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Crēdo Cube™ Series 4 User Guide

Product Overview

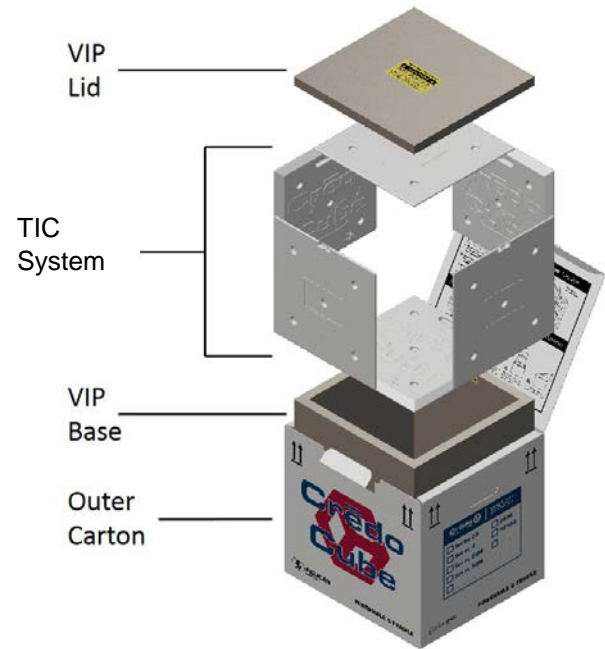
Crēdo Cube™ parcel shippers consist of durable components that meet ISTA 3A transit criteria thereby delivering accurate, long-lasting temperature control allowing for high quality use and look with enhanced operational efficiency.

Innovative TIC™ System (Thermal Isolation Chamber) panels with integrated 5°C phase-change material surround the payload providing greater temperature performance and overall payload protection.

Modular design provides efficiency in storage, high volumetric payload to exterior ratio and simplicity in conditioning and pack-out.

Note: nested product configuration is available for longer duration requirements.

System Diagram



Crēdo Cube Shipper Benefits

Easy quick assembly and single simple pack-out for all seasons.

Reusable patented technology that is recyclable reducing environmental impact.

Enhanced performance and proven payload protection eliminates temperature excursions.

Reduces overall distribution costs.

Longevity of components = lowest cost per use.

Reduce payload risk.
Reduce distribution costs.
Reduce environmental impact.

Ensuring Consistent Performance

Always condition the TIC System before use according to instructions provided in this User Guide (Section 1).

Ensure all components are clean and free of damage.

Follow assembly instructions printed on the inside lid of the outer box.

Avoid unnecessary opening of the container after loading the payload.

Ensure both TIC and VIP lids are secure before sealing the container for transport.



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1 Preparing Your TIC™ Panels

1.1 Option 1: Freezer to Room Temperature (Small Volume Processing)

Place the TIC system in a -18°C freezer, or below, for a minimum of 24 hours. Ensure that the TICs lay flat. Freeze times may vary depending on amount of units being frozen and equipment specifications. To ensure the TIC is fully frozen, shake the panels to verify no liquid can be heard.

The TIC system is ready to receive pack out staging-time. The pack out staging-time is the length of time immediately following the TIC removal from the freezer to the duration at room temperature wherein the PCM inside will rise to the appropriate operating temperature range.

The Staging Time Reference Chart below is a guideline for the amount of time the TIC system requires in order to warm to the operating temperature. An Infrared temperature thermometer can assist in ensuring the panels reach a safe pack out temperature but is not a requirement. Simply point laser at edge of the center stand-off (center depression) of the TIC panel for an accurate surface temperature reading. The TIC is ready to load when the IR gun reads between 3°C and 4.5°C.



Alternatively, Pelican BioThermal offers the TIC Smart Indicator for the Crêdo™ Series 4 TIC system with an embedded indicator mounted inside a sealed housing with a label overlay. When TIC panels have reached the accurate PCM core temperature a visible check mark will appear.

NOTE: Staging times are based on a freezer temperature of -18°C and a room temperature of 22°C. Panels are not stacked during the staging time. Ample air flow around all panel sides required. Staging times are intended to serve as a guideline and may need adjustment based on your individual operating environment.

