. to determine whether additional testing or updating of past testing is necessary to verify that the packaging we have tested remains in compliance with those standards.

#### MANUFACTURER:

**Chart, Inc.**  
201 7th Street Northwest  
New Prague, MN 56071

  
Eric M. Stiltjes  
Packaging Engineer  
TEN-E Packaging Services, Inc.  
1666 County Road 74  
Newport, MN 55055




## SECTION I: CERTIFICATION

### Periodic Retest of the Chart, Inc. CMD-20 Cryogenic Shipper for 9 x Plastic Box containing 20 x 2 mL Plastic Vials

TEN-E Packaging Services, Inc. is a current DOT UN Third-Party Certification Agency under §107.403 and certifies that the Chart, Inc. packaging referenced above has passed the standards of the DEPARTMENT OF TRANSPORTATION'S TITLE 49 CFR; Performance Oriented Packaging Standards, Section 178. This package is also certified under IMDG, ICAO/IATA Regulations and the UN Recommendations on the Transport of Dangerous Goods. It is the responsibility of the end user to determine authorization for use under these regulations. The use of other packaging methods or components other than those documented in this report may render this certification invalid.

#### SUMMARY OF PERFORMANCE TESTS

UN / DOT TEST	CFR REFERENCE	TEST LEVEL	TEST CONTENTS	TEST COMPLETED	TEST RESULTS
Cold Temp Drop	178.609(d) & (f)	9 m	Methanol/Water Solution	June 29, 2016	PASS
Penetration	178.609(h)(1) & (2)	1 m	Methanol/Water Solution	June 29, 2016	PASS
Thermal Shock	173.196(a)(7)	-40°C to +55°C	Antifreeze	June 29, 2016	PASS
Pressure	173.196(a)(6)	28 In Hg – 30 Minutes	Water	June 28, 2016	PASS
Watertight	173.196(a)(1) & (2)	5 Minutes	Water	June 28, 2016	PASS
Vibration	173.24a(a)(5)	4.3 Hz – 1 Hour	Methanol/Water Solution	June 28, 2016	PASS
<b>TEST REPORT NUMBERS:</b>			16-MN20402, 14-2522		
<b>UN MARKING:</b> (CFR 49 – 178.503)			 1H2 / Class 6.2 / ** USA / +AA7309		
<b>PACKAGING IDENTIFICATION CODE:</b>			4G - Fiberboard Box (178.516)		
<b>YEAR OF MANUFACTURE:</b>			** Insert year the packaging is manufactured		
<b>STATE AUTHORIZING THE MARK</b>			USA		
<b>PACKAGING CERTIFICATION AGENCY:</b>			(+AA) TEN-E Packaging Services, Inc. (Newport, MN CAA #2006030022)		
<b>THIRD PARTY PACKAGING IDENTIFICATION:</b>			+AA7309		
<b>PERIODIC RETEST DATE:</b>			June 29, 2018		

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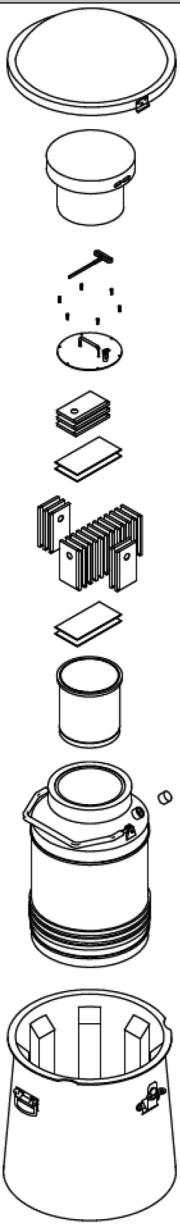
#### MANUFACTURER:

