BioT™ ULT Transporter

Part of Biolife Solutions

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1 BioT™ ULT Transporter Function and Description

1.1 Overview

BioT™ ULT Transporter dry-ice based temperature stability system is a convenient mid-sized solution for transporting temperaturesensitive material. It will also serve as a compact, portable, ultra-low freezing station for freezing samples at a collection site. The patent-pending DIR™ cooling insert technology inside the transporter harnesses cold convection for efficient, stable, and hours-long dry ice-based cooling. The base chamber accommodates up to 8 standard 2-inch cryostorage boxes. Side finger grips make it easy to pick up and carry. The closed-cell high density polyethylene foam chamber construction is highly durable, non-absorbent and comfortable to the touch, even when loaded with dry ice and frozen samples.

Temperature Range	Cooling Source	Lid off Cooling Duration	Lid on Cooling Duration
<-70˚C to -50˚C	Dry Ice	8 hours	24 hours

1.2 General safety

The product described here is intended for the exclusive use by trained and experienced laboratory personnel. Use of dry ice can be dangerous. Direct skin contact with dry ice or conductive components that have been in contact with dry ice can cause freezing injury. Always use appropriate protective equipment for eyes and skin when handling dry ice and cold metal components.

⚠ CAUTION:

- Use of dry ice as a coolant produces CO_2 gas. When using dry ice, ensure that adequate ventilation is provided in the working environment.
- When dry ice is present, the conductive surface of the DIR™ retainer will be at dry ice temperature. Handle with care, and wear protective gear when handling dry ice and working around the DIR retainer.
- Always use both hands and side handholds when lifting or carrying the BioT™ ULT Transporter.
- BioT™ ULT Transporter is optimized for use in room temperature (20 - 26°C) environments with dry ice loaded into the unit's interior cavity.
- Avoid exposing the unit's exterior surfaces to temperatures below 0°C.

1 BioT™ ULT Transporter Function and Description (Continued)

1.3 Use as intended

If BioT™ ULT Transporter is used in a manner not specified by BioLife Solutions the protection provided by the equipment may be impaired.

1.4 Unpacking

If you are missing any components, please contact BioLife Solutions customer support at **+1-866-424-6543** or at **info@biolifesolutions.com** for assistance.

1.5 Instrument components

BioT™ ULT Transporter is comprised of three parts: magnetized lid, thermoconductive alloy DIR™ dry ice retainer, and base chamber.

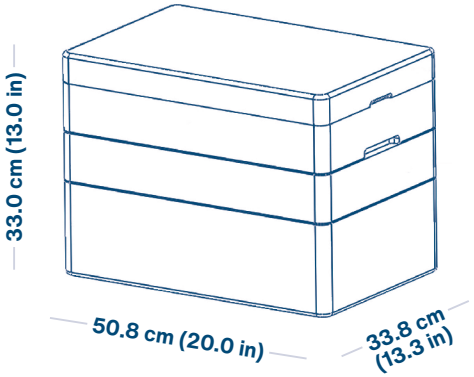
1.6 Specifications

Hours of <-50˚C cooling	8 hours (lid off)
	24 hours (lid on))
Amount of dry ice required	5.4 kg (12.8 lbs)
Weight empty	3.1 kg (6.8 lbs)
Weight with dry ice	8.5 kg (19.6 lbs)
Working depth < -50°C	up to 20 cm (8 inches) from chamber floor
Capacity	8 standard 2-inch cryostorage boxes 18, 250 mL cassettes

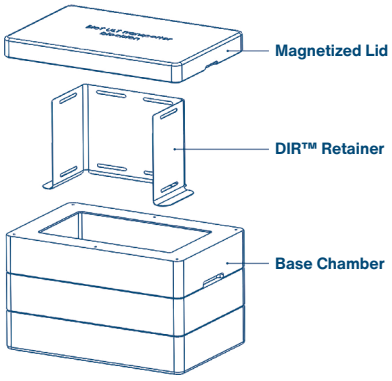
1.7 Dimensions (L x W x H)

Internal working area: 29.0 x 16.2 x 20.3 cm (11.4 x 6.4 x 8.0 in).

External: 50.8 x 33.8 x 33.0 cm (20.0 x 13.3 x 13.0 in).



