



OXYGEN, REFRIGERATED LIQUID

Safety Data Sheet

1. IDENTIFICATION

Product identifier

Product Name OXYGEN, REFRIGERATED LIQUID

Other means of identification

Safety data sheet number LIND-P098

UN/ID no. UN1073

Synonyms Liquid Oxygen; LOX

Recommended use of the chemical and restrictions on use

Recommended Use Industrial and professional use. Medical.

Uses advised against Consumer use.

Details of the supplier of the safety data sheet

Linde Gas North America LLC

10 Riverview Drive

Danbury, CT 06810

Phone: 908-329-9700

www.lindeus.com

* May include subsidiaries or affiliate companies/divisions.

For additional product information contact your local customer service.

Emergency telephone number

Company Phone Number +1 800-645-4633

CHEMTREC: 1-800-424-9300 (North America) +1-703-527-3887 (International)

2. HAZARDS IDENTIFICATION

Classification**OSHA Regulatory Status**

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Oxidizing gases	Category 1
Gases under pressure	Refrigerated liquefied gas

Label elements



Signal word

Danger

Hazard Statements

May cause or intensify fire; oxidizer

Contains refrigerated gas; may cause cryogenic burns or injury

Combustibles in contact with liquid oxygen may explode on ignition or impact

Precautionary Statements - Prevention

Do not handle until all safety precautions have been read and understood

Keep and store away from clothing and other combustible materials

Keep valves and fittings free from grease and oil

Use and store only outdoors or in a well ventilated place

Wear cold insulating gloves, face shield, and eye protection

Use a backflow preventive device in piping

Use only with equipment of compatible materials of construction and rated for cylinder pressure

Use only with equipment cleaned for oxygen service

Do NOT change or force fit connections

Avoid spills. Do not walk on or roll equipment over spills

Close valve after each use and when empty

Always keep container in upright position

Precautionary Statements - Response

IF ON SKIN: Thaw frosted parts with lukewarm water. Do not rub affected area. Get immediate medical advice/attention.

In case of fire: Stop leak if safe to do so

Hazards not otherwise classified (HNOC)

Not applicable

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	Volume %	Chemical Formula
OXYGEN	7782-44-7	>99	O ₂

4. FIRST AID MEASURES**Description of first aid measures****General advice**

Show this safety data sheet to the doctor in attendance.

Inhalation

Move victim to fresh air. Seek immediate medical attention/advice.

Skin contact	For dermal contact or suspected frostbite, remove contaminated clothing and flush affected areas with lukewarm water. DO NOT USE HOT WATER. A physician should see the patient promptly if contact with the product has resulted in blistering of the dermal surface or in deep tissue freezing.
Eye contact	If frostbite is suspected, flush eyes with cool water for 15 minutes and obtain immediate medical attention.
Ingestion	Not an expected route of exposure.

Most important symptoms and effects, both acute and delayed

Symptoms	Oxygen is not acutely toxic under normal pressure. Oxygen is more toxic when inhaled at elevated pressures. Depending upon pressure and duration of exposure, pure oxygen at elevated pressures may cause cramps, dizziness, difficulty breathing, convulsions, edema and death. Contact with evaporating liquid may cause cold burns/frostbite.
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Indication of any immediate medical attention and special treatment needed

Note to physicians	Treat symptomatically.
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5. FIRE-FIGHTING MEASURES**Suitable extinguishing media**

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media	None.
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Specific extinguishing methods

Continue to cool fire exposed cylinders until flames are extinguished. Damaged cylinders should be handled only by specialists.

Specific hazards arising from the chemical

May cause or intensify fire; oxidizer. Combustibles in contact with liquid oxygen may explode on ignition or impact. Will support and accelerate combustion of combustible materials (wood, paper, oil, debris, etc). Cylinders may rupture under extreme heat.

Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES**Personal precautions, protective equipment and emergency procedures**

Personal precautions	Evacuate personnel to safe areas. Ensure adequate ventilation, especially in confined areas. Avoid spills. Do not walk on or roll equipment over spills. Monitor oxygen level. Eliminate all ignition sources if safe to do so. Use personal protection recommended in Section 8.
Other Information	When in contact with refrigerated/cryogenic liquids, many materials become brittle and are likely to break without warning.

Environmental precautions

Environmental precautions	Prevent spreading of vapors through sewers, ventilation systems and confined areas.
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Methods and material for containment and cleaning up

Methods for containment	Stop the flow of gas or remove cylinder to outdoor location if this can be done without risk. If leak is in container or container valve, contact the appropriate emergency telephone number in Section 1 or call your closest Linde location.
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Methods for cleaning up

Return Portable Cryogenic Container to Linde or an authorized distributor.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling

Liquid oxygen cannot be handled in carbon or low alloy steel, 18-8 and 18-10 stainless steel are acceptable as are copper and its alloys, brass bronze, silicon alloys, Monel®, Inconel®, and beryllium. Teflon®, Teflon® composites, or Kel-F® are preferred non-metallic gasket materials. Oxygen should not be used as a substitute for compressed air in pneumatic equipment since they generally contain flammable lubricants. Equipment able to use oxygen must be "cleaned for oxygen service". Check with the equipment supplier to verify oxygen compatibility for the service conditions. Keep valves and fittings free from grease and oil. Use only equipment of compatible materials of construction. Do NOT change or force fit connections. Open valve slowly. "NO SMOKING" signs should be posted in storage and use areas. Separate flammable gas cylinders from oxygen and other oxidizers by a minimum distance of 20 ft. or by a 5 ft. high barrier with a minimum fire resistance rating of a half an hour. Never allow any unprotected part of the body to touch uninsulated pipes or vessels that contain cold fluids. The extremely cold metal will cause moist flesh to stick fast and tear when one attempts to withdraw from it. Stationary customer site vessels should be operated in accordance with the manufacturer's and Linde's instruction. Do not attempt to repair, adjust or in any other way modify the operation of these vessels. If there is a malfunction or other type of operations problem with the vessel, contact the closest Linde location immediately for assistance.