**Chart, Inc.**  
201 7th Street Northwest  
New Prague, MN 56071

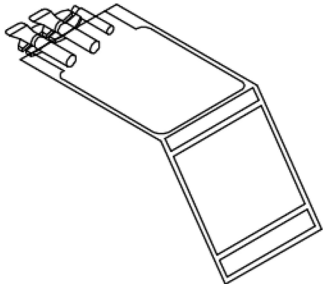
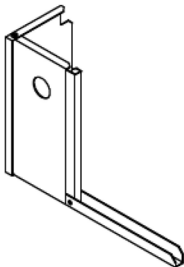
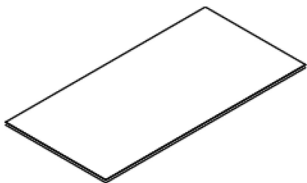
  
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**SECTIONS II & V: PACKAGING DESCRIPTIONS / COMPONENT DRAWINGS**

**CMD-20 Cryogenic Shipper for 20 Flexible Plastic Blood Bags**

ASSEMBLY DRAWING	TEST LEVELS			
	Certification Type:		Periodic Retest	
	Packaging Code Designation:		1H2 Category A Infectious Substance	
	<b>TEST SAMPLE PREPARATION</b> (Refer to Section IV)			
	Overall Packaging Tare Weight:		27,118 Grams	
	Fill Capacity (98% Maximum Capacity):			
	Methanol/Water Solution		49 Grams	
	Water		49 Grams	
	Package Test Weight:			
	Methanol/Water Solution		28.0 Kg	61.7 Lbs.
	Water		28.0 Kg	61.7 Lbs.
<b>CLOSING METHOD</b>				
<b>BLOOD BAG TUBES</b>				
Application Method:		Heat Sealed		
Equipment:		Packworld Heat Sealer #750		
		Temperature: 175°C		
		Time: 4.5 Seconds		
<b>SECONDARY CONTAINER</b>				
Application Method:		(6) Allen Head Screws tightened until fully engaged with cover and a minimum 1/8 turn thereafter		
<b>DEWAR (CRYOSHIPPER)</b>				
Application Method:		Friction Fit Cover		
<b>SHIPPER</b>				
Application Method:		Top Cover with (2) Metal Twist-Lock Hasp Latch Assemblies		