Staging-Time Reference Chart	
TIC Panel Size	Staging-Time Required
5 x 5	35 Minutes
6 x 6	25 Minutes
6.5 x 6.5	30 Minutes
6.5 x 11	30 Minutes
8.5 x 8.5	45 Minutes
9 x 9	35 Minutes
10 x 10	35 Minutes
12 x 12	35 Minutes
12 x 15	40 Minutes
15 x 15	40 Minutes
15 x 18	40 Minutes
18 x 18	40 Minutes



1.2 Option 2: Freezer to Refrigerator Processing (Rotational Conditioning)

This rotational TIC™ conditioning and pack out staging method utilizes controlled freezer and refrigerated temperatures to safely and efficiently condition the TIC panel system. This method is usually deployed for conditioning large volumes of TIC panels but can be used for small volumes as well. The primary benefit of rotational conditioning is the elimination of room temperature pack-out staging time.

Place the TIC system in a -18°C freezer, or below, for a minimum of 24 hours. Ensure that the TICs lay flat. Freeze times may vary depending on amount of units being frozen and equipment specifications. To ensure the TIC is fully frozen, shake the panels to verify no liquid can be heard.

After the TICs have been properly conditioned (fully frozen solid), the TIC system is then rotated and placed inside a refrigerated (2° to 8° C) environment to allow the TIC system to reach a minimum usable temperature of 2° C. The TIC system can then be stored in the refrigerated environment until it is ready for use or until the PCM begins to melt. Once the PCM has begun melting the TIC system should not be used and be returned to the freezer for reconditioning. If a refrigerated temperature of 3° C ($\pm 1^\circ$ C) can be maintained within the refrigerated environment, the PCM within the TIC system will never melt and the TIC system can be held indefinitely within the refrigerated environment until it is ready for use.

Timing for each step of the process will depend on the volume of TICs, the TIC size(s), the configuration and the equipment being used. Pelican BioThermal can assist in helping you determine the timing for your specific application by performing a conditioning study or providing guidance on how to conduct one. An IR gun, TIC smart temperature indicator, or conditioning study can help you ensure the TIC system has reached a safe minimum temperature of 2° C prior to use.



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2 Packing Your Crêdo™ Thermal Packaging Solution

2.1 Standard Configuration

1. **Condition the TIC™ System**

- After freezing, be certain to carefully perform one of the Pack out options explained in Section 1.

2. **Assemble the TIC base**

- Insert a TIC panel into the insulator base (inner insulator in nested configuration) with the Crêdo Cube logo embossment facing up.
- Add the 4 TIC panels to form the side walls with the Crêdo Cube logo embossment facing in.



3. **Load payload (product shipping)**

- Ensure the payload is conditioned at 5°C (+/- 3°C) before loading into the five (5) TIC panel assembly. Do not over pack the Crêdo parcel shipper.
- Add non-insulating filler to fill any excess payload space to prevent contents from shifting during transit.





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4. **Insert insulator lid(s)**

- Place the final TIC™ panel over the payload area with the Crêdo™ logo facing down, ensuring the panel lies flat and level without force onto the TIC side walls.
- Place the insulator lid over the TIC system making sure it rests flat and level without forcing.



5. **Close and secure outer container**

- Close and secure outer box (corrugated or kraft carton) with packing tape where indicated.
- For hard outer cases only: secure latches and use security loop with tamper-proof tie or tag to ensure container will not open during shipment.



Note: In the unlikely event that the container may be exposed to extreme cold conditions (50% or more of the transit time), condition as follows: Place the TIC System in a refrigerator between 4° and 8°C for 4 to 12 hours. Verify that the PCM is liquid by shaking.



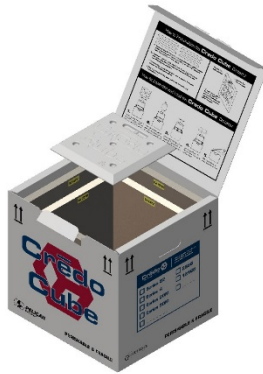
2.2 2" VIP – Nested Configuration

1. Condition the TIC™ System

- After freezing, be certain to carefully perform one of the Pack Out Options explained in Section 1.