Protect cylinders from physical damage; do not drag, roll, slide or drop. Never attempt to lift a cylinder by its valve protection cap. When moving cylinders, even for short distance, use a cart designed to transport cylinders. Never insert an object (e.g. wrench, screwdriver, pry bar, etc.) into valve cap openings. Doing so may damage valve, causing leak to occur. Use an adjustable strap wrench to remove over-tight or rusted caps. Use only with adequate ventilation. Use a backflow preventive device in piping. Close valve after each use and when empty. If user experiences any difficulty operating cylinder valve discontinue use and contact supplier. Ensure the complete gas system has been checked for leaks before use.

Never put cylinders into trunks of cars or unventilated areas of passenger vehicles. Never attempt to refill a compressed gas cylinder without the owner's written consent. Never strike an arc on a compressed gas cylinder or make a cylinder a part of an electrical circuit.

Only experienced and properly instructed persons should handle gases under pressure. Always store and handle compressed gas cylinders in accordance with Compressed Gas Association, pamphlet CGA-P1, Safe Handling of Compressed Gases in Containers.

For additional recommendations, consult Compressed Gas Association's Pamphlets SB-7, G-4.3, G-4.1, G-4.4, P-2.5, G-4.9, P-14, and SB-2.

Conditions for safe storage, including any incompatibilities

Storage Conditions

Store in cool, dry, well-ventilated area of non-combustible construction away from heavily trafficked areas and emergency exits. Keep at temperatures below 52°C / 125°F. Cylinders should be stored upright with valve protection cap in place and firmly secured to prevent falling. Full and empty cylinders should be segregated. Use a "first in-first out" inventory system to prevent full cylinders from being stored for excessive periods of time. Stored containers should be periodically checked for general condition and leakage. Do not store near combustible materials

Incompatible materials

Combustible materials. Organic material. Reducing agents. Oil. Grease.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines

This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies

Appropriate engineering controls**Engineering Controls**

Showers. Eyewash stations. Use local exhaust in combination with general ventilation as necessary to keep oxygen concentrations below 23.5%. Consider installation of leak detection systems in areas of use and storage. Systems under pressure should be regularly checked for leakages.

Individual protection measures, such as personal protective equipment**Eye/face protection**

Wear safety glasses with side shields (or goggles). If splashes are likely to occur, wear: Goggles. Face-shield.

Skin and body protection

Work gloves and safety shoes are recommended when handling cylinders. Gloves must be clean and free from grease or oil. Wear cold insulating gloves when handling liquid.

Respiratory protection

No special protective equipment required.

General Hygiene Considerations

Handle in accordance with good industrial hygiene and safety practice. Do not get in eyes, on skin, or on clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	Gas.
Appearance	Pale blue.
Odor	Odorless.
Odor threshold	No information available
pH	Not applicable
Melting/freezing point	-218.8 °C / -361.8 °F
Evaporation rate	Not applicable
Flammability (solid, gas)	See Section 5.
Lower flammability limit:	Not applicable
Upper flammability limit:	Not applicable
Flash point	Not applicable
Autoignition temperature	No data available
Decomposition temperature	No data available
Oxidizing properties	Oxidizer
Water solubility	Slightly soluble
Partition coefficient	No data available
Kinematic viscosity	Not applicable

Chemical Name	Molecular weight	Boiling point/range	Vapor Pressure	Vapor density (air =1)	Gas Density kg/m ³ @20°C	Critical Temperature
OXYGEN	31.99	-182.9 °C	Above critical temperature	1.11	1.331	-118.6 °C

10. STABILITY AND REACTIVITY

Reactivity

Not reactive under normal conditions

Chemical stability

Stable under normal conditions.

Explosion data

Sensitivity to Mechanical Impact None.
Sensitivity to Static Discharge None.

Possibility of Hazardous Reactions

May cause or intensify fire; oxidizer. Will support and accelerate combustion of combustible materials (wood, paper, oil, debris, etc).

Conditions to avoid

None under recommended storage and handling conditions (see Section 7).

Incompatible materials

Combustible materials. Organic material. Reducing agents. Oil. Grease.

Hazardous Decomposition Products

None known.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Inhalation Symptoms of overexposure are dizziness, headache, tiredness, nausea, unconsciousness, cessation of breathing.
Poisoning began in dogs 36 hours after inhalation of pure oxygen at atmospheric pressure. Distress was seen within 48 hours and death within 60 hours.

Skin contact Contact with evaporating liquid may cause cold burns/frostbite.

Eye contact The incompletely developed retinal circulation is more susceptible to toxic levels of oxygen. In premature infants, arterial oxygen tension above 150 mm Hg may cause retrolental fibroplasia. Permanent blindness may occur several months later. One case of severe retinal damage in an adult was reported. An individual suffering from myasthenia gravis developed irreversible retinal atrophy after breathing 80% oxygen for 150 days. Contact with evaporating liquid may cause cold burns/frostbite.

Ingestion Not an expected route of exposure.

Information on toxicological effects

Symptoms Oxygen is not acutely toxic under normal pressure. Oxygen is more toxic when inhaled at elevated pressures. Depending upon pressure and duration of exposure, pure oxygen at elevated pressures may cause cramps, dizziness, difficulty breathing, convulsions, edema and death.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation Not classified.
Sensitization Not classified.
Germ cell mutagenicity Not classified.
Carcinogenicity This product does not contain any carcinogens or potential carcinogens listed by OSHA, IARC or NTP.
Reproductive toxicity Not classified.
STOT - single exposure Not classified.
STOT - repeated exposure Not classified.
Chronic toxicity Prolonged inhalation of high oxygen concentrations (>75%) may affect coordination, attention, and cause tiredness of respiratory irritation.
Target Organ Effects None known.
Aspiration hazard Not applicable.

Numerical measures of toxicity

Oral LD50

No information available

12. ECOLOGICAL INFORMATIONEcotoxicity

No known acute aquatic toxicity.

Persistence and degradability

Not applicable.

Bioaccumulation

Will not bioconcentrate.

Other adverse effects

Can cause frost damage to vegetation.

13. DISPOSAL CONSIDERATIONSWaste treatment methodsDisposal of wastes

Do not attempt to dispose of residual waste or unused quantities. Return in the shipping container PROPERLY LABELED WITH ANY VALVE OUTLET PLUGS OR CAPS SECURED AND VALVE PROTECTION CAP IN PLACE to Linde for proper disposal.