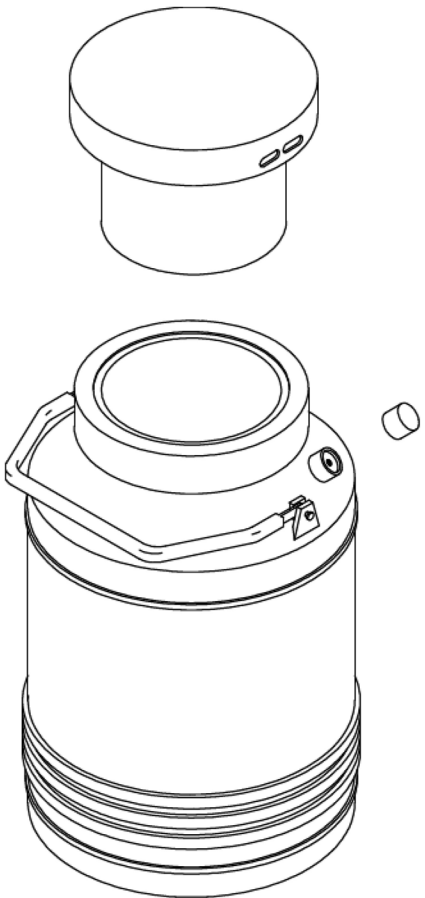
## COMPONENT INFORMATION

BLOOD BAG (CS 50)		DRAWING
<b>Manufacturer: Cryostore Freezing Bags, Austin, TX</b>		
<b>Description:</b>	50 mL Plastic Sealed Blood Bag w/ Valve Openings and Attached 14" Long Tubing with (2) Threaded Closures	
<b>Quantity:</b>	20	
<b>Material:</b>	PVC, Natural	
<b>Tare Weight:</b>	25 Grams (with Tubing)	
<b>Overall Dimensions:</b>		
<b>Overall Length</b>	14.5 cm	
<b>Width</b>	7.6 cm	
<b>Thickness</b>	0.014"	
<b>Markings (QC Audit):</b>	50153                      0715BA1172      Origen	
CASSETTE (ZC0604)		DRAWING
<b>Manufacturer: Biomedical Marketing Associates, Wexford, PA</b>		
<b>Description:</b>	Cassette w/ Top Rivet Hinge for Containing Blood Bag	
<b>Quantity:</b>	20	
<b>Material:</b>	Aluminum	
<b>Tare Weight:</b>	74 Grams	
<b>Overall Dimensions:</b>		
<b>Depth</b>	3/8"	
<b>Length:</b>	6-1/4"	
<b>Width:</b>	3-5/8"	
<b>Markings (QC Audit):</b>	Custom Biogenic Systems                      ZC06OH www.custombiogenics.com	
ABSORBENT SHEET		DRAWING
<b>Manufacturer: Fisher Scientific Company, LLC., Waltham, MA</b>		
<b>Description:</b>	(2) Absorbent Sheets Placed In Bottom of Stainless Steel Can, (1) Each Per Cassette w/ Blood Bag, Folded and (2) Sheets Placed Under Top 3 Cassettes	
<b>Quantity:</b>	24	
<b>Material:</b>	Paper Fiber Absorbent Material, White	
<b>Tare Weight:</b>	2.010 Grams	
<b>Overall Dimensions:</b>		
<b>Length</b>	11-5/8"	
<b>Width</b>	4"	
<b>Thickness</b>	0.013"	
<b>Markings (QC Audit):</b>	None	

## SECONDARY CONTAINER

COVER		DRAWING
<b>Manufacturer: Chart Industries, New Prague, MN</b>		
<b>Description:</b>	Stainless Steel Cover w/ Handle, Pressure Release Valve and (6) Allen Head Fastening Screws	
<b>Quantity:</b>	1	
<b>Material:</b>	Stainless Steel, SS304	
<b>Tare Weight:</b>	884 Grams (902 Grams with Screws)	
<b>Overall Dimensions:</b>		
<b>Height</b>	0.137"	
<b>Height w/Handle</b>	1.629"	
<b>Diameter</b>	8.375"	
<b>Markings (QC Audit):</b>	None	
<b>SECONDARY CONTAINER</b>		
<b>Manufacturer: Chart Industries, New Prague, MN</b>		
<b>Description:</b>	6 Liter Stainless Steel Can	
<b>Quantity:</b>	1	
<b>Material:</b>	Stainless Steel, SS304	
<b>Tare Weight:</b>	1,719 Grams	
<b>Overall Dimensions:</b>		
<b>Height</b>	9.375"	
<b>Outer Diameter</b>	8.375" (top)	
<b>Inside Diameter</b>	7.367"	
<b>Markings (QC Audit):</b>	<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; border-radius: 50%; padding: 2px 5px; margin-right: 5px;">u n</div> <div>                     1H2/CLASS 6.2/16                      USA/+AA7309                      Tested and Approved For Chart/MVE Inc. By TEN-E                      PACKAGING SERVICES, INC.                      DOT CERTIFIED AGENCY +AA                 </div> </div>	
<b>Gasket:</b>		
<b>Description:</b>	White PTFE Gasket Placed In Top Groove of Can	
<b>Tare Weight:</b>	7 Grams	
<b>Thickness:</b>	0.106"	
<b>Diameter:</b>	7.667"	
<b>WRENCH</b>		
<b>Description:</b>	Long Allen Wrench w/ Red Vinyl Coated Handle	
<b>Quantity:</b>	1	
<b>Material:</b>	Black Coated Metal/ PVC, Red	
<b>Tare Weight:</b>	35 Grams	
<b>Overall Dimensions:</b>		
<b>Length</b>	6.799"	
<b>Width</b>	3.090"	
<b>Thickness</b>	0.284" (Top Handle) 0.176" (Bottom Points)	
<b>Markings (QC Audit):</b>	Eklind®      32      51610      USA	

