



Cryovial Safety Quick Guide

Laboratory personnel must use extreme caution when handling samples in liquid nitrogen (LN_2). Liquid-phase nitrogen can leak into vials, which may result in the vial exploding or spraying its contents while warming. When transitioning from liquid to gas at room temperature, liquid nitrogen expands to approximately 700 times its original volume.

Safe Handling Guidelines:

- ❖ Personal Protective Equipment (as detailed on page 2) must be worn when handling cryovials.
- ❖ Treat all vials as having the potential to explode. In the event of an explosion, you will be exposed to the hazardous materials contained within the vial.
- ❖ Samples for freezing/storage should be placed in appropriate containers such as polypropylene cryovials. Glass or polystyrene cryovials may crack and should be avoided.
- ❖ Only vials certified for use in liquid nitrogen should be used.
- ❖ Cryovials should not be overfilled, as this may increase the risk of cracking.
- ❖ Caps should not be overtightened before freezing. This may damage the gasket.
- ❖ Avoid liquid-phase liquid nitrogen storage of vials in favor of gas (vapor) phase storage.
- ❖ If liquid-phase storage is necessary, use internally threaded cryovials (male caps) with silicone gaskets or use cryogenic heat-shrink tubing to encase the vial fully before immersing in liquid nitrogen.



- ❖ When thawing a cryovial, do so inside a fume hood or biosafety cabinet by using a thick-walled container (like the ones pictured below or a Styrofoam box).

DO NOT USE YOUR HANDS!



Personal Protective Equipment (PPE)

The following PPE is required when handling or using LN₂.

- ❖ Hands- must be protected with waterproof thermal insulated gloves (i.e., cryoprotective gloves). Even with insulated gloves, hands should not be submerged in LN₂.
- ❖ Body- must be protected with long pants, lab coats, and closed-toe shoes.
- ❖ Eyes- must be protected with face shields with safety glasses underneath.