2 Instrument Assembly and Operation



1. Insert the DIR™ retainer, flanges down, into the base chamber.
2. Add pelletized dry ice into the cavity between the DIR retainer and the base chamber walls, filling to the top of the DIR retainer. A full load of dry ice is approximately 13 lbs (5.8 kgs). Do not overfill.
3. The internal chamber will reach optimal working conditions (<-70˚C to -50˚C) within approximately 20 minutes and will be ready for use.
4. Place the lid on the unit when access to the working area is not required. This will decrease the rate of dry ice sublimation and increase the longevity of the system at working temperatures.
5. Additional dry ice may be added as needed to extend operating time of the system. To do so, remove lid, add additional dry ice as needed and replace lid.

3 Care and Cleaning

When not in use, remove all dry ice and any residual moisture from the chamber. If dry ice is present, be sure to wear protective gear as conductive materials will be at cryogenic temperature. Store the system with the DIR™ retainer and lid in place.

The BioT™ ULT Transporter base chamber and lid are constructed from cross-linked closed-cell high density polyethylene foam. The material has excellent resistance to fluid absorption and abrasion. Maximum temperature exposure: 60°C. Avoid prolonged exposure to UV light sources. The DIR™ retainer is constructed from a thermoconductive aluminum-based alloy. All components will sustain repeated and prolonged exposure to cryogenic temperatures. All components can be wiped down with either 70% isopropyl alcohol (IPA) or 10% bleach. The DIR retainer may be autoclaved.

4 Troubleshooting

Q: Cavity between the DIR™ retainer and the three chamber walls is not accessible.
A: Ensure that the DIR retainer is loaded with flanges down on the bottom of the chamber.

Q: Inadequate cooling.
A: Use only pelletized dry ice. Ensure dry ice is filled to the top of the DIR retainer.

5 Customer Service Information

5.1 Technical service and repair

Contact BioLife Solutions customer support at **+1-866-424-6543** or at **info@biolifesolutions.com** for assistance.

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Instructions for Use

1 BioT™ LN2 Transporter Function and Description

1.1 Overview

The BioT™ LN2 Transporter is a transport and sorting station for samples stored at or below vapor phase liquid nitrogen (LN2) temperatures. When installed and charged with LN2, the insert creates a cryogenic temperature zone of < -150˚C, ideal for preventing temperature excursions in valuable specimens. The unit accommodates up to 4 standard 2-inch cryostorage boxes for transportation with the lid closed. Two cryostorage boxes can be placed side-by-side in the unit for sample sorting and cherry picking with the lid open.

Temperature Range	Cooling Source	Lid off Cooling Duration	Lid on Cooling Duration
-180˚C to -150˚C at < 6”	LN2	1 - 1.5 hours	2 - 2.5 hours

1.2 General safety

The product described here is intended for the exclusive use by trained and experienced laboratory personnel. Use of LN2 can be dangerous. Direct skin contact with LN2 or conductive components that have been in contact with LN2 can cause severe injury. Users are advised to comply with applicable organizational standard operating procedures, industry safety guidelines, and local, regional, national and international laws and regulations.

⚠ CAUTION:

Personal Safety Guidelines

- To avoid injury and cold burns, use extreme care whenever working with LN2, or handling any objects that have come in contact with LN2.
- Cover all exposed skin to protect against LN2 exposure.
- Suitable safety attire, proper shoes, and personal protective equipment such as face shield, cryogenic gloves and apron are highly recommended.
- Seek immediate medical attention for any cold burns or injuries sustained due to LN2 exposure.
- Immediately remove any clothing or safety attire on which LN2 has been spilled.

LN2 Safety Guidelines

- **DANGER:** DO NOT store or use LN2 containers in areas that have poor ventilation. Nitrogen gas will deplete oxygen in the air, possibly leading to asphyxiation or even death.
- Do not overfill LN2 vessels.
- Do not tightly seal LN2 container or prevent nitrogen gas from escaping.

1 BioT™ LN2 Transporter Function and Description (Continued)

1.3 Use as intended

If BioT™ LN2 Transporter is used in a manner not specified by BioLife Solutions the protection provided by the equipment may be impaired.