2. Assemble the TIC base

- Insert a TIC panel into the insulator base (inner insulator base in nested configuration) with the Crêdo Cube™ embossed logo facing up.
- Add 4 TIC panels to form the side walls with the Crêdo Cube embossed logo facing in.



3. Load payload (product shipping)

- Ensure the payload is conditioned at 5° C ($\pm 3^{\circ}\text{C}$) before loading into the 5 TIC panel assembly. Do not over pack the container.
- Add non-insulating filler to fill any excess payload space to prevent contents from shifting during transit.



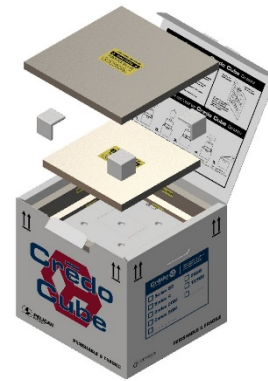


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4. Insert insulator lid(s)

- Place the final TIC™ panel over the payload area ensuring the panel lies flat and level without forcing onto TIC side walls.
- Place the inner VIP insulator lid over the TIC system making sure it rests flat and level without forcing.
- Install the four white corner blocks with the cube logo facing up. Ensure that all four blocks do not protrude above the outer corrugate container assembly. Place the outer VIP insulator lid on top of the corner blocks making sure it rests flat and level without forcing.



5. Close and secure outer container

- Close and secure outer box top (corrugated or plastic) with packing tape where indicated.
- For hard outer cases only: secure latches and use security loop with tamper-proof tie or tag to ensure container does not open during shipment.



Note: In the unlikely event that the container may be exposed to extreme cold conditions, condition as follows: place the TIC System in a refrigerator between 4° and 8°C for 4 to 12 hours. Verify that the PCM is liquid by shaking.



3 Caring for your Crêdo™ Thermal Packaging Solution

3.1 How to Clean Your Crêdo Components

- **TIC™ System (6 panels):** Clean the TIC panels by using warm water and soap or alcohol. Decontaminate/clean by using an isopropyl alcohol and water mixture (typically 70/30 mix alcohol to water) or other salt-based disinfectants.
- **Insulator lid and base:** Clean the insulator lid and base by using a damp towel with soap or a rag with isopropyl alcohol.
- **Plastic corrugated outer box:** Clean the plastic outer box by using a damp towel with a non-abrasive soap or a rag with isopropyl alcohol.

DO NOT:

- Autoclave any of the components.
- Use any organic solvents such as acetone or methyl ethyl ketone (MEK) on any of the components.
- Expose any of the TIC components or insulator to extreme heat (+75° C or above.)
- Use any abrasive cleaners on any of the components.

Note: If your preferred cleaning method is not mentioned above, please contact your Sales Account Manager at Pelican BioThermal.

3.2 How to Perform a Thermal and/or Transit Qualification

Pelican BioThermal offers thermal and transit qualification services, to industry standards, via our thermal laboratory. We also offer a NIST traceable PC-based temperature data logger that fits inside the container and provides accurate, continuous time and temperature data in a spreadsheet format. We utilize and follow ISTA procedure 7D or 7E, which are ASTM D3103 compliant to guide you through your thermal testing process. We recommend ISTA procedure Series 1, 2, or 3, or ASTM D4169 to guide you through your transit testing. Many of our units are already transit tested to ISTA procedure 3A. The certification can be found on the bottom of the shipper.

3.3 How to Inspect and Replace Vacuum Insulation Panels

The Vacuum Insulation Panels (VIPs) in Crêdo containers are extremely effective as long as they hold an internal vacuum. Periodically inspect the VIP lid and base surfaces. Loss of rigidity indicates a compromised panel. A loose skin or non-rigid panel indicates vacuum loss and the product should be recycled (refer to Section 4). Avoid removing the VIP base from the outer corrugated box. Replace the VIP lid and VIP base before the expiration date printed on each panel.

