

CoolBox™ 2XT

Instructions for Use

Introduction

CoolBox 2XT is a portable workstation designed for maintaining sample temperatures below 4°C on the bench top without the use of wet ice or electricity. Dual-phase conductive XT Cooling Core or XT Freezing Core provides the cooling source when a thermo-conductive CoolRack or CoolSink tube or plate module is placed on top. The core and sample module in combination ensure uniform well-to-well temperature throughout the cooling period regardless of sample position. XT Cooling Core can maintain sample temperature from 0.5 to 4°C for over 16 hours; XT Freezing Core can maintain frozen samples for up to 10 hours; using dry ice in the base provides an ultra-cold temperature (-78°C) for snap-freezing samples in tubes or plates. For a list of CoolRack and CoolSink modules that are compatible with the CoolBox 2XT, see below.

Temperature Working Range	CoolBox 2XT Cooling Source	Temperature Duration* Open Lid	Temperature Duration* Closed Lid
0.5 to 4°C	XT Cooling Core	Over 10 hours	Over 16 hours
-20 to 0°C	XT Freezing Core	Over 5 hours	Over 8 hours
-78°C	200ml Dry Ice	Over 4 hours	Over 5 hours

*All tests were performed using a CoolRack XT M24 loaded with 24 TruCool® 2.0ml microcentrifuge tubes filled with 1.5 mL water. Actual performance may vary depending upon CoolRack module employed, sample load, initial sample temperature, ambient temperature, air currents, and other conditions.

Quick Start

- Remove two XT Cooling Cores from -20°C freezer and place in base of CoolBox 2XT.
- Secure collar on base.
- When temperature strip on XT Cooling Core registers 1°C, place CoolRack® or CoolSink® sample modules on top.
- Load samples.

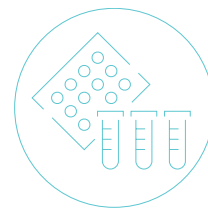
CAUTION

- Lift CoolBox 2XT from the bottom using the handholds on the sides.
- Always use two hands when carrying or lifting CoolBox 2XT.
- Avoid touching the top metal surface of XT Cooling Core and XT Freezing Core when removing from freezer.

IMPORTANT

- To ensure your samples do not freeze and to get maximum cooling duration, please refer to the detailed instructions that follow.





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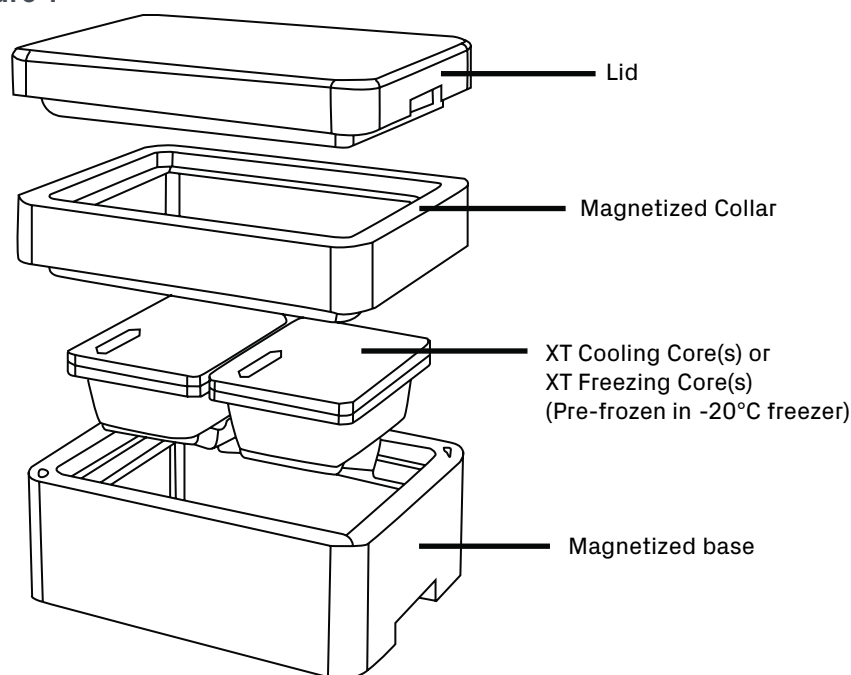
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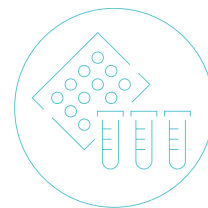
Assembly of CoolBox 2XT

The CoolBox 2XT System consists of a high-density polyethylene foam base, collar and lid, and two reusable XT Cooling Cores. A CoolBox 2XT Workstation also includes two CoolRack or CoolSink tube or plate modules to hold and organize samples. When placed on top of the XT Cooling or Freezing Core, the modules and samples rapidly equilibrate to the temperature of the core. Samples can be placed in the CoolRack or CoolSink module either before or after the module is placed in CoolBox 2XT. When used with CoolSink plate modules the magnetized collar is not required and can be removed for easy access when working; however, to obtain the maximum cooling duration, we recommend using the collar whenever possible.