14. TRANSPORT INFORMATIONDOT

UN/ID no.	UN1073
Proper shipping name	Oxygen, refrigerated liquid
Hazard Class	2.2
Subsidiary class	5.1
Special Provisions	T75, TP5, TP22
Description	UN1073, Oxygen, refrigerated liquid, 2.2 (5.1)
Emergency Response Guide Number	122

TDG

UN/ID no.	UN1073
Proper shipping name	Oxygen, refrigerated liquid
Hazard Class	2.2
Subsidiary class	5.1
Description	UN1073, Oxygen, refrigerated liquid, 2.2 (5.1)

IATA

Description	Forbidden by Passenger Air
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Description	Forbidden
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IMDG

UN/ID no.	UN1073
Proper shipping name	Oxygen, refrigerated liquid
Hazard Class	2.2
Subsidiary hazard class	5.1
EmS-No.	F-C, S-W
Description	UN1073, Oxygen, refrigerated liquid, 2.2 (5.1)

15. REGULATORY INFORMATION**International Inventories**

TSCA	Complies
DSL/NDSL	Complies
EINECS/ELINCS	Complies

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances

US Federal Regulations**SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazard Categories

Should this product meet EPCRA 311/312 reporting criteria at 40 CFR 370, refer to Section 2 of this SDS for appropriate classifications.

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)

This product does not contain any substances regulated as hazardous air pollutants (HAPs) under Section 112 of the Clean Air Act Amendments of 1990.

CWA (Clean Water Act)

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

Risk and Process Safety Management Programs

This material, as supplied, does not contain any regulated substances with specified thresholds under 40 CFR Part 68. This product does not contain any substances regulated as Highly Hazardous Chemicals pursuant to the 29 CFR Part 1910.110.

US State Regulations**California Proposition 65**

This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Oxygen 7782-44-7	X	X	X

16. OTHER INFORMATION

NFPA**Health hazards** 3**Flammability** 0**Instability** 0**Physical and Chemical
Properties** OX

Note: Ratings were assigned in accordance with Compressed Gas Association (CGA) guidelines as published in CGA Pamphlet P-19-2009, CGA Recommended Hazard Ratings for Compressed Gases, 3rd Edition.

Issue Date 24-Feb-2015
Revision Date 07-Apr-2020
Revision Note SDS sections updated; 1

LIND-P098

General Disclaimer

For terms and conditions, including limitation of liability, please refer to the purchase agreement in effect between Linde LLC, Linde Merchant Production, Inc. or Linde Gas North America LLC (or any of their affiliates and subsidiaries) and the purchaser.

DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained herein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s).

End of Safety Data Sheet



March 31, 2025

City of Ann Arbor
Procurement Unit
301 E. Huron Street
Ann Arbor, MI 48104

RE: ITB NO. 4769 – WATER TREATMENT CHEMICAL - LIQUID OXYGEN (LOX)
DATE: WEDNESDAY, APRIL 2, 2025 @ 3:00 PM

To Whom It May Concern:

We are pleased to submit our proposal for your Liquid Oxygen requirements estimated at 200,000 ccf into a customer owned 11,000-gallon storage tank in Ann Arbor, MI.

MODIFICATIONS TO BID SPECIFICATIONS

If legally allowed by the bidding process, Linde's Sales, Legal, and Risk Management groups are available for further discussion on any of the modifications, additions or clarifications provided below.

CHEMICAL INSURANCE REQUIREMENTS		
Pg 8 of pdf	Item #3	Modify referenced section to read as follows: "Umbrella liability insurance over all other required insurance, written on a per occurrence basis with \$5,000,000 \$1,000,000 limit..."
Pg 8 of pdf	Item #4	Modify referenced section to read as follows: "Contractor pollution liability insurance, written on a per occurrence basis, with \$5,000,000 \$1,000,000 limit..."
Pg 8 of pdf	Item #5	Delete referenced section in its entirety as it does not apply to the supply of LOX.
Pg 8 of pdf	Last Paragraph	Modify the referenced section to read as follows: For all required insurance, the City shall be named an additional insured per ISO Endorsement Number CG 20 26 12 19 notwithstanding any language to the contrary contained in any insurance certificate issued or received by either party without added exclusions or limiting endorsements that diminish the City's protections. Further, all insurers shall be authorized to do business in Michigan, and shall carry and maintain a minimum rating of "A-" from A.M. Best and Co., with a minimum financial size category of "V." All required insurance shall be primary to any insurance the City has (including self-insured retention), and any insurance or retention the City has shall not be required to contribute. For itself and all of its insurers, vendor waives its right to recover against the City for liabilities for which the City has insurance. Vendor shall furnish to the City endorsements from its insurers unconditionally entitling the City to 30-days' notice of cancellation or non-renewal, except that in the case of cancellation or non-renewal due to non-payment of premiums, 10-days' notice is sufficient. Vendor shall furnish the City proof of its compliance with these insurance requirements upon demand, through City-approved means (currently MyCOI). Compliance with this section is a condition of City's payment to vendor. Vendor should add registration@mycoitracking.com to its safe-senders list.
INVITATION TO BID		
Pg 8	Paragraph 4	Note: As it pertains to City Code Chapter 112, Linde can agree to the current language in City Code Chapter 112 as it pertains to liquidated damages. However, should there be a revision in this Code, Linde would require 30 days written notice of such change to determine whether we can comply with the changes. If we cannot comply, Linde reserves the right to terminate the agreement.
SPECIFICATIONS		
Pg 11	Part 3.2 Sampling	Note: Linde's safety procedures mandate a safe method of sampling delivered product at the customer location and prohibits sampling product directly from a product trailer.
GENERAL TERMS AND CONDITIONS		
Pg 14	Indemnification	Delete referenced section in its entirety. What Linde can provide is contained in Section 4. Health Safety and liability below.
Pg 14	Warranty	Modify referenced section as indicated below: Warranty: The Vendor warrants to the City that all goods and services furnished hereunder will conform in all respects to the terms of this contract, including any drawings, specifications and standards incorporated herein. In addition, the Vendor warrants the goods and services are suitable for and will perform in accordance with the purposes for which they were intended.

In addition to the above, the following terms and conditions are hereby incorporated into the bid documents and confirm the agreement of Buyer (defined below) to purchase Buyer's total requirements, in gaseous and liquid form, of Product (defined below) for use at Buyer's Locations(s) (defined below) for the period of the Basic Term (defined below) and the agreement of Linde, Inc. ("Seller") to deliver Product to Buyer pursuant to these terms and conditions. The terms and conditions set forth below are incorporated into the bid documents and these terms and conditions together with the bid documents as modified by the above letter are collectively referred to as the "Agreement". Payment terms are net thirty (30) days from date of invoice.

