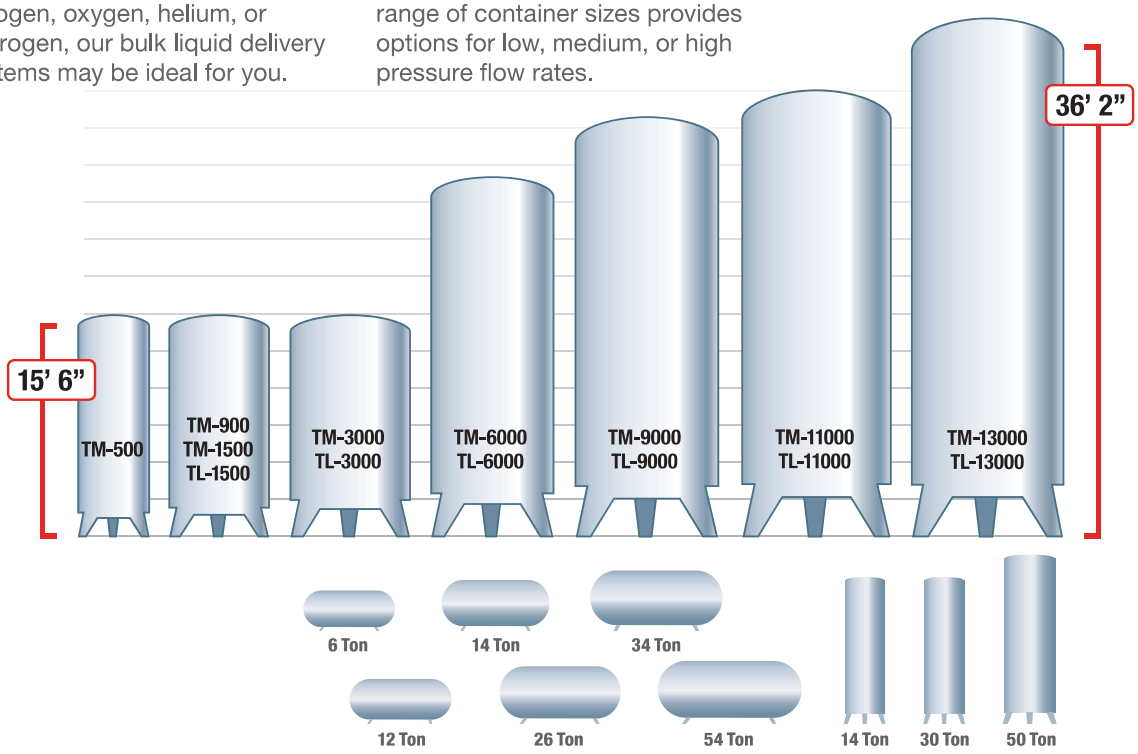
Bulk Liquid Delivery and Storage Systems

If you require medium-range amounts of argon, carbon dioxide, nitrogen, oxygen, helium, or hydrogen, our bulk liquid delivery systems may be ideal for you.

Bulk deliveries are made by truck and stored in your on-site tanks. A range of container sizes provides options for low, medium, or high pressure flow rates.



Characteristics	TM-500	TM-900	TM-1500	TL-1500	TM-3000	TL-3000	TM-6000	TL-6000	TM-9000	TL-9000	TM-11000	TL-11000	TM-13000
Gross Volume (gal.)	568	956	1,611	1,615	3,117	3,133	6,022	6,036	9,180	9,180	11,290	11,290	11,290
Net Capacity	530	904	1,517	1,523	3,000	3,016	5,889	5,908	8,900	8,900	11,040	11,040	11,300
Oxygen (scf)	61,000	104,000	174,600	175,300	345,200	347,100	677,700	679,400	1,024,400	1,024,400	1,266,100	1,266,100	1,266,100
Nitrogen (scf)	49,300	84,100	141,200	141,800	279,200	280,700	548,100	549,400	826,700	826,700	1,024,200	1,024,200	1,024,200
Argon (scf)	59,600	101,600	170,654	171,300	337,200	330,100	662,000	663,700	1,001,300	1,001,300	1,237,500	1,237,500	1,237,500
Max. Working Pressure Liquid Container (psig)	250	250	250	125	250	83	250	77	250	65	250	65	375
Weight (lb)													
Tank Empty	5,400	9,700	10,300	8,840	15,500	11,400	27,800	20,700	37,000	26,500	47,000	34,200	56,500
Filled Oxygen	10,500	18,400	24,800	23,400	44,100	40,200	84,000	77,100	121,800	111,300	152,000	139,000	161,500
Filled Nitrogen	9,100	15,800	20,600	19,200	35,800	31,900	67,600	60,700	97,000	86,500	121,000	108,000	130,500
Filled Argon	11,700	20,300	28,000	26,700	50,400	46,500	96,300	89,400	140,500	130,000	175,000	162,000	184,500
Configuration	vertical	vertical	vertical		vertical		vertical		vertical		vertical		
Dimensions													
Diameter (in)	60	78	78	78	96	96	96	96	114	114	122	122	122
Height (ft-in)	15-6	15-9	15-9	15-9	16-0	16-0	25-9	25-9	27-10	27-10	31-7	31-7	31-7