## DEWAR (CRYO-SHIPPER EXTRA CAPACITY UNIT)

DEWAR COVER		DRAWING
<b>Manufacturer: Chart Industries, New Prague, MN</b>		
<b>Description:</b>	Slip Fit Round Cover w/ Expanded Polystyrene Tube (Cork) Glued To Underside of Cover	
<b>Quantity:</b>	1	
<b>Material:</b>		
• <b>Outside</b>	Black, Plastic	
• <b>Inside (Cork)</b>	White, Expanded Polystyrene	
<b>Tare Weight:</b>	629 Grams	
<b>Overall Dimensions:</b>		
• <b>Height</b>	7.638"	
• <b>Diameter</b>	<b>Top:</b> 11.378" <b>Bottom:</b> 8.303" (Foam)	
<b>Markings (QC Audit):</b>	None	
DEWAR CANISTER		
<b>Manufacturer: Chart Industries, New Prague, MN</b>		
<b>Description</b>	Cylindrical Metal Canister w/ Metal Handle, Welded Side Seam w/Inner Fiberglass Lined Neck Opening and Top Side Valve	
<b>Material:</b>	Aluminum, Stainless Steel	
<b>Tare Weight:</b>	14,176 Grams	
<b>Capacity:</b>		
• <b>Overflow</b>	N/A	
<b>Handle:</b>		
• <b>Style</b>	Attached	
• <b>Material</b>	Stainless Steel	
• <b>Quantity/Location</b>	1-Top Shoulder	
Marking (QC Audit)		
Z002 Serial Number NPB 2016180683G      Made In USA Part Number 10777411      Capacity 11.8 Liters		
Drum Overall Dimensions		
<b>Top Diameter:</b>	10.925"	
<b>Bottom Diameter:</b>	15.002"	
<b>Height:</b>	22"	



OVERPACK COVER		DRAWING
<b>Manufacturer: Chart Industries, New Prague, MN</b>		
<b>Description:</b>	Attached Domed Cover of 2-Piece Shipping Container w/Rear Metal Hinge, (2) Side Metal Fasteners and Glued-In Foam Ring Pad	
<b>Quantity:</b>	1	
<b>Material:</b>	Polyethylene, Tan	
<b>Density:</b>	0.935 g/cc	
<b>Melt Index (190/21.6):</b>	5.0 g/10 min.	
<b>Overall Dimensions:</b>		
• <b>Height</b>	5-1/2"	
• <b>Diameter</b>	22"	
<b>Markings (QC Audit):</b>	None	
OVERPACK		
<b>Manufacturer: Chart Industries, New Prague, MN</b>		
<b>Description:</b>	CMD-20 Cryogenic Open Head 2-Piece Plastic Shipping Container w/ (2) Bolted Metal Handles, (2) Metal Twist-Lock Hasp Latches. (8) Glued-In Side Wall Foam Pads and (2) 17-1/2" Diameter Round Loose Foam Cushioning Pads Placed In Bottom	
<b>Quantity:</b>	1	
<b>Material:</b>	Polyethylene, Tan/White, Polyethylene Foam	
<b>Density:</b>	0.935 g/cc	
<b>Melt Index (190/21.6):</b>	5.0 g/10 min.	
<b>Tare Weight (w/Cover):</b>	7,951 Grams (with Cover)	
<b>Overall Dimensions:</b>		
• <b>Height</b>	22"	
• <b>Top Diameter</b>	20.892"	
• <b>Bottom Diameter</b>	22"	
<b>Markings (QC Audit):</b>	<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; border-radius: 50%; padding: 2px; margin-right: 10px;">u n</div> <div> <p>1H2/CLASS 6.2/ 116 USA/+AA7309</p> <p>Tested and Approved For Chart/MVE Inc. By TEN-E PACKAGING SERVICES, INC. DOT CERTIFIED AGENCY +AA</p> <p>MVE                      This End Up</p> </div> </div>	

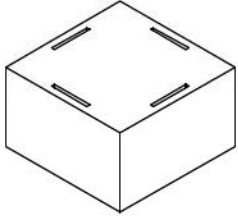
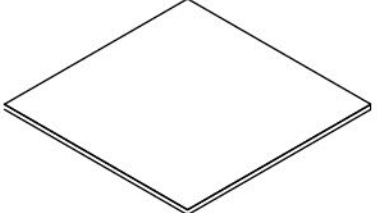