For purposes of this letter the terms "Buyer", "Buyer's Location", "Basic Term", "Prices", "Product", "Specifications", and "Product Storage System" will have the respective meanings set forth below:

"Buyer" means City of Quincy having an address at 919 Sunset Road, Ann Arbor, MI 48103

"Buyer's Location(s)" means Ann Arbor, MI

"Basic Term" means one year from the date of first fill to the Product Storage System

"Prices" means \$0.40/ccf

"Product" means Liquid Oxygen

"Product Storage System" means Buyer's owned 11,000-gallon storage tank

"Specifications" means $\geq 99.5\%$ assay

Product will meet ANSI/AWWA and NSF-60 Standards. Linde's plant is certified to these standards. Evidence of certification can be found by going to the following website: WQA.org

You will find a list of all the Linde plants that are NSF-60 certified for liquid oxygen. Supply to your facility will be shipping from Ecorse, MI plant. Attached is a copy of the paperwork that you will receive with each shipment of liquid oxygen to your facility indicating that the product is certified by Water Quality Association to the ANSI/NSF Standard 60, Drinking Water Treatment Chemicals – Health Effects.

1. **BUYER'S STORAGE SYSTEM:** Buyer, at its expense, will maintain the Product Storage System ("Product Storage System") and the site on which the Product Storage System is located. Seller will have the right, without any liability hereunder, to refuse to deliver Product into the Product Storage System if Seller reasonably determines that the Product Storage System or Product Storage System site is unfit for the storage or delivery of Product or the site on which the Product Storage System is located is not safe as determined by Seller for the delivery of Product.

2. **SPECIFICATIONS.** Product delivered hereunder will meet the Specifications. Buyer may reject any Product which does not meet the Specifications and no charge will be made for Product so rejected. Since Buyer may obtain devices which have the capability of testing whether Product meets the Specifications, no claim of any kind with respect to the conformance of Product to the foregoing Specifications, whether or not based on negligence, warranty, strict liability or any other theory of law, will be greater than the price of the quantity of nonconforming Product in respect to which such claim is made. The foregoing constitutes Buyer's exclusive remedy and Seller's sole obligation with respect to any such claim. THERE ARE NO EXPRESS WARRANTIES BY SELLER OTHER THAN THOSE SPECIFIED IN THIS ARTICLE 2. NO WARRANTIES BY SELLER (OTHER THAN WARRANTY OF TITLE AS PROVIDED IN THE UNIFORM COMMERCIAL CODE) WILL BE IMPLIED OR OTHERWISE CREATED UNDER THE UNIFORM COMMERCIAL CODE INCLUDING, WITHOUT LIMITATION, WARRANTY OF MERCHANTABILITY AND WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

3. **CONTINGENCIES.** Neither party hereto will be liable to the other for default or delay in the performance of any of its obligations hereunder (except any obligation to make payments when due) due to act of God, accident, fire, flood, storm, riot, war, act of terrorism, sabotage, explosion, strike, concerted acts of workers, national defense requirements, governmental law, ordinance, rule or regulation, whether valid or invalid, extraordinary failure of equipment or apparatus, inability to obtain electricity or other type of energy, feedstock, raw or finished material from normal sources of supply, labor, equipment or transportation, or any similar or different contingency beyond its reasonable control which would prevent or delay performance or make performance commercially impracticable whether or not the contingency is of the same class as those enumerated above, it being expressly agreed that such enumeration is non-exclusive; provided, however, that neither business downturn nor economic conditions will qualify as a contingency within the meaning of this Article 3. In the event any such contingency affects only a part of Seller's capability to produce and/or deliver Product, Seller will allocate production and/or deliveries among the requirements of all its affected customers and Seller's own requirements in a fair and reasonable manner. Buyer will pay or reimburse Seller for any additional costs incurred relating to the delivery of any Product to Buyer during a contingency. In the event that a contingency event prevents Seller from delivering Product or requires Buyer to pay any additional costs for Product then Buyer shall be allowed to seek Product from alternative sources during the period of the contingency. In the event that a contingency event prevents Seller from delivering Product or requires Buyer to pay any additional costs for Product then Buyer shall be allowed to seek Product from alternative sources during the period of the contingency.

4. **HEALTH, SAFETY AND LIABILITY.** Buyer acknowledges that there are hazards associated with Product, including the storage, use and handling thereof, and Buyer agrees that its employees, agents, contractors, and others concerned with Product are aware of

Date: _____

INVITATION TO BID

City of Ann Arbor
Guy C. Larcom Municipal Building
Ann Arbor, Michigan 48107

Ladies and Gentlemen:

The undersigned, as Bidder, declares that this Bid is made in good faith, without fraud or collusion with any person or persons bidding on the same Contract; that this Bidder has carefully read and examined the bid documents, including City Nondiscrimination requirements, Vendor Conflict of Interest Form, Instructions to Bidders, Bid Forms, Purchase Order Terms and Conditions, General Conditions, Detailed Specifications, and all Addenda, and understands them. The Bidder declares that it conducted a full investigation of the work proposed and is fully informed as to the nature of the work and the conditions relating to the work's performance.

The Bidder acknowledges that it has not received or relied upon any representations or warrants of any nature whatsoever from the City of Ann Arbor, its agents or employees, and that this Bid is based solely upon the Bidder's own independent business judgment.

In accordance with these bid documents, and Addenda numbered N/A, the undersigned, as Bidder, proposes to deliver to the City all product/services herein described for the amounts set forth in the Bid Forms.

The Bidder declares that it has become fully familiar with the liquidated damage clauses for completion times and for compliance with City Code Chapter 112, understands and agrees that the liquidated damages are for the non-quantifiable aspects of non-compliance and do not cover actual damages that may be shown and agrees that if awarded the Contract, all liquidated damage clauses form part of the Contract.


Bidder further agrees that the cited provisions of Chapter 14 form a part of this Contract.

The Bidder declares that it has become familiar with the City Conflict of Interest Disclosure Form and certifies that the statement contained therein is true and correct.