- Remove XT Cooling Core units from the freezer and Lid place on benchtop for approximately 10-15 minutes. When the temperature indicator displays 1°C, XT Cooling Core is ready to use. **Note:** Frost will form on the core exterior upon removal from the freezer; when the frost liquifies, the Core is at proper temperature.
- Place XT Cooling Cores into CoolBox 2XT Base
- Fit magnetized collar on top of base, seating it securely.
- Place the CoolRack or CoolSink modules of choice onto XT Cooling Cores.
- Load samples.
- Place lid on CoolBox 2XT when not processing samples to maximize cooling duration.

Figure 1





CoolBox™ 2XT

Instructions for Use

Using XT Cooling Core for Maintaining Samples at 0.5 to 4°C

Temperature Working Range	Temperature Duration Open Lid	Temperature Duration Closed Lid
0.5 to 4.0°C	Over 10 hours	Over 16 hours

Freeze XT Cooling Core in a -20°C freezer for at least 12 hours. XT Cooling Core should be stored in -20°C freezer when not in use so it is ready when needed.

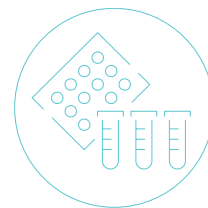
Note: Freezing XT Cooling Cores for less than the specified time will result in decreased cooling duration.

When Using Room Temperature CoolRack or CoolSink Modules

- Remove two XT Cooling Core units from the freezer and place into base.
- Fit magnetized collar onto base, seating it securely.
- Place CoolRack or CoolSink modules directly onto the cores and allow to equilibrate to 4°C (approximately 10 -15 minutes).
- Load samples
- Place lid on CoolBox 2XT when not processing samples to maximize cooling duration.

Using a Pre-chilled (4°C) CoolRack or CoolSink Modules Containing Samples

- Remove two XT Cooling Core units from the freezer and place on benchtop for approximately 10 minutes. When the temperature indicator displays 1°C, the 2XT Cooling Cores are ready to use.
- **ATTENTION!:** Failure to allow XT Cooling Core to Reach 1°C may Result in Sample Freezing.
- Place two XT Cooling Core units into base.
- Fit magnetized collar onto base, seating it securely.
- Place the CoolRack or CoolSink modules of choice onto the cores.
- Load samples.
- Place lid on CoolBox 2XT when not processing samples to maximize cooling duration.



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Instructions for Use

Using Optional XT Freezing Core for Maintaining Samples at -20 to 0°C

Temperature Working Range	CoolBox XT Cooling Source	Freezer Temperature	Temperature Duration* Open Lid	Temperature Duration* Closed Lid
-20 to 0°C	XT Freezing Core	-20°C	Over 5 hours	Over 8 hours
-20 to 0°C	XT Freezing Core	-80°C	Over 8 hours	Over 12 hours

Freeze two XT Freezing Core units in a -20°C freezer for at least 12 hours, or for a faster start, freeze in a -80°C freezer for at least 6 hours. Freezing in a -80°C freezer also prolongs cooling duration. XT Freezing Core should be stored in a -20°C or -80°C freezer when not in use so they are ready when needed.

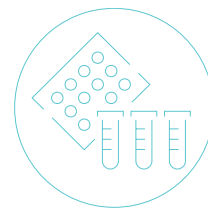
Note: Freezing XT Freezing Core for less than the specified time will result in decreased cooling duration.

When Using Room Temperature CoolRack or CoolSink Modules

- Remove two XT Freezing Core units from the freezer and place into base.
- Fit magnetized collar onto base, seating it securely.
- Place the room temperature CoolRack or CoolSink module of choice onto core and allow to equilibrate to 0°C (approximately 10 -15 minutes).
- Load samples
- Place lid on CoolBox 2XT when not processing samples to maximize cooling duration.

When Using a Pre-chilled (10°C or less) CoolRack or CoolSink Modules Containing Samples

- Remove two XT Freezing Core units from the freezer and place into base.
- Fit magnetized collar onto the base, seating it securely.
- Place the CoolRack or CoolSink module of choice onto XT Freezing Core.
- Load samples.
- Place lid on CoolBox 2XT when not processing samples to maximize cooling duration.



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Instructions for Use

Using Dry Ice for Maintaining or Snap-Freezing Samples at -78°C

Temperature Working Range	CoolBox XT Cooling Source	Temperature Duration* Open Lid	Temperature Duration* Closed Lid
-78°C	400ml dry ice	Over 4 hours	Over 5 hours

- Remove two XT Cooling or Freezing Core units from base.
- Fill the base with approximately 200ml of pulverized dry ice.
- Fit magnetized collar onto the base, seating it securely.
- Place the CoolRack or CoolSink module directly onto dry ice and allow module to equilibrate to -78°C (approximately 7-8 minutes).
- Load samples.
- If snap-freezing, freezing will occur in 7-10 minutes depending upon sample volume and type.