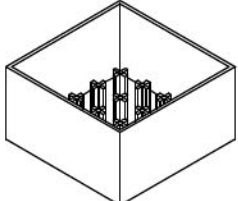
**SECTIONS II & V: PACKAGING DESCRIPTIONS / COMPONENT DRAWINGS**

**CMD-20 Cryogenic Shipper for 9 x Plastic Box containing 20 x 2 mL Plastic Vials**

ASSEMBLY DRAWING	TEST LEVELS		
	Certification Type:	Periodic Retest	
	Packaging Code Designation:	1H2 Category A Infectious Substance	
	<b>TEST SAMPLE PREPARATION</b> (Refer to Section IV)		
	Overall Packaging Tare Weight:	26,384 Grams	
	Fill Capacity (98% Maximum Capacity):		
	Methanol/Water Solution	2 Grams	
	Water	2 Grams	
	Package Test Weight:		
	Methanol/Water Solution	26.7 Kg	58.8 Lbs.
	Water	26.7 Kg	58.8 Lbs.
<b>CLOSING METHODS</b>			
<b>2 ML VIAL</b>			
Application Torque:	7 In-Lbs.		
Equipment:	Torque Wrench #741		
<b>SECONDARY CONTAINER</b>			
Application Method:	(6) Allen Head Screws tightened until fully engaged with cover and a minimum 1/8 turn thereafter		
<b>DEWAR (CRYOSHIPPER)</b>			
Application Method:	Friction Fit Cover		
<b>SHIPPER</b>			
Application Method:	Top Cover with (2) Metal Twist-Lock Hasp Latch Assemblies		

CLOSURE		DRAWING
<b>Manufacturer: Federal Industries Corp., Plymouth, MN</b>		
<b>Description:</b>	12 mm Threaded Closure with Valve Seal	
<b>Quantity:</b>	180	
<b>Material:</b>	Polypropylene, Natural	
<b>Tare Weight:</b>	0.707 Grams	
<b>Overall Dimensions:</b>		
• <b>Height</b>	0.531"	
• <b>Diameter</b>	0.559"	
<b>Finish Dimensions:</b>		
• <b>T</b>	0.484"	
• <b>E</b>	0.455"	
<b>Markings (QC Audit):</b>	79	
<b>Gasket:</b>		
<b>Description:</b>	White Rubber Gasket	
<b>Tare Weight:</b>	0.085 Grams	
<b>Thickness:</b>	0.048"	
<b>Diameter:</b>	0.474"	
PLASTIC VIAL		
<b>Manufacturer: Federal Industries Corp., Plymouth, MN</b>		
<b>Description:</b>	2 mL Self Standing Vial	
<b>Quantity:</b>	180	
<b>Material/Pigment:</b>	Polypropylene, Natural	
<b>Method of Manufacture:</b>	Injection Molded	
<b>Tare Weight:</b>	1.618 Grams	
<b>Capacity:</b>		
• <b>Rated</b>	2 mL	
• <b>Overflow</b>	2 Grams	
<b>Overall Dimensions:</b>		
• <b>Height</b>	1.619"	
• <b>Diameter</b>	0.458"	
<b>Thread Dimensions:</b>		
• <b>T</b>	0.473"	
• <b>E</b>	0.443"	
• <b>Pitch</b>	0.0768"	
<b>Wall Thickness:</b>		
• <b>Minimum</b>	0.051"	
<b>Markings (QC Audit):</b>	S                      3	