In submitting this Bid, it is understood that the right is reserved by the City to accept any Bid, to reject any or all Bids, to waive irregularities and/or informalities in any Bid, and to make the award in any manner the City believes to be in its best interest.

SIGNED THIS 31st DAY OF March 31, 2025.

Linde Inc.
Bidder's Name
7000 High Grove Blvd.,
Burr Ridge, IL 60527
Official Address
630-320-4231
Telephone Number

* 
Authorized Signature of Bidder
Holly O'Donnell
(Print Name of Signer Above)
municipalbids@linde.com
Email Address for Award Notice

* Exceptions to bid specifications are contained in the attached bid response letter.

LEGAL STATUS OF BIDDER

(The Bidder shall fill out the appropriate form and strike out the other three.)

Bidder declares that it is:

* A corporation organized and doing business under the laws of the State of Delaware, for whom Holly O'Donnell, bearing the office title Director - Gov't & Aerospace Programs, whose signature is affixed to this Bid, is authorized to execute contracts.

NOTE: If not incorporated in Michigan, please attach the corporation's Certificate of Authority

• A limited liability company doing business under the laws of the State of _____, whom _____ bearing the title of _____ whose signature is affixed to this proposal, is authorized to execute contract on behalf of the LLC.

* A partnership, organized under the laws of the state of _____ and filed in the county of _____, whose members are (list all members and the street and mailing address of each) (attach separate sheet if necessary):

* An individual, whose signature with address, is affixed to this Bid: _____
(initial here)

Authorized Official

 **Date** March 31, 2025

(Print) Name Holly O'Donnell Title Director - Gov't & Aerospace Programs

Company: Linde Inc.

Address: 7000 High Grove Blvd., Burr Ridge, IL 60527

Contact Phone (630) 320-4231 Fax () Not Applicable

Email municipalbids@linde.com

BID FORM

VENDOR NAME: Linde Inc.

All Bidders shall submit pricing in the format requested

LIQUID OXYGEN BULK	\$ 0.40/	HCF
FREIGHT	\$ N/A	HCF

TOTAL DELIVERED COST	\$ 0.40/	HCF
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INVOICE TERMS: Discount of 0 % or \$ 0 will be allowed for payment of invoice thirty (30) days from day of delivery and acceptance.

OTHER TERMS: Less than 30 days, E.O.M., Proximo, etc., will not be considered in determining award of contract.

Liquid Oxygen shall be supplied to the City of Ann Arbor Water Treatment Plant, f.o.b. destination, freight prepaid. Contractor shall be responsible for transferring the product from transport vehicle to the City of Ann Arbor storage vessel. Bidder shall specify minimum shipping amount if any:

Not applicable

QUANTITY: The annual quantity is approximately **200,000 HCF**. This quantity is for estimating purposes only, not a guarantee of actual usage. Product will be ordered on an "as needed" basis. All prices are to remain firm.

MONITORING: The provider will be responsible for using telemetry to monitor the tank level and keeping the tank above 50% capacity. Therefore, ordering product will not be necessary and resupply will be managed by the supplier according to the needs of the Water Treatment Plant. The successful Provider must provide a telemetry device or use and maintain the existing telemetry at no cost to the City of Ann Arbor. Failure to maintain 50% capacity could result in breach of contract.

SPECIFICATIONS: Please include the typical specifications of your product with your bid to demonstrate your product quality, especially pertaining to minimum purity, percent oxygen content, dew point, water concentration, hydrocarbon concentration, and other impurities.

REFERENCES: Please list at least three (3) entities for which you have done similar work:

<u>Organization</u>	<u>Address</u>	<u>Contact Person</u>	<u>Telephone</u>
1. City of Baltimore	3501 Asiatic Avenue, Baltimore, MD 21221	Marvin Young	410-491-3320
2. City of Fairfield (CA)	2900 Vista Grande Fairfield, CA 94533	Stuart Hamilton	707-434-6102
3. City of Vallejo	202 Fleming Hill Road Vallejo, CA 94589	Joe Abitong	707-648-4039



Vendor Conflict of Interest Disclosure Form


All vendors interested in conducting business with the City of Ann Arbor must complete and return the Vendor Conflict of Interest Disclosure Form in order to be eligible to be awarded a contract. Please note that all vendors are subject to comply with the City of Ann Arbor's conflict of interest policies as stated within the certification section below.

If a vendor has a relationship with a City of Ann Arbor official or employee, an immediate family member of a City of Ann Arbor official or employee, the vendor shall disclose the information required below.

1. No City official or employee or City employee's immediate family member has an ownership interest in vendor's company or is deriving personal financial gain from this contract.
2. No retired or separated City official or employee who has been retired or separated from the City for less than one (1) year has an ownership interest in vendor's Company.
3. No City employee is contemporaneously employed or prospectively to be employed with the vendor.
4. Vendor hereby declares it has not and will not provide gifts or hospitality of any dollar value or any other gratuities to any City employee or elected official to obtain or maintain a contract.
5. Please note any exceptions below:

Conflict of Interest Disclosure*	
Name of City of Ann Arbor employees, elected officials or immediate family members with whom there may be a potential conflict of interest.	<input type="checkbox"/> Relationship to employee
	<input type="checkbox"/> Interest in vendor's company
	<input type="checkbox"/> Other (please describe in box below)
Not Applicable	

*Disclosing a potential conflict of interest does not disqualify vendors. In the event vendors do not disclose potential conflicts of interest and they are detected by the City, vendor will be exempt from doing business with the City.

I certify that this Conflict of Interest Disclosure has been examined by me and that its contents are true and correct to my knowledge and belief and I have the authority to so certify on behalf of the Vendor by my signature below:		
Linde Inc.	630-320-4231	
Vendor Name		Vendor Phone Number
	3/31/2025	Holly O'Donnell
Signature of Vendor Authorized Representative	Date	Printed Name of Vendor Authorized Representative

**CITY OF ANN ARBOR
DECLARATION OF COMPLIANCE**

Non-Discrimination Ordinance

The "non discrimination by city contractors" provision of the City of Ann Arbor Non-Discrimination Ordinance (Ann Arbor City Code Chapter 112, Section 9:158) requires all contractors proposing to do business with the City to treat employees in a manner which provides equal employment opportunity and does not discriminate against any of their employees, any City employee working with them, or any applicant for employment on the basis of actual or perceived age, arrest record, color, disability, educational association, familial status, family responsibilities, gender expression, gender identity, genetic information, height, HIV status, marital status, national origin, political beliefs, race, religion, sex, sexual orientation, source of income, veteran status, victim of domestic violence or stalking, or weight. It also requires that the contractors include a similar provision in all subcontracts that they execute for City work or programs.

