

## CoolBox 30 Care and Cleaning

CoolBox 30 is constructed from high density closed cell polyethylene foam. The CoolBox 30 is compatible with prolonged cryogenic temperature exposure. The foam may be cleaned by water and mild soap. Rinse thoroughly. The CoolBox 30 is resistant to alcohols and 10% bleach solutions. Avoid abrasive or sharp objects. Do not use the CoolBox for pulverizing dry ice. Do not autoclave. Maximum temperature exposure: 60°C. Avoid exposure to UV light sources. The CoolBox 30 is not recommended for shipping of temperature-sensitive samples.

## CoolRack and CoolSink Thermo-Conductive Sample Modules Compatible with CoolBox 30

Item	Description	Accommodates
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-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 M-PF 500 uL	30 x 500 uL microfuge tubes
BCS-126	CoolRack CF15	for 15 cryogenic vials
BCS-138	CoolRack CFT30	for 30 cryogenic vials or FACS tubes

## CoolBox 30 Dimensions

Internal (with Cooling Cartridge loaded): 12 x 10.4 x 7.9 cm. (L x W x H) / 4.7 x 4 x 3.1 in. (L x W x H)

External: 16.5 x 15.25 x 12.7 cm. (L x W x H) / 6.5 x 6 x 5 in. (L x W x H)

**CAUTION:** The product described here are intended for the exclusive use by trained and experienced laboratory and medical personnel. A portion of the methods described require the use of dry ice. Direct skin contact with dry ice or metal components that have been touching dry ice can cause freezing injury. Always use appropriate protective equipment for eyes and skin when handling dry ice and cold metal components.

Made in USA.

# CoolBox 30™

## Instructions for Use

### Overview of CoolBox 30 System

CoolBox 30 is a portable cooling system for maintaining cooling and freezing sample temperature on the bench top without ice. It is intended for use with a variety of CoolRack® tube modules. The design and thermal conductivity of CoolRack modules maintain samples at uniform well to well temperature throughout the cooling period regardless of sample position. By selecting from a number of cartridges and cooling options, samples can be maintained within a variety of temperature bands that range from -78°C to 4°C. For a list of compatible CoolRack modules, see last page.

Temperature Range	Cooling Source	Cooling Duration Open Lid	Cooling Duration Closed Lid
0.5°C to 4°C	+2°C Cartridge - Blue	Over 4 hours	Over 10 hours
-20°C to -4°C	-20°C to 0°C Cartridge - Green	Over 3 hours	Over 6 hours
-78°C	Dry Ice	Over 5 hours	Over 6 hours

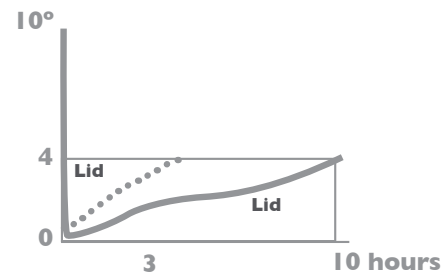
Actual performance may vary depending upon ambient temperature, start-up parameters, sample load, initial sample temperature, air currents, radiant energy sources and other conditions.

### Using +2°C Gel Cartridge (Blue) at 0.5°C to 4°C

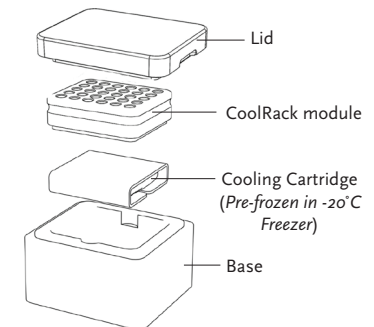
Freeze blue +2°C cartridges in a -20°C freezer for a minimum of four hours. Pre-chill the CoolRack module to 0 to 4°C in a refrigerator for approximately 30 minutes. Remove cartridge from freezer and allow cartridge to sit at room temperature until the surface frost begins to melt (approximately 10 minutes). Place a frozen cartridge in the CoolBox 30 base followed by a CoolRack module. The CoolRack temperature should equilibrate between 0.5°C to 4°C. Keep the lid on the CoolBox 30 to prolong the cooling duration.

**IMPORTANT:** It is possible to also start with a room temperature CoolRack module placed directly onto frozen cartridge immediately after removing it from the freezer. The system will take approximately 20 minutes to equilibrate to approximately 4°C and will not undercool samples below 0°C.

For cooling beyond the specified times shown below, simply exchange the cooling cartridge with a freshly charged one.



