

NEW

Wilmad Sets the Standard

Liquid Nitrogen Dewar Flask

Hot Price at Cryogenic Temperature

Liquid nitrogen is an easily transported and economic source of coolant, whose boiling point is far below the freezing point of water without pressurization. This unique feature makes liquid nitrogen extremely useful for a wide range of applications in basic science research, such as cell cryopreservation, sample degasification by freeze-pump-thaw cycle and cold trap for experiments involving vacuum lines.

Wilmad-LabGlass®, the world's leading provider in lab glassware and NMR/EPR consumables and accessories, is announcing a high quality Liquid Nitrogen Dewar Flask to meet these applications.



Highlights:

- ✎ 30% cheaper but with equal or better quality than major manufacturers' corresponding products
- ✎ Highly vacuumed ($<10^{-6}$ torr) and fully silvered cylindrical Dewar minimizes liquid nitrogen loss during storage
- ✎ Unique metal base increases stability
- ✎ Optional full length aluminum metal housing can further increase safety and reduce potential breakage



Quality Manufactured
in the USA
ISO 9001:2000 Certified
An SP Industries Company

**ORDER
TODAY**

Call: 1-800-220-5171

or 856-691-3200

Fax: 1-800-220-1081

or 856-691-6206

On Line:

**www.Wilmad-LabGlass.com
csvineland@wilmad-labglass.com**

Product No	Base	I.D. (mm)	Total Height (mm)	Inside Depth (mm)	Max Volume (mL)	Cross Reference	Price Each
LN2DF-600-1	3 inch Aluminum	80	180	150	600	Pope Scientific 8640	\$85.00

* Other sizes (300 mL, 2000 mL) and full aluminum housing version are coming soon.

Tips to avoid tube shattering

Tube shattering during extreme temperature change is mainly caused by mechanical stress due to large temperature gradient over tube body and/or gas expansion inside frozen sample.

To minimize this possibility, we provide the following tips based on stress equations and physical properties of different tube materials.

- ✎ Always use Wilmad-LabGlass brand tubes, which have the highest quality in the industry.
- ✎ Increase wall thickness. For example, by changing from thin-walled tube to medium-walled tube, the chance of breakage is reduced by a factor of 4.
- ✎ Degas sample and take multiple steps in sample warm up.
- ✎ Freeze sample with pre-cooled isopentane* (2-methylbutane) at around 120 K. It will reduce the chance of breakage by a factor of 2.
- ✎ Use quartz tube instead of Pyrex® or N51A glass tube. This will reduce the chance of breakage by a factor of 14 at the same wall thickness.
- ✎ Due to the sample weight increase, please take extra caution in handling sample tubes with O.D. over 5 mm. Keep the motion of tubes in one direction. Do not suddenly flip or rotate the tube against gravity in order to prevent sheering force.

* Isopentane is an organic solvent which evaporates at room atmosphere. Cooling of isopentane should be performed in chemical fume hoods.