* High pressure. Contact your Praxair productivity specialist for more information on bulk gas delivery and storage systems.

Cryogenic Delivery System

Cryogenic Liquids

Liquid oxygen, liquid nitrogen and liquid argon are cryogenic liquids. Their boiling temperatures are:

Liquid Oxygen	-297.3 °F (-183 °C)
Liquid Nitrogen	-320.4 °F (-195.8 °C)
Liquid Argon	-302.6 °F (-185.9 °C)
Sublimation Point	
Liquid CO_2	-109.3 °F (-78.5 °C)

To minimize heat transfer and sustain very low temperatures, the storage vessel must be specially designed. Storage vessels for liquid oxygen, liquid nitrogen and liquid argon are commercially available in various capacities from 350 to 13,000 U.S. gallons (1,325 to 49,210 liters) water capacity. The storage vessels may be either vertical, spherical, or horizontal depending on the site and consumption requirements.

Cryogenic liquids storage vessels have three basic components:

1. Inner Pressure Vessel

A vessel, usually made of stainless steel or other materials that have favorable strength characteristics when exposed to cryogenic temperatures.

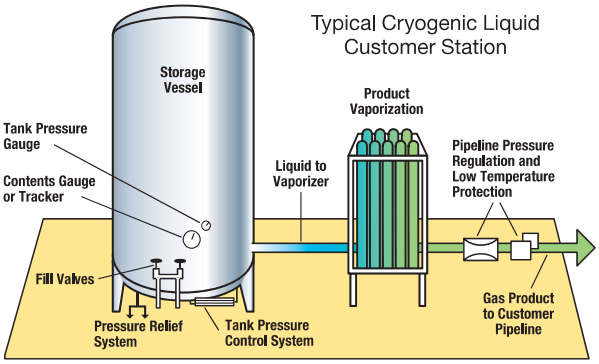
2. Outer Vessel

A vessel made of carbon steel or stainless steel. Under normal operating conditions, this vessel retains the insulation around the inner pressure vessel, and can also maintain a vacuum around the inner vessel. Typically, the outer vessel is not exposed to cryogenic temperatures.

3. Insulation

The space between the inner and outer vessel, containing several inches of insulating material maintained in a vacuum. The vacuum and insulating material help to reduce heat transfer and thereby reduce the boil-off of the liquid oxygen, liquid nitrogen or liquid argon stored within the vessel.

Typical Cryogenic Liquid Customer Station



The inner vessel of the storage tank is typically designed to sustain a maximum allowable working pressure of 250 psig (1724 kPa). Vessels may be fabricated for higher or lower working pressures and special applications. The service pressure of the vessel is adjustable.

Caution: Storage Facility Maintenance. Only authorized and trained personnel should maintain and operate the liquid oxygen, liquid nitrogen or liquid argon storage facility and its components. Safety concerns should be reported immediately.

General safety rules for liquid oxygen, liquid nitrogen and liquid argon.

- Do not store liquid oxygen, liquid nitrogen or liquid argon in confined spaces or poorly ventilated areas.
- Ensure that cryogenic liquids are handled only by persons instructed in the properties of the material and in the proper procedures for handling it.
- Ensure that all piping in which cryogenic liquids could be trapped between two valves and receptacles is equipped with pressure relief valves that are piped to properly designed vents.
- Do not smoke or create sparks near liquid oxygen equipment and tanks. Do not approach liquid oxygen tanks with an open flame.