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CRYOGENICS & CARBON DIOXIDE

BULK & DEWAR STORAGE OF PURE GAS IN LIQUID FORM

Liquid Gas Emergency Response Guides:

- Argon UN1951, Guide #120
- Carbon Dioxide UN2187, Guide #120
- Helium UN1963, Guide #120
- Nitrogen, UN1977, Guide #120
- Oxygen UN1073, Guide #122



Cryogenic Liquid

A liquid having a normal boiling point below -200° F

1 gallon of liquid Argon	equals	112.50 cubic feet of gas
1 gallon of liquid Carbon Dioxide	equals	74.04 cubic feet of gas
1 gallon of liquid Helium	equals	100.74 cubic feet of gas
1 gallon of liquid Nitrogen	equals	93.11 cubic feet of gas
1 gallon of liquid Oxygen	equals	115.10 cubic feet of gas



DEWAR Fill Prices

Description (Gas Type)	Part No.	Fill Ea
Argon:		
Liquid Withdraw	XLAr-4500L	\$403.20
Standard Pressure	XLAr-4500S	\$403.20
High Pressure	XLAr-4500H	\$403.20
Carbon Dioxide:	CO2-DWR	Call
Helium:	LHe-DWR	Call
Nitrogen:		
Liquid Withdraw	XLN2-LS160L	\$86.40
Standard Pressure	XLN2-LS160S	\$86.40
High Pressure	XLN2-LS160H	\$86.40
Oxygen, Aviators/Laser:		
Standard Pressure	LABO-4500S	Call
High Pressure	LABO-4500H	Call
Oxygen, Technical:		
Standard Pressure	LO2-4500S	Call
High Pressure	LO2-4500H	Call

How is Liquid Oxygen, Nitrogen & Argon produced & Stored?

Air is taken out of the atmosphere, filtered, then the Carbon Dioxide is removed. This clean air is then chilled. The chilling continues until each primary element, within the air, turns into a liquid state. Nitrogen, Oxygen & Argon each convert at a different temperature. Each liquid goes on for further cleaning. The 3 finished cryogenic products are stored separately in large storage vessels. These insulated vessels are like giant thermos bottles, and aid in the effort to try and minimize the loss that occurs when the liquid product warms up and flashes back into a gas. This product, even though it is insulated, continually flashes off. Therefore long term storage is impossible. This is also part of the consideration when deciding whether to acquire liquid product stored & dispensed from a Dewar, or to procure gas in pressurized cylinders. Gas in pressurized cylinders can last indefinitely. A Dewar slowly releases gas, if it is unused, completely emptying itself in about 2 weeks.

COMMON DEWARs

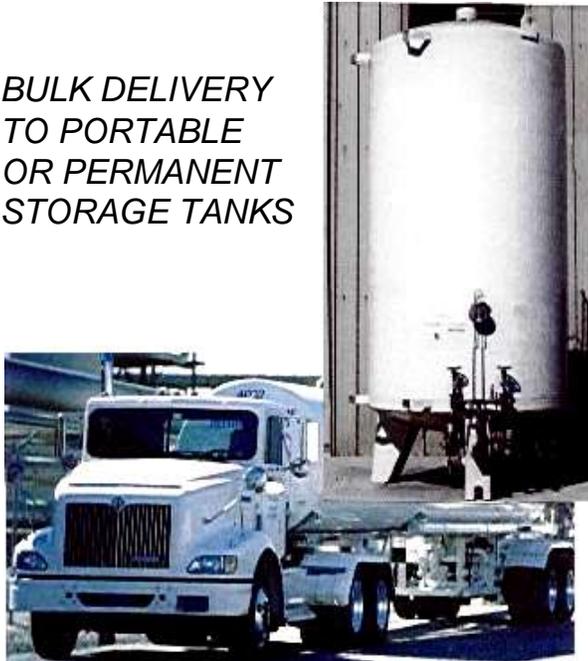
contain about the same amount of gas as 16 to 20 large high pressure cylinders

For Dewar Rentals: See Cylinder Services Page

Bulk Cryogenic (Type II) & Carbon Dioxide

Call if you don't have a storage vessel, we can assist you.

BULK DELIVERY TO PORTABLE OR PERMANENT STORAGE TANKS



Description (Gas Type)	Part No.	Price
Argon:		
Minimum fill	LAr-BULKM	Call
Bulk	LAr-BULK	Call
Carbon Dioxide:		
Minimum fill	CO2-BULKM	Call
Bulk	CO2-BULK	Call
Nitrogen:		
Minimum fill	LN2-BULKM	Call
Bulk	LN2-BULK	Call
Oxygen, Aviators:		
Minimum fill	LABO-BULKM	Call
Bulk	LABO-BULK	Call
Oxygen, Technical:		
Minimum fill	LO2-BULKM	Call
Bulk	LO2-BULK	Call

On-Site Conversion of Liquid Nitrogen to Gaseous Nitrogen
Up to 22,000 Cubic Feet per Delivery

Part No.	Price Per Delivery
N2-SUB	\$2,495.00

X at the beginning of Stoody gas number means that the gas is under current contract and includes all standard storage and delivery costs
NAVSUP FLC SAN DIEGO CONTRACT #N00244-09-D-0016 (Ask for concurrent Modification)