In addition the City Non-Discrimination Ordinance requires that all contractors proposing to do business with the City of Ann Arbor must satisfy the contract compliance administrative policy adopted by the City Administrator. A copy of that policy may be obtained from the Purchasing Manager

The Contractor agrees:

- (a) To comply with the terms of the City of Ann Arbor's Non-Discrimination Ordinance and contract compliance administrative policy, including but not limited to an acceptable affirmative action program if applicable.
- (b) To post the City of Ann Arbor's Non-Discrimination Ordinance Notice in every work place or other location in which employees or other persons are contracted to provide services under a contract with the City.
- (c) To provide documentation within the specified time frame in connection with any workforce verification, compliance review or complaint investigation.
- (d) To permit access to employees and work sites to City representatives for the purposes of monitoring compliance, or investigating complaints of non-compliance.

The undersigned states that he/she has the requisite authority to act on behalf of his/her employer in these matters and has offered to provide the services in accordance with the terms of the Ann Arbor Non-Discrimination Ordinance. The undersigned certifies that he/she has read and is familiar with the terms of the Non-Discrimination Ordinance, obligates the Contractor to those terms and acknowledges that if his/her employer is found to be in violation of Ordinance it may be subject to civil penalties and termination of the awarded contract.

Linde Inc.

Company Name

*



March 31, 2025

Signature of Authorized Representative

Date

Holly O'Donnell/Director - Gov't & Aerospace Programs

Print Name and Title

7000 High Grove Blvd., Burr Ridge, IL 60527

Address, City, State, Zip

630-320-4231/municipalbids@linde.com

Phone/Email Address

Questions about the Notice or the City Administrative Policy, Please contact:
Procurement Office of the City of Ann Arbor
(734) 794-6500

* Exceptions to bid specifications are contained in the attached the bid response letter.

2016 Rev 0

NDO-2



Certificate of Analysis - COA

LINDE INC.

Customer Name

Customer Address

Linde Number:

Product Label: Liquid Oxygen

Lot Number:

Component	Specification	Analytical Result	Analytical Method
Assay	$\geq 99.5 \%$		Servomex 4100
H ₂ O	≤ 6 PPM		Analyzer
Odor	Is None Detected		Organoleptic
Total Hydrocarbons	≤ 25 PPM		Analyzer

LDL = Lower Detection Limit of Analyzer

Authorized Linde Representative _____



Order #: 12345678

Date

123-45678

Proof of Delivery

LINDE INC
Delivered by:

Linde #:
Customer:
Measurement Site:

Customer Prod ID:

Liquid Oxygen Air Liquefaction
Produced by the air liquefaction process

PO#:		Route #:	
Release #:		Tractor #:	
Product Label:	Liquid Oxygen	Trailer #:	
Lot Number:		Driver 1:	
		Driver 2:	
Service Agreement #:	Location:	Carrier:	Well Number:

Liquid Delivery

Date/Time Arrived: Date/Time Depart:

Meter	U/M	Scale	U/M
Finish:	_____	Gross Weight:	_____
Start:	_____	Tare Weight:	_____
		Net Weight:	_____
		Scale Ticket #:	_____

Delivery Volume:



Order #: 12345789

Date

123-45678

Proof of Delivery

NSF-ANSI-CAN 60 by WQA

MAXIMUM USE: N/A



C US

Driver or Deputy
Weighmaster:

Order contact:

Water Quality Association Gold Seal Certificate

Linde Inc

175 East Park Drive
Tonawanda, New York United States
Facility: Linde Inc. (Ecorse, MI)

Certification Date: January 09, 2023

Authorized By: *Caren L. Settler*

Caren L. Settler
Process Improvement Manager

Water Quality Association
2375 Cabot Drive
Lisle, IL 60532, USA



Products are evaluated according to Product Certification Scheme Type 5, as defined in ISO/IEC 17067 (current version).
This Certificate, or any part thereof, may not be used in a misleading manner and validation of its use is contingent upon the Official WQA web -listing.
Please contact your Account Representative for product expiration terms . All Standards referenced in the Product Certification Schemes by Standard Name.

Water Quality Association Official Gold Seal Listing

Granted to the following company:

Linde Inc
175 East Park Drive
Tonawanda, New York 14150 United States

For the Facility Located at:

Linde Inc. (Ecorse, MI)
300 E. Great Lakes St.
River Rouge, MI 48218 United States

The WQA Gold Seal Certification Department has issued certification for the following model(s) to the standard(s) below. Only models that appear in the official listing are authorized to bear the WQA Gold Seal.

NSF/ANSI/CAN 60 - 2021: Drinking Water Treatment Chemicals - Health Effects

Oxygen

Notice: To request any changes to the certified model(s), please request a Change to Certified Product (CCP) form. Examples include any change to the wetted parts or formulations such as supplier or material types, literature, or a change in company name. This list is not all inclusive. Failure to submit documentation regarding changes may result in non-compliance with the standard(s) as well as de-listing of the affected models.

LINDE INC.

ASSISTANT SECRETARY'S CERTIFICATE

I, Anthony M. Pepper, Assistant Secretary of LINDE INC., a corporation organized and existing under the laws of the State of Delaware (the "Corporation"), DO HEREBY CERTIFY that the following are true and correct resolutions adopted by the Board of Directors of said Corporation in a Unanimous Consent of Directors dated June 24, 1992, and that said resolutions are still in full force and effect:

RESOLVED, that the general enabling resolutions adopted by the Board on November 8, 1988 are amended and restated in their entirety as follows:

"RESOLVED, that the Chairman, the Chief Executive Officer, the President, any Vice-President, the Chief Financial Officer, the Treasurer, the Secretary, any Assistant Treasurer or any Assistant Secretary of the Corporation is authorized, in the name and on behalf of the Corporation, to execute and deliver any contract, agreement or document, to enter into any commitment or obligation, or to take or do or cause to be taken or done any action or thing, for the conduct of the business of the Corporation in the ordinary course thereof; and be it further