\*Data obtained from pre-chilled (4°C) CoolRack at approximately 18-20°C ambient room temperature.



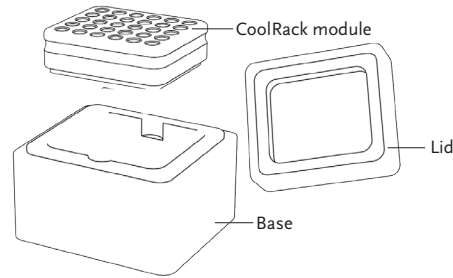
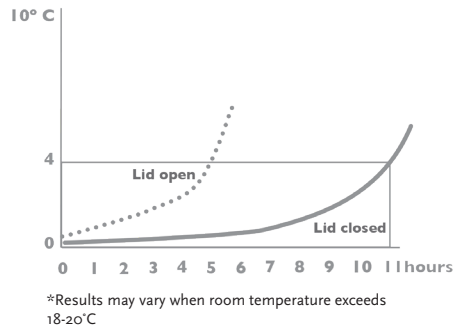
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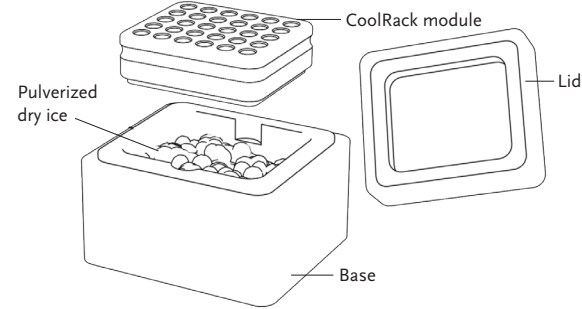
### Using wet ice at 0.5°C to 4°C

When conventional ice cooling is needed, fill the CoolBox 30 base with crushed ice. It is fine to slightly overfill the base as the CoolRack module will settle quickly during initial cool down. Place a room temperature or pre-chilled (4°C) CoolRack on top of the crushed ice. Melting ice and ice-water will absorb heat from the CoolRack module and will continue to cool until all ice has melted - up to approximately 10 hours with lid closed.



### Using Dry Ice at -78°C

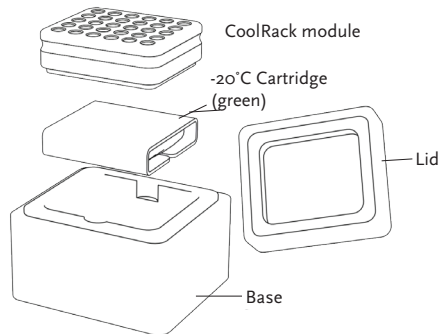
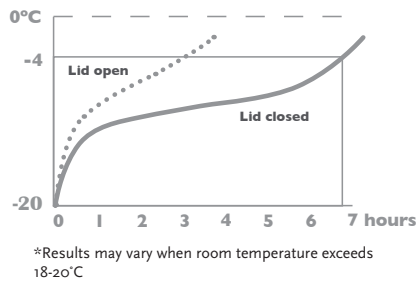
Fill the CoolBox 30 base with pulverized dry ice up to level with the bottom of the finger grip recesses as shown. Place the CoolRack module directly onto dry ice. CoolRack module temperatures will quickly reach dry ice temperature in approximately 8 minutes. Closing the CoolBox 30 lid will not further decrease the CoolRack module temperature, however it will extend the cooling duration.



### Using -20°C Gel Cartridge (Green) at -20°C to -4°C

Freeze green -12°C cartridges in a -20°C freezer for a minimum of 6 hours. Pre-chill the CoolRack module in the -20°C freezer for approximately one-half hour. Place a frozen cartridge in the CoolBox 30 followed by the pre-chilled CoolRack module.

For cooling beyond the times shown below simply exchange the cooling cartridge with a recharged one.



### Temperature Measurement

The CoolRack module thermoconductive design ensures that all well temperatures are identical.

#### Test Equipment

- Temperature probe with small thermal mass such as a K-type beaded thermocouple probe
- Digital thermometer to match probe
- Representative closed sample tube with cap

#### Test procedure

- Drill a small hole in the center of the sample tube cap with a diameter that provides a snug fit for the temperature probe wire so there will be minimal ambient air influx into the tub
- Fill the sample tube with 1 mL of water
- Place the cap on sample tube and insert temperature probe
- Place the instrumented sample tube in any well of the CoolRack module
- Rack temperatures can be measured by direct contact of the probe in any of the rack wells