



THERMO-FLASKS

Instruction Sheet

Read through instructions completely prior to doing any operation.

Handling Thermo-Flasks

We recommend that care be taken in the use of Barnstead|Lab-Line Thermo-Flasks. Any product used under vacuum is a potential hazard and, therefore, should be treated with caution. If in doubt, consult the safety regulations of your laboratory or institution. We list below a few suggestions to avoid some of the more common errors.

- When personnel handle liquid gases, they should protect themselves by wearing goggles or face-masks and insulated or rubber gloves large enough to allow quick removal and insulated or rubber aprons.
- It could sometimes be dangerous to pour liquid gases into a Thermo-Flask without pre-cooling the flask. When pouring liquefied gases from one container to another, the receiving container should be cooled gradually to prevent thermal shock. The liquid should be poured slowly to avoid splashing. A receiving vessel should always be vented to the atmosphere and high concentrations of excess oxygen and/or nitrogen should not be allowed to collect.
- If liquid gases or other materials of extremely low temperatures are being used, it is dangerous to use a glass, stirring rod to mix or stir substances in the Thermo-Flask UNLESS there is a PTFE (polytetrafluoroethylene) or comparable form of protective coating on the rod.
- If a glass Thermo-Flask is used "bare" i.e., glass only, without the container, it is advisable to apply strong adhesive tape to the outside of the flask or to cover the flask with wire mesh. This will minimize the risk from flying particles of glass, should the flask be knocked over or broken.

Venting

- All Thermo-Flasks in plastic and stainless steel containers, Model 2110 and Models 2122~2125 have vented lids to prevent build-up of gas pressure when holding a gassing substance. The ability of the vent to release pressure should be checked periodically.
- If an enameled steel container, Models 2113~2121, is being used, care should be taken to ensure that the lid of the container is not fixed to the container body with straps or adhesive tape, etc. which will prevent the lid from lifting with gas pressure if needed.
- All glass Thermo-Flasks, with or without container, should not be covered with any fixed or heavy object that might form a seal around the rim either naturally or induced by freezing.

Liquid Nitrogen Holding Times

| <u>SIZE</u> | <u>HOLDING TIME</u> |
|-------------|---------------------|
| 1 Liter | 38 Hours |
| 2 Liters | 48 Hours |
| 4.5 Liters | 54 Hours |
| 7 Liters | 70 Hours |

The above times are intended as a guide only and illustrate the probable time it takes for a stainless steel or enameled steel Thermo-Flask, with lid, to empty completely after being filled with liquid nitrogen. The times may change depending on higher or lower ambient temperatures, whether or not the lid is removed for examination of the contents and according to the mass of the material being frozen.

Even though the Thermo-Flasks may be almost empty of liquid nitrogen, they will continue to be effective storage vessels for frozen material because the contents will be held in the vapor phase of the nitrogen, i.e. the liquid nitrogen will have boiled to become a very low temperature gas. This can benefit users who wish to store materials in a frozen state, but not at the exceptionally low temperature of the liquid nitrogen itself.

Specifications

| <u>Model</u> | <u>Capacity Liters</u> | <u>Inside Diameter Inches (cm)</u> | <u>Outside Diameter Inches (cm)</u> | <u>Height Inches (cm)</u> | <u>Ship Wt. lbs (kg)</u> |
|--------------|----------------------------|--|---|-------------------------------|------------------------------|
| 2101 | 1.0 | 4 (10.2) | 7 (17.8) | 7-1/4 (18.4) | 6 (2.7) |
| 2102 | 2.0 | 5 (12.7) | 8 (20.3) | 8 (20.3) | 8 (3.6) |
| 2104 | 4.0 | 6-3/4 (17.1) | 10 (25.4) | 9-1/2 (24.1) | 10 (4.5) |
| 2108 | 8.0 | 8 (20.3) | 11 (27.9) | 11 (27.9) | 14 (6.3) |
| 2110 | 1.0 | 3-1/3 (8.5) | 5-3/4 (14.6) | 8-3/4 (22.2) | 6 (2.7) |
| 2113 | 0.2 | 1-5/8 (3.8) | 2-3/4 (6.9) | 8-1/2 (21.6) | 4 (1.8) |
| 2114 | 0.6 | 2-1/4 (5.7) | 3-1/4 (8.3) | 13-3/4 (34.9) | 5 (2.3) |
| 2115 | 0.7 | 2-5/8 (6.4) | 3-3/4 (9.5) | 11-1/4 (28.6) | 5 (2.3) |
| 2116 | 1.1 | 3 (7.6) | 4-1/4 (10.8) | 11 (27.9) | 6 (2.7) |
| 2117 | 1.5 | 3-1/2 (8.9) | 5 (12.7) | 11-3/8 (29.2) | 7 (3.2) |
| 2118 | 1.0 | 3-1/2 (8.9) | 4-5/8 (11.4) | 9 (22.9) | 6 (2.7) |
| 2119 | 2.0 | 4-1/4 (10.8) | 5-5/8 (13.9) | 10-1/2 (26.7) | 8 (3.6) |
| 2120 | 4.5 | 6 (15.2) | 7-1/4 (18.4) | 13-3/4 (34.9) | 10 (4.5) |
| 2121 | 10.0 | 8 (20.3) | 9-1/8 (23.3) | 17-1/8 (43.7) | 16 (7.3) |
| 2122 | 1.0 | 3-1/3 (8.5) | 4-5/8 (11.6) | 9 (22.9) | 6 (2.7) |
| 2123 | 2.0 | 4-1/4 (10.8) | 5-5/8 (13.9) | 10-1/2 (26.7) | 8 (3.6) |
| 2124 | 4.5 | 6 (15.2) | 7-1/4 (18.4) | 13-3/4 (34.9) | 10 (4.5) |
| 2125 | 7.0 | 8 (20.3) | 9-1/4 (23.5) | 13-1/4 (33.7) | 14 (6.4) |
| 2126 | 20 ml | 3 (7.6) | 4-1/8 (10.6) | 3 (7.6) | 4 (1.8) |
| 2127 | 30 ml | 4 (10.2) | 5-1/8 (13.2) | 3-1/2 (8.9) | 6 (2.7) |
| 2128 | 500 ml | 4-1/2 (11.4) | 6 (15.2) | 3-3/4 (9.5) | 6 (2.7) |
| 2129 | 1000ml | 5-3/8 (13.6) | 7 (17.8) | 4-1/8 (10.7) | 8 (3.6) |
| 2130 | 1900 ml | 6 (15.2) | 7-1/4 (18.4) | 5-1/2 (14.0) | 10 (4.5) |
| 2131 | 1.5 | 4 (10.2) | 5-3/8 (13.9) | 11 (27.9) | 7 (3.2) |
| 2133 | 2.0 | 4 (10.2) | 5-3/8 (13.9) | 13 (33.1) | 8 (3.6) |
| 2135 | 3.0 | 5-1/4 (13.3) | 7 (17.8) | 11-3/8 (29.2) | 9 (4.1) |

BI Barnstead International
Your Lab Starts Here



2555 Kerper Boulevard
Dubuque, Iowa 52001-9918
Phone: 563-556-2241 or 800-553-0039
Fax: 563-589-0516
E-mail: mkt@barnstead.com
www.barnstead.com