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## Corning® CoolRack®, Corning CoolSink®, and Corning ThermalTray™

### Instructions for Use

Thermo-conductive passive temperature regulating modules for use on common laboratory cooling, freezing, warming sources such as ice, dry ice, liquid nitrogen (LN<sub>2</sub>), water bath, or other compatible cooling or heat sources.

Thermo-conductive Corning CoolRack and Corning CoolSink tube and plate modules and the Corning ThermalTray platforms are designed to regulate temperature through direct contact with a cooling, freezing, or heating source. When placed on a cooling or heating source (-196°C through >100°C) they will rapidly adapt to the source temperature. This method of cooling or heating replaces direct insertion of tubes and/or plates into or onto the temperature source, allowing for more uniform temperature amongst the individual samples, reproducible cooling, freezing or warming, increased organization, and minimized risk of contamination.

**⚠ CAUTION:** Direct skin contact with metal surfaces at ultra-low or cryogenic temperatures or when heated can cause serious burns. Never touch frozen or heated metal surfaces with bare skin. Always use insulated protective gloves when handling modules in dry ice, liquid nitrogen, or any heat source. Follow all applicable standard laboratory safety procedures.

### Benchtop Cooling with Ice

Fill the ice bucket with ice and place the CoolRack or CoolSink module directly on top of the ice. The module will cool to <4°C within two minutes and will stay below 4°C as long as it remains in contact with solid ice or water that contains solid ice pieces. It is not necessary to pre-cool the module prior to placing on ice. Replenish ice as desired for a longer cooling duration.

If using a Corning® ThermalTray™ platform for extended cooling duration, fill a Corning 9L rectangular ice pan half way with ice. Press the ThermalTray platform into the ice until fully seated. The ice level should reach the underside of the ThermalTray platform. Place the Corning CoolRack® or the Corning CoolSink® module(s) onto the ThermalTray platform and allow to reach to <4°C temperature (about 5 minutes). The modules will remain below 4°C for as long as solid ice remains in the melt water (typically 8 to 10 hours or longer, depending on ambient conditions). Replenish the ice as desired for longer cooling durations. Avoid exposure to hot lights or strong air currents for optimal temperature stability.

### Ice-free Benchtop Cooling

For an alternate method of benchtop cooling without ice, some CoolRack and CoolSink thermo-conductive modules are compatible with the Corning CoolBox ice-free systems. Pairing a CoolRack or CoolSink module with a CoolBox system will provide hours of ice-free cooling (0.5°C to 4°C) or freezing (-20°C to 0°C). For more information, visit [www.corning.com/lifesciences](http://www.corning.com/lifesciences).

### Snap Freezing in Dry Ice

Place enough dry ice into an insulated pan to create a 1.5 in. (4 cm) bed of dry ice under the entire surface of the CoolRack or CoolSink module. Place the module on the dry ice. Allow approximately 7 to 8 minutes for the module to equilibrate to dry ice temperature (approx. -78°C). Insert the tubes or plates into the module to snap freeze. Replenish the dry ice as desired for longer cooling duration.

**Note:** While cooling down, modules may briefly emit a ringing tone due to CO<sub>2</sub> emissions beneath the module.

The CoolRack and CoolSink modules will provide a solid work surface on dry ice. It is not necessary to use a ThermalTray platform when working with dry ice. It is not necessary to pre-cool the CoolRack or CoolSink. It is not necessary to add ethanol or any alcohol to the dry ice.

### Cryogenic Benchtop Handling in Liquid Nitrogen (LN<sub>2</sub>)

A ThermalTray may be used, but is not required, when using the CoolRack and CoolSink modules with liquid nitrogen (LN<sub>2</sub>).

If using a Corning® ThermalTray™ platform, place the ThermalTray into an insulated pan. A Corning 9L rectangular ice pan is ideal. Add LN<sub>2</sub> to the pan until the level reaches just below the table height of the platform. Place the Corning CoolRack® or Corning CoolSink® module(s) onto the platform and allow approximately 15 minutes to reach cryogenic temperature (approx. -150°C). The modules will remain at cryogenic temperature for as long as the liquid nitrogen contacts the fins of the ThermalTray. Replenish LN<sub>2</sub> as desired for longer cooling durations.

If NOT using a ThermalTray platform, place the CoolRack or CoolSink module in a Corning insulated ice pan. Add LN<sub>2</sub> to the pan until it covers half the height of the module. Allow approximately 15 minutes for the module to equilibrate to cryogenic temperature (approx. -150°C). Replenish LN<sub>2</sub> as required.

### Heating/Thawing in a Water Bath

Place a ThermalTray platform into a water bath. (A minimum clear area of 12 x 6 in. with a minimum depth of 5 in. is ideal.) Place the CoolRack or CoolSink module(s) onto the platform. Maintain a water level that is at or slightly above the level of the platform surface. Allow approximately 10 minutes for the modules to equilibrate to the bath temperature. It may be necessary to offset the bath temperature by approx. 1°C to maintain the desired module temperature.

### Other Heating Sources

The CoolRack and CoolSink modules may be used on other heating sources such as hot plates and dry baths.

**Note:** The aluminum alloy may react with some ceramic surfaces. Check compatibility of surface prior to placing the CoolRack or CoolSink module on it.

### General Information

**Thermo-conductivity:** The CoolRack and CoolSink modules and the ThermalTray platforms are thermo-conductive and designed for direct contact with a temperature source. They are compatible with ice, dry ice, liquid nitrogen, refrigerators, -20°C freezers, -80°C freezers, water baths, heat

blocks, ovens, incubators, and many other laboratory temperature sources. Upon removal from these temperature sources, the modules will gradually equilibrate to room temperature. For more information on passive warming and cooling profiles, visit [www.corning.com/lifesciences](http://www.corning.com/lifesciences).

**Use of liquid crystal display (LCD) temperature strip:** The LCD 1°C to 8°C temperature strip may be affixed to any thermo-conductive module by simply removing the paper backing to expose the adhesive strip and applying to a flat, dry surface on the module. The display will indicate the temperature of the module when placed on, or in, a 1°C to 8°C temperature source such as ice. A module bearing an LCD temperature strip may be used in other cooler or warmer temperature sources. The LCD strip is not autoclavable and should not be affixed to modules that will be autoclaved.

### Care and Cleaning

All thermo-conductive modules are anodized and corrosion resistant. They may be cleaned with solvents, aqueous detergents, alcohols, and acid/base viricide (such as Virkon™ S) solutions. Rinse with clear water after exposure to cleaning solutions. They may be stored at room temperature or in a cooling or heating medium. Avoid soaking for extended periods (more than one hour) in low or high pH solutions. The modules are autoclavable and can be heat sterilized up to 250°C.

**Warranty/Disclaimer:** Unless otherwise specified, all products are for research use only. Not intended for use in diagnostic or therapeutic procedures. Corning Life Sciences makes no claims regarding the performance of these products for clinical or diagnostic applications.

For additional product or technical information, visit [www.corning.com/lifesciences](http://www.corning.com/lifesciences) or call 800.492.1110. Outside the United States, call +1.978.442.2200 or contact your local Corning sales office.

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