3.4 Refrigerated Hold

The Crêdo Series 4 thermal shipping containers can be put into a refrigerated hold immediately after loading or any time during transit to reduce, or stop altogether, the heat transfer into the shipper. If the ambient inside the refrigerated environment is between 2.0° C and 4.0° C there will be no positive heat flow into the container and therefore no performance degradation. This is because temperatures are below the phase point of the Series 4 PCM but above the minimum allowable temperature of 2.0° C. At temperatures above 4.0° C, a small thermal gradient exists and heat flow across the insulator into the container is established. This will result in a small thermal performance degradation since the PCM will be slowly melting.



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4 Pelican BioThermal End-of-Life Component Recycling Program

Pelican BioThermal is strongly committed to reducing the environmental impact of its product components throughout and beyond their functional life. When Crēdo™ container components do reach end of usefulness, Pelican BioThermal is pleased to offer the ability to send retired shippers back to our manufacturing facility in Plymouth, MN where they will be dismantled, sorted and their materials recycled.

Important:

Prior to sending Crēdo system components (VIPs, TICs, and outer containers) back to Pelican BioThermal for disposition, you are required to send a Certificate of Non-Contamination (see page 11) to your Pelican BioThermal Sales Account Manager declaring the product to be free of any substances/materials considered hazardous to human health (OSHA Standards). You will then be issued a Return Authorization to include with your shipment.

COMPONENT RECYCLING LOCATION:

Please send* all Crēdo components (VIPs, TICs, and outer containers) to:

PELICAN BIOTHERMAL
Attn: Shane Miller
3020 Niagara Lane N.
Plymouth, MN 55447

For Customer Assistance, please call 877.537.9800

COMPANY PROGRAM DISCLAIMER:

*Client is responsible for freight charges for shipment to Plymouth MN USA
A two week advance notice is required prior to product delivery date in Plymouth MN
The ownership of returned product is relinquished once received at Pelican BioThermal docks in Plymouth MN
No refunds or reimbursements

Take the next step... **REDUCE, RECYCLE and REUSE.**

Thank you!



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Certification of Non-Contamination

(Please copy and paste into your company letterhead)

CERTIFICATE OF NON-CONTAMINATION

As a company representative of (enter company name), I hereby certify the following Crēdo™ components, being returned to Pelican BioThermal for disposition, are to the best of my knowledge free of any bio-hazard substances/materials harmful to human health as subject to and currently established by OSHA guidelines.

Description and quantities of Crēdo components:

Authorized Company Representative:

Company Name: _____

Name: _____

Signature: _____

Title: _____

Date: _____

Please return completed form via email at shane.miller@pelican.com or fax to: 763.413.4801



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Series 4 – 1” VIP (Standard Configurations)