Note: The thermo-conductive design of the CoolRack and CoolSink modules ensures uniform well-to-well temperature regardless of the consistency of the dry ice.

Assembly of CoolBox 2XT

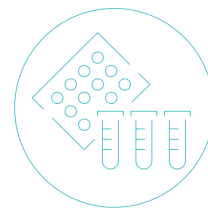
The CoolBox 2XT housing is constructed from a cross-linked closed-cell dense polyethylene foam. The material has excellent resistance to fluid absorption and abrasion. Do not use the CoolBox 2XT base for pulverizing dry ice. Maximum temperature exposure: 60°C. Avoid prolonged exposure to UV light sources.

All components including housing, XT Cooling Core and optional XT Freezing Core are compatible with repeated and prolonged cryogenic temperature exposure. All components can be cleaned with aqueous detergents, alcohol, 10% bleach, and acid/base viricide (such as Virkon S) solutions. Rinse with clear water after using cleaning solutions. Do not autoclave. CoolRack and CoolSink sample modules may be autoclaved, or cleaned with alcohol or 10% bleach.

CoolBox 2XT Dimensions

Interior (with XT Cooling Core in base): 21 x 14.3 x 13.4 cm (L x W x H) / 8.3 x 5.6 x 5.3 in (L x W x H) Exterior: 26.5 x 20 x 15 cm (L x W x H) / 10.4 x 7.9 x 6.3 in (L x W x H)



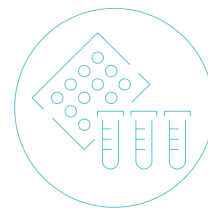


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CoolRack and CoolSink Thermo-Conductive Sample Modules Compatible with CoolBox 2XT

Part Number	Description	Accommodates
BCS-163	CoolRack M6	6 x 1.5ml or 2ml microfuge tubes
BCS-125	CoolRack M15	15 x 1.5ml or 2ml microfuge tubes
BCS-127	CoolRack M15-PF	15 x 1.5ml conical microfuge tubes
BCS-535	CoolRack XT M24	24 x 1.5 or 2.0 mL microcentrifuge tubes, SBS-compliant
BCS-108	CoolRack M30	30 x 1.5ml or 2.0ml microfuge tubes
BCS-128	CoolRack M30-PF	30 x 1.5ml conical microfuge tubes
BCS-137	CoolRack M30-PF 500 uL	30 x 500 uL microfuge tubes
BCS-126	CoolRack CF15	15 x 1ml or 2ml cryovials
BCS-534	CoolRack XT CFT24	24 cryogenic vials, with "gripping" wells for one-hand vial open/close, SBS-compliant
BCS-138	CoolRack CFT30	for 30 cryogenic vials or FACS tubes
BCS-105	CoolRack CF45*	45 cryogenic vials or FACS
BCS-259	CoolRack XT PCR96	PCR tubes, strips or 96-well plate
BCS-523	CoolRack XT M-PCR	12 x 1.5 or 2.0 mL microcentrifuge tubes and 6 PCR strip wells
BCS-538	CoolRack XT PCR384	one 384-well PCR plate, SBS-compliant



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Part Number	Description	Accommodates
BCS-231	CoolRack 96x0.5ml	96 x 0.5ml 2D barcode tubes
BCS-149	CoolRack 96x1ml	96 x 1ml 2D barcode tubes
BCS-536	CoolRack XT 96F	one flat-bottom 96- or 384-well assay plate, SBS-compliant
BCS-537	CoolRack XT 96U	one u-bottom 96-well assay plate, SBS-compliant
BCS-184	CoolRack LX55*	one universal 55ml reagent reservoir (such as Labcor, VWRbrand, and others)
Tall Tube Modules - requires Extension Collar, if lid closing is necessary		
BCS-232	CoolRack L	12 x 15 mL centrifuge tubes
BCS-153	CoolRack 15ml	9 x 15 mL centrifuge tubes
BCS-154	CoolRack 50ml	4 x 50 mL centrifuge tubes
BCS-235	CoolRack LV	12 x 13mm or 16mm diameter tubes
BCS-157	CoolRack VS13	9 x 13x75mm blood tubes
BCS-155	CoolRack V13	9 x 13x100mm blood tubes or 5ml cryogenic vials
BCS-156	CoolRack VS16	9 x thermo-conductive module for 16x100mm blood tubes

*Can only be used with CoolRack M6

CAUTION: The products described here are intended for the exclusive use by trained and experienced laboratory and medical personnel. Use of dry ice can be dangerous. Direct skin contact with dry ice or metal 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.