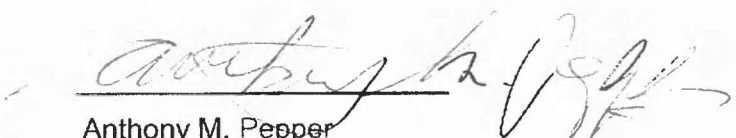
RESOLVED, that the Chief Executive Officer or the President of the Corporation is authorized to appoint executives of a business, division or department of the Corporation, to designate their titles, to fix their compensation, and to prescribe their duties; and be it further

RESOLVED, that the President, or any Vice-President of the Corporation responsible for a business, division or department of the Corporation is authorized to appoint other agents and employees for such component, to designate their titles, if any, to fix their compensation, and to prescribe their duties; and be it further

RESOLVED, that any officer or manager referred to above is authorized to designate in writing one or more employees or representative to do any act or thing which said officer or manager is authorized to do pursuant to the foregoing resolutions; and be it further

RESOLVED, that any person dealing with the Corporation may conclusively rely on a certificate from the Secretary or an Assistant Secretary of the Corporation or on an opinion from an attorney employed by or otherwise representing the Corporation that an officer, manager or other person is authorized to act for the Corporation in a particular matter."

IN WITNESS WHEREOF, I have hereunto set my hand this 22nd day of January 2025.


Anthony M. Pepper
Assistant Secretary

DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS
CORPORATIONS, SECURITIES & COMMERCIAL LICENSING BUREAU

05 E4

Date Received

9/9/2020 9:31

(FOR BUREAU USE ONLY)

This document is effective on the date filed, unless a subsequent effective date within 90 days after received date is stated in the document.

FILED

SEP 09 2020

ADMINISTRATOR
CORPORATIONS DIVISION

Name

Address

City

State

Zip code

Document will be returned to the name and address you enter above

EFFECTIVE DATE:

**AMENDED APPLICATION FOR CERTIFICATE OF AUTHORITY
TO TRANSACT BUSINESS IN MICHIGAN**

For use by Foreign Profit Corporations
(Please read information and instructions on the last page)

Pursuant to the provisions of Act 284, Public Acts of 1972, the undersigned corporation executes the following Amended Application:

1. The name of the corporation is: Praxair, Inc.
2. If the name in Item 1 was not available for use in Michigan, the assumed name adopted when obtaining the Certificate of Authority is: _____
3. The identification number assigned by the Bureau is: 801035186
4. It is incorporated under the laws of Delaware
5. The corporation was authorized to transact business in Michigan on 12/08/1988
6. The period of its duration (corporation term) is perpetual.

7. a) The total authorized shares of the corporation on record with the Corporations, Securities & Commercial Licensing Bureau are 800,000,000 as of 7/7/2020.
- b) The shares attributable to Michigan as currently on the records of the Corporations, Securities & Commercial Licensing Bureau are: 49,940,000.
- c) If the total authorized stock has changed, the total authorized shares of the corporation are 1.
The effective date of the stock change was the 31 day of October, 2018.
- d) For year ending 12 / 31 / 17 the apportionment percentage from the most recently filed Michigan tax return is 5.001 %.

8. If the name of the corporation has changed, its new name is:

Linde Inc.

the effective date of the name change was the 1st day of September, 2020 and the name change was made in compliance with the laws of the jurisdiction of its incorporation.

9. Complete this item only if the new name in item 8 is not available for us in Michigan. The assumed name of the corporation to be used in all its dealings with the Bureau and in the transaction of its business in Michigan is:

10. If the assumed name in item 2 has changed, the new name is:

11. The name of the resident agent at the registered office is: The Prentice-Hall Corporation System, Inc.

The address of its registered office in Michigan is:

601 Abbot Road, East Lansing

(Street Address)

(City)

, Michigan

(State)

48823

(Zip Code)

The mailing address of the registered office in Michigan, if different than above, is:

, Michigan

(Street Address or P.O. Box)

(City)

(State)

(Zip Code)

The resident agent is an agent of the corporation upon whom process against the corporation may be served.

12. The address of the main business or headquarters office of the corporation is:

10 Riverview Drive, Danbury, CT 06810

(Street Address)

(City)

(State)

(Zip Code)

The mailing address if different than above is:

(Street Address or P.O. Box)

(City)

(State)

(Zip Code)

13. If the business the foreign corporation proposes to do in this State is to be enlarged, limited, or otherwise changed, the specific business which the corporation is to transact in Michigan is as follows:

The corporation is authorized to transact such business or conduct affairs in the jurisdiction of its incorporation.

Signed this 8 day of September, 2020

By

(Signature of Authorized Officer or Agent)

Anthony M. Pepper, Assistant Secretary

(Type or Print Name)



Price Schedule for Supply System Service



Commitment to Excellence

Linde is focused on helping our customers obtain the products and services needed to help ensure that their facilities operate as efficiently and safely as possible, with minimum interruptions. As part of our commitment, Linde offers special services and support.

If any of the services listed are needed, please contact us at **1-844-44LINDE (1-844-445-4633)** and a member of our Customer Service team will provide you with next steps.

- | | | |
|--|---|--|
| → Customer-requested tank painting | → Pressure washing | → Installation, relocation, or removal of permanent or temporary Supply System |
| → Relocation of equipment (permanent or temporary) | → Services on customer-owned tanks | → Custom services completed on site |
| → Modifications to existing equipment | → Annual tank inspection | → Trailer purge |
| → Installation of accessory equipment | → Pressure adjustment | |
| → Vaporizer de-icing | → Piping work | |
| → Repair of customer-caused damage | → Repairs associated with improper use of Supply System | |

The following charges apply to services performed on Linde or customer owned Supply Systems for Argon, Carbon Dioxide, Helium, Hydrogen, Nitrogen, and Oxygen. If you are unsure if services performed on your Supply System will be billed to you, please contact your Account Manager. Billable services performed will be invoiced per charges in the schedule and are subject to change.

Customer Service Technician Rates for All Services

Labor, portal-to-portal, weekdays	\$260/hour, \$1,000 minimum charge
Labor, portal-to-portal, weekends & holidays	\$395/hour, \$1,500 minimum charge
Travel, portal-to-portal	\$2.75 per mile
Warm Tank Fill	\$1,950/tank (including labor and miles)
Customer Owned Tank Inspection	\$1,450/supply system (including labor and miles)

Extra charges may apply if additional work is required during a technician visit, including parts, crane or freight charges (e.g. during Supply System installations, removals, relocations), and other miscellaneous expenses.