2-PIECE PLASTIC CASE (B3CM)		DRAWING
<b>Manufacturer: Biomedical Marketing Associates, Wexford, PA</b>		   
<b>Description:</b>	2 Piece Plastic Box with 25 Cells	
<b>Quantity:</b>	9	
<b>Material:</b>	Plastic, White	
<b>Method of Manufacture:</b>	Injection Molded	
<b>Tare Weight:</b>		
• <b>Top</b>	24.326 Grams	
• <b>Bottom</b>	37.351 Grams	
<b>Overall Dimensions:</b>		
• <b>Top</b>	2-5/8" x 2-5/8" x 1-1/2"	
• <b>Bottom</b>	2-5/8" x 2-5/8" x 1-5/8"	
• <b>Overall</b>	2-5/8" x 2-5/8" x 3"	
<b>Markings (QC Audit):</b>		
• <b>Top</b>	MVE Numbers "1" Through "25"	
• <b>Bottom</b>	None	
ABSORBENT SHEET		
<b>Manufacturer: Fisher Scientific Company, LLC., Waltham, MA</b>		
<b>Description:</b>	(1) Absorbent Sheet Folded in Half and placed on top of vials inside each box, (4) sheets placed in bottom of secondary container under boxes containing vials and (11) folded sheets used to fill void space	
<b>Quantity:</b>	24	
<b>Material:</b>	Fiber Absorbent Material, White	
<b>Tare Weight:</b>	1.783 Grams	
<b>Overall Dimensions:</b>		
<b>Length</b>	7-7/8"	
<b>Width</b>	4"	
<b>Thickness</b>	0.012"	
<b>Markings (QC Audit):</b>	None	

COVER		DRAWING
<b>Manufacturer: Chart Industries, New Prague, MN</b>		
<b>Description:</b>	Stainless Steel Cover w/Handle, Pressure Release Valve and (6) Allen Head Fastening Screws	
<b>Quantity:</b>	1	
<b>Material:</b>	Stainless Steel, SS304	
<b>Tare Weight:</b>	884 Grams (902 Grams with Screws)	
<b>Overall Dimensions:</b>		
<b>Height</b>	0.137"	
<b>Height w/Handle</b>	1.629"	
<b>Diameter</b>	8.375"	
<b>Markings (QC Audit):</b>	None	
<b>SECONDARY CONTAINER</b>		
<b>Manufacturer: Chart Industries, New Prague, MN</b>		
<b>Description:</b>	6 Liter Stainless Steel Can	
<b>Quantity:</b>	1	
<b>Material:</b>	Stainless Steel, SS304	
<b>Tare Weight:</b>	1,719 Grams	
<b>Overall Dimensions:</b>		
<b>Height</b>	9.375"	
<b>Outer Diameter</b>	8.375" (top)	
<b>Inside Diameter</b>	7.367"	
<b>Markings (QC Audit):</b>	<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; border-radius: 50%; padding: 2px; margin-right: 10px;"> u n </div> <div> 1H2/CLASS 6.2/16  USA/+AA7309   Tested and Approved For Chart/MVE Inc. By  TEN-E PACKAGING SERVICES, INC.  DOT CERTIFIED AGENCY +AA </div> </div>	
<b>Gasket:</b>		
<b>Description:</b>	White PTFE Gasket Placed In Top Groove of Can	
<b>Tare Weight:</b>	7 Grams	
<b>Thickness:</b>	0.106"	
<b>Diameter:</b>	7.667"	
<b>WRENCH</b>		
<b>Description:</b>	Long Allen Wrench w/Red Vinyl Coated Handle	
<b>Quantity:</b>	1	
<b>Material:</b>	Black Coated Metal/ PVC, Red	
<b>Tare Weight:</b>	35 Grams	
<b>Overall Dimensions:</b>		
<b>Length</b>	6.799"	
<b>Width</b>	3.090"	
<b>Thickness</b>	0.284" (Top Handle) 0.176" (Bottom Points)	
<b>Markings (QC Audit):</b>	Ek lind®      5/32      51610      USA	