1.4 Unpacking

If you are missing any components, please contact BioLife Solutions customer support at **+1-866-424-6543** or at **info@biolifesolutions.com** for assistance.

1.5 Instrument components

BioT™ LN2 Transporter is comprised of three parts: thermoconductive basket, thermoconductive shelf plate, and absorbent/baffle pad.

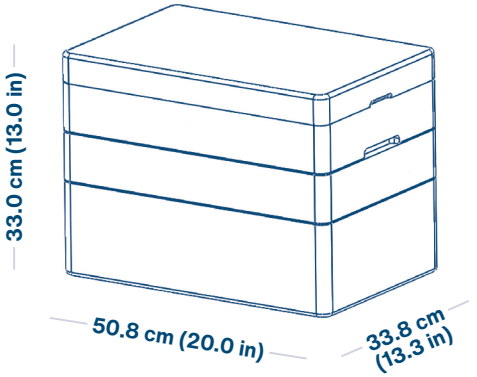
1.6 Specifications

< -150˚C cooling time	60-90 min (lid off)
	120-140 min (lid on)
Amount of LN2 required	~2.7 L to charge unit
Weight empty	4.0 kg (8.8 lbs)
Weight with LN2	6.2 kg (13.6 lbs)
Working depth < -150°C	up to 15.2 cm (6 inches) from floor plate
Capacity	> 6 standard 2-inch cryostorage boxes 24, 250 mL cassettes

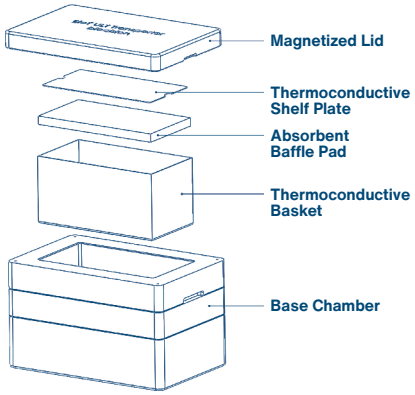
1.7 Dimensions (L x W x H)

Internal working area: 36.5 x 20.3 x 20.3 cm (14.4 x 8.0 x 8.0 in).

External: 50.8 x 33.8 x 33.0 cm (20.0 x 13.3 x 13.0 in).



2 Instrument Assembly and Operation



1. Ensure unit is clean and dry before inserting the LN2 Kit components.
2. Insert the thermoconductive basket into the unit using the side finger slots. Ensure the floor of the basket is at the bottom of the unit.
3. Insert the absorbent/baffle pad into the floor of the thermoconductive basket.
4. Place the thermoconductive shelf plate into the basket on top of the absorbent/baffle pad using the finger holes.
5. Pour 1.3 L of LN2 into unit basket (directly on shelf plate is okay) and wait 10 minutes for unit to cool down.
6. Pour an additional 1.4 - 1.6 L of LN2 into unit until LN2 is just slightly overlapping shelf plate. This is considered a full charge of LN2.
7. The internal chamber will reach optimal working conditions (<-150˚C) within approximately 10 minutes after the second addition of LN2. Leave lid off during this boil-off period, approximately 5-10 minutes, or lid will bow from temperature differential.
8. Place the lid on the unit when access to the working area is not required. This will decrease the rate of LN2 depletion and increase the longevity of the system at working temperatures. For safety, place lid on Transporter while moving if LN2 is present in the container.
9. Additional LN2 may be added as needed to extend operating time of the system.

3 Care and Cleaning

- When not in use, allow all components to dry completely.
- The metal components are constructed from a thermoconductive aluminum-based alloy. These components scan be wiped down with either 70% isopropyl alcohol (IPA) or 10% bleach. They may also be autoclaved.
- The absorbent/baffle material is an open cell foam.
- Please change pads every 4 - 6 months for optimal performance. (BioT™ LN2 Transporter Foam Pads: Part no. AST-527).

4 Troubleshooting

Q: Inadequate cooling.
A: Ensure fill procedure is followed and add sufficient LN2.

5 Customer Service Information

5.1 Technical service and repair

Contact BioLife Solutions customer support at **+1-866-424-6543** or at **info@biolifesolutions.com** for assistance.

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