

Protocol 1006

Snap Freezing Samples in Dry Ice Using a CoolRack® module

INTRODUCTION

There are a variety of CoolRack modules to fit many commonly used sample vessels including the CoolRack M series, CoolRack M-PF series, and the CoolRack CF series. This document shows a CoolRack and CoolBox 30 as an illustrative example of how to snap freeze in an efficient and reproducible manner. The CoolRack module allows you to snap freeze samples with dry ice alone. No alcohol is required.

Materials

- ✓ CoolRack® module
- ✓ CoolBox 30 or insulative ice pan
- ✓ Dry ice

Snap-Freezing with a CoolRack Module

Use either a CoolBox 30 System base or an insulative ice pan to contain the dry ice. No alcohol is required in this method.

1. Place the CoolRack module directly on crushed or cake dry ice. A buzzing sound coming from the metal-ice contact is normal and safe.
2. The CoolRack module will cool to dry ice temperature in approximately 5-7 minutes (-78°C).
3. Place a sample tube in CoolRack module at any time after it reaches temperature.
4. The sample will snap freeze in 1-3 minutes and may be left in place while the remaining samples are being processed.
5. All samples will remain at -78°C while the CoolRack is in direct contact with dry ice.
6. Remove samples for freezer archive. The CoolRack module with snap-frozen samples in place may also be placed directly into a storage freezer.

Using a CoolBox 30 base

Using a CoolBox 30 base requires a minimal amount of dry ice and is an efficient way to snap freeze samples.

1. Fill a CoolBox 30 base with 200 cc of crushed dry ice. Place the CoolRack module directly on the dry ice and allow approximately 5-7 minutes to cool to dry ice temperature. (Fig. 1)
2. Place a sample in the CoolRack module. (Fig. 2)



Fig. 1



Fig. 2

3. The sample will snap freeze in 1 to 3 minutes and may be left in place as long as dry ice remains in contact with CoolRack module. One charge of dry ice in a CoolBox can last up to 10 hours with the lid closed. (Fig. 3)

4. All samples may be transferred to a storage freezer when the procedure is complete. Use protective gloves if handling a frozen CoolRack module to avoid skin-freezing burns. (Fig. 4)



Fig. 3



Fig. 4

Using an Insulated Ice Pan

1. Fill an insulated pan with 1 to 2 inches of cake or crushed dry ice. Place the CoolRack module directly on the dry ice and allow 7 minutes to reach dry ice temperature. (Fig. 1)
2. Place a sample in the CoolRack module. (Fig. 2)
3. The sample will snap freeze in 1 to 3 minutes and may be left in place as long as dry ice remains in contact with CoolRack module. (Fig. 3)
4. All samples may be transferred to a storage freezer when the procedure is complete. Use protective gloves if handling a frozen CoolRack module to avoid skin-freezing burns. (Fig. 4)

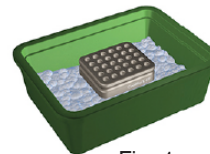


Fig. 1

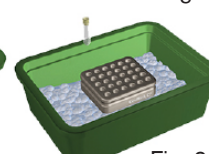


Fig. 2

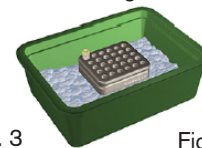


Fig. 3

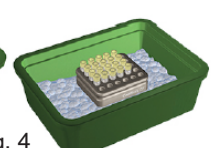


Fig. 4

Note: It is important to adhere to laboratory safety protocols when handling dry ice or liquid nitrogen. CoolRack and ThermalTray modules can cause skin burns when cooled to ultra-low temperatures. Use extreme caution and appropriate protective clothing and equipment.