**OVERPACK (CRYO-SHIPPER EXTRA CAPACITY UNIT)**

OVERPACK COVER		DRAWING
<b>Manufacturer: Chart Industries, New Prague, MN</b>		
<b>Description:</b>	Attached Domed Cover of 2-Piece Shipping Container w/Rear Metal Hinge, (2) Side Metal Fasteners and Glued-In Foam Ring Pad	
<b>Quantity:</b>	1	
<b>Material:</b>	Polyethylene, Tan	
<b>Density:</b>	0.935 g/cc	
<b>Melt Index (190/21.6):</b>	5.0 g/10 min.	
<b>Overall Dimensions:</b>		
• <b>Height</b>	5-1/2"	
• <b>Diameter</b>	22"	
<b>Markings (QC Audit):</b>	None	
OVERPACK		
<b>Manufacturer: Chart Industries, New Prague, MN</b>		
<b>Description:</b>	CMD-20 Cryogenic Open Head 2-Piece Plastic Shipping Container w/ (2) Bolted Metal Handles, (2) Metal Twist-Lock Hasp Latches. (8) Glued-In Side Wall Foam Pads and (2) 17-1/2" Diameter Round Loose Foam Cushioning Pads Placed In Bottom	
<b>Quantity:</b>	1	
<b>Material:</b>	Polyethylene, Tan/White, Polyethylene Foam	
<b>Density:</b>	0.935 g/cc	
<b>Melt Index (190/21.6):</b>	5.0 g/10 min.	
<b>Tare Weight (w/Cover):</b>	7,951 Grams (with Cover)	
<b>Overall Dimensions:</b>		
• <b>Height</b>	22"	
• <b>Top Diameter</b>	20.892"	
• <b>Bottom Diameter</b>	22"	
<b>Markings (QC Audit):</b>	<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; border-radius: 50%; padding: 2px; margin-right: 10px;">                     u n                 </div> <div>                     1H2/CLASS 6.2/16                      USA+AA7309                       Tested and Approved For Chart/MVE Inc. By                      TEN-E PACKAGING SERVICES, INC. DOT                      CERTIFIED AGENCY +AA                      MVE This End Up                 </div> </div>	

# Packing for Shipment

## IATA Shipper -150 Specimen Transport

The components of the IATA Shipper consist of:

- Shipping container (overpack)
- Cryoshipper
- Secondary Container (primary)

### Secondary Container

1. Pre-cool the secondary container in liquid nitrogen vapor phase or -70 °C mechanical freezer, before placing samples inside.

**CAUTION:** Do not put dry ice or liquid nitrogen in secondary container. Do NOT submerge the secondary container into liquid nitrogen.

2. Remove the secondary container from the pre-cooling vapor phase and insert biological samples.

3. Seal the lid of the secondary container using all 6 screws.

Note: Be sure to keep top flange dry before sealing secondary container.

4. After charging the Cryoshipper and removing any excess liquid, place the secondary container into the Cryoshipper just prior to shipment.



## Cryoshipper

1. Remove cork/cover (do not twist) from Cryoshipper.
2. Fill the Cryoshipper to bottom of neck tube.

**CAUTION:** Follow established safety practices and procedures for transferring LN2.

Transfer using LN2 hose with phase separator or pouring container and approved funnel.

3. Reinstall cork/cover and allow unit to stand for 12 hours.
4. Verify the LN2 level, and fill again to the bottom of the neck tube. Wait 12 more hours.
5. Pour off excess liquid.
6. Place the secondary container into the Cryoshipper to prepare for shipment.
7. After transit, remove secondary container from Cryoshipper using face shield, cryogenic gloves, and cryogenic apron.

**CAUTION:** ALWAYS release pressure inside this container by lifting up the handle of relief valve BEFORE opening the lid of the secondary container.

## Safety

- Fill the container with a funnel or transfer line when possible. Avoid spilling liquid nitrogen over the vacuum cap near the neck as this can shrink the seal and allow air to leak into the vacuum space.
- To avoid injury by frostbite use extreme care when handling liquid nitrogen, liquid nitrogen storage or transfer vessels, or any other objects which have come in contact with liquid nitrogen.
- Leave no area of skin exposed.
- Always wear proper safety attire over clothing: face shield, cryogenic gloves, and cryogenic apron.
- Never overfill vapor shippers with liquid nitrogen.
- Always keep vapor shippers in upright position.
- Do not tightly seal liquid nitrogen container or prevent nitrogen gas from escaping.
- Use extreme care to prevent spilling and splashing liquid nitrogen during transfer.
- Immediately remove any clothing or safety attire on which liquid nitrogen has spilled.
- Get immediate medical attention for any frostbite injuries due to liquid nitrogen.