Shipper Name	Temperature Range	Internal Dimensions						Payload Volume Liters	External Dimensions						Volumetric Efficiency	Tare Weight		ISTA Summer No Load	ISTA Winter No Load
		Length		Width		Height			Length		Width		Height			lbs	Kg		
		in	(mm)	in	(mm)	in	(mm)		in	(mm)	in	(mm)	in	(mm)					
Series 4-3120 White Plastic	2°C to 8°C	5.1	129.54	5.1	129.54	5.1	129.54	2.17	12.5	317.5	10.5	266.7	11	279.4	9%	14	6.35	102.25	188.92
Series 4-496 White Plastic	2°C to 8°C	5.9	149.86	5.9	149.86	5.9	149.86	3.37	12.5	317.5	10.5	266.7	11	279.4	14%	12	5.44	65.25	146.03
Series 4-472 ProMed	2°C to 8°C	5.9	149.86	5.9	149.86	5.9	149.86	3.37	11.5	292.1	11.5	292.1	11	279.4	14%	12	5.44	73.25	110.58
Series 4-896 White Plastic	2°C to 8°C	11.1	281.94	6.5	165.1	6.5	165.1	7.69	17.5	444.5	11.25	285.75	11.5	292.1	21%	17	7.71	76.86	146.08
Series 4-872 ProMed	2°C to 8°C	11.1	281.94	6.5	165.1	6.5	165.1	7.69	16	406.4	11.25	285.75	11.25	285.75	23%	18	8.16	73.8	110.58
Series 4-10120 White Plastic	2°C to 8°C	8.5	215.9	8.5	215.9	8.5	215.9	10.06	15	381	13.5	342.9	13.75	349.25	22%	24	10.89	104.72	147.92
Series 4-1296 White Plastic	2°C to 8°C	8.9	226.06	8.9	226.06	8.9	226.06	11.55	15	381	13.5	342.9	13.75	349.25	25%	22	9.98	94.86	146.03
Series 4-1696 White Plastic	2°C to 8°C	10	254	10	254	10	254	16.39	16.5	419.1	14.75	374.65	15	381	27%	25	11.34	84.67	145.33
Series 4-1696 DuraCube LT	2°C to 8°C	10	254	10	254	10	254	16.39	17.5	444.5	17.5	444.5	16	406.4	20%	33	14.97	90.42	145.33
Series 4-1696 DuraCube HD	2°C to 8°C	10	254	10	254	10	254	16.39	20.5	520.7	20.5	520.7	19.25	488.95	12%	47	21.32	93.42	138.67
Series 4-2896 White Plastic	2°C to 8°C	12	304.8	12	304.8	12	304.8	28.32	18	457.2	16.5	419.1	17	431.8	34%	36	16.33	105.53	114.42
Series 4-2896 DuraCube LT	2°C to 8°C	12	304.8	12	304.8	12	304.8	28.32	19.75	501.65	19.75	501.65	18	457.2	25%	50	22.68	98.8	135.75
Series 4-2896 DuraCube HD	2°C to 8°C	12	304.8	12	304.8	12	304.8	28.32	20.5	520.7	20.5	520.7	19.25	488.95	21%	57	25.85	106.33	187.83
Series 4-4296 White Plastic	2°C to 8°C	18	457.2	12	304.8	12	304.8	42.48	24.25	615.95	16.5	419.1	17	431.8	38%	46	20.87	104.33	120+
Series 4-5696 Kraft	2°C to 8°C	15	381	15	381	15	381	55.31	21.25	539.75	19.5	495.3	19.75	501.65	41%	54	24.49	111.75	117
Series 4-9696 Kraft	2°C to 8°C	18	457.2	18	457.2	18	457.2	95.57	30	762	26	660.4	28.25	717.55	26%	82	37.19	106.08	X
Series 4-9696 DuraCube HD	2°C to 8°C	18	457.2	18	457.2	18	457.2	95.57	26.5	673.1	26.5	673.1	25.25	641.35	33%	102	46.27	113.61	120+

Series 4 – 2” VIP (Nested Configurations)

Shipper Name	Temperature Range	Internal Dimensions						Payload Volume Liters	External Dimensions						Volumetric Efficiency	Tare Weight		ISTA Summer No Load	ISTA Winter No Load
		Length		Width		Height			Length		Width		Height			lbs	Kg		
		in	(mm)	in	(mm)	in	(mm)		in	(mm)	in	(mm)	in	(mm)					
Series 4-4120 White Plastic	2°C to 8°C	5.9	149.86	5.9	149.86	5.9	149.86	3.37	15	381	13.5	342.9	13.75	349.25	7%	20	9.07	102.08	147.25
Series 4-12168 White Plastic	2°C to 8°C	8.9	226.06	8.9	226.06	8.9	226.06	11.55	18	457.2	16.5	419.1	17	431.8	14%	36	16.33	163.5	170+
Series 4-16168 White Plastic	2°C to 8°C	10	254	10	254	10	254	16.39	18.25	463.55	17	431.8	17.5	444.5	18%	37	16.78	166.08	185.33
Series 4-28168 Kraft	2°C to 8°C	12	304.8	12	304.8	12	304.8	28.32	21.25	539.75	19.5	495.3	19.75	501.65	21%	56	25.40	162.17	171
Series 4-12168 DuraCube HD	2°C to 8°C	8.9	226.06	8.9	226.06	8.9	226.06	11.55	20.5	520.7	20.5	520.7	19.25	488.95	9%	57	25.85	163.5	170+
Series 4-56168 DuraCube HD	2°C to 8°C	15	381	15	381	15	381	55.31	26.5	673.1	26.5	673.1	25.25	641.35	19%	105	47.63	186.75	235

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