Trailer Purging

Small Trailer/ISO	\$2,500 / trailer
Nitrogen/Oxygen	\$2,500 / trailer
Argon	\$6,000 / trailer
Hydrogen	\$10,000 / trailer
Carbon Dioxide	\$2,500 / trailer

A purchase order number is required before any services are performed. Please be prepared to provide a purchase order number when calling **1-844-44LINDE (1-844-445-4633)** for service requests.



Customer—Owned Tank Checklist

NOTE: This form must be completed before Linde fills your tank. Accurate completion of this checklist ensures safe operating conditions for the customer and for Linde drivers.

Customer Name _____

Customer Address _____

(Street, City, State, Zip)

Tank Information

Is this tank outdoors? ☐ Yes ☐ No (IF NO, STOP!! CALL CUSTOMER SERVICE.)

Tank Manufacturer and Model No. _____

Manufacturer's Serial No. _____ Year Built _____ National Board No. _____

Product _____ Tank Capacity (gal/ton) _____ Tank fills at _____ inches

Tank Configuration: ☐ Vertical ☐ Horizontal ☐ Sphere

Inner Tank Material of Construction* _____

Tank Maximum Allowable Working Pressure (psig) _____

Tank Pressure Relief Valve—Set Pressure (psig) _____ Size _____

CO₂ Tank Back Pressure Regulator—Set Pressure (psig) _____ Size _____

Rupture Disk (if applicable)—Set Pressure (psig) _____ Size _____

CO₂ Fill Connection Size: ☐ CGA 1½ inch ☐ CGA 2 inch ☐ Other _____

* Linde Customer Service Personnel: Refer to Customer Service Standard CS-02-01, Cross-Functional Work Process Key Safety Policies, Section 1.6, for the policy on cryogenic tanks with aluminum inner containers in oxygen service.

Safety Parameters

Customer or Tank Owner: Please verify that each of the following safety conditions are met. (Check box that applies.)

	Yes	No	N/A
1. Tank has manufacturer's nameplate that indicates that the tank meets ASME code requirements, is suitable for the product service indicated above, specifies maximum allowable working pressure (MAWP), and specifies maximum and minimum working temperature.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Tank is equipped with ASME coded pressure relief valve(s) sized to relieve product at the MAWP. Each relief valve meets the capacity requirements specified in the manufacturer's instruction manual.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Tank is equipped with rupture disk(s) sized to relieve product at tank test pressure.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Pressure relief devices have been inspected and will protect <u>all</u> equipment against damage if the pressure should rise to MAWP. Also: a) There is no isolation valve between tank and relief devices. b) No cracks or other mechanical damage are present. c) No leaks are present, as evidenced by frost, sound, or escaping gas. d) Adjacent piping is not deformed. e) Relief device outlets are open and free to discharge. f) Relief devices discharge away from areas where personnel operate valves. g) Relief devices do not discharge against the tank surface.	<input type="checkbox"/>	<input type="checkbox"/>	
5. If tank is vacuum-jacketed, it is equipped with vacuum jacket relief devices.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Customer—Owned Tank Checklist

	Yes	No	N/A
6. The pipes and valves that may be exposed to cryogenic liquid or gas are made of aluminum, brass or bronze alloys, copper, or stainless steel (carbon steel is acceptable for CO ₂ ; PVC is not acceptable).	<input type="checkbox"/>	<input type="checkbox"/>	
7. On argon, nitrogen, or oxygen tank, a trycock (95% valve) is installed and verified to be unobstructed. Note: Contents gauge does not qualify as a fill termination device on these tanks.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Tee fix (I): Union Carbide and Taylor Wharton 500–6000 gallon tanks manufactured between 1964 and 1983 had the stainless steel liquid line slip-fitted and braised over the branch connection of the brass tee. This configuration is not acceptable.			
8a. If within this manufacturing range, has the tee fix been retrofitted?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8b. If within this manufacturing range and not retrofitted, is the temporary clamp and support fix in place?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Tee fix (II): Union Carbide and Taylor Wharton vertical and horizontal 9000–13,000 gallon tanks up to 355 psig MAWP manufactured between 1970 and 1985 had the stainless steel liquid and gas lines joined to a brass tee. This configuration may not be acceptable.			
9a. If within this manufacturing range and construction, have the joints been inspected for leakage?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9b. If within this manufacturing range and construction, and if either of the joints have leaked, have the tees been repaired/replaced?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10a. Is this vessel compliant with CGA Position Statement PS-8 or CGA P-59 regarding overpressure protection (OPP)?	<input type="checkbox"/>	<input type="checkbox"/>	
10b. If answer to 10a is Yes, what type of OPP device is installed?			
11. Are all areas where liquid product can be trapped (e.g., between two valves: between check valve and isolation valve; between isolation valve and fill connection cap) protected from overpressurization by a block line relief device?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Are the hand wheels of valves that will be operated by the driver (fill valves, trycock, blowdown) no more than 5 feet above grade or work platform?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Does the tank have both a liquid phase (bottom) and a gas phase (top) fill valve?	<input type="checkbox"/>	<input type="checkbox"/>	
14. Are tank fill lines at least 1 inch outer diameter with at least 3/4 inch nominal pipe size fill valves?	<input type="checkbox"/>	<input type="checkbox"/>	
15. If a Micro Bulk tank, is the tank also fitted with a 1.5 inch CGA fill connection that bypasses any automated fill termination device, such as a floating ball stop check valve or "Sure-Fill"?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. If tank operating pressure is greater than 250 psig, is the tank equipped with a local filling pump?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. If tank operating pressure is greater than 250 psig, and the tank is NOT equipped with a local filling pump, is it permissible to lower tank pressure during a fill without first notifying site personnel?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Customer Representative _____ Date _____

Customer Representative Signature (required) _____

Phone No. _____ Email _____

Linde Number (to be filled in by Linde Customer Service) _____



Price Schedule for Supply System Service



Commitment to Excellence

Linde is focused on helping our customers obtain the products and services needed to help ensure that their facilities operate as efficiently and safely as possible, with minimum interruptions. As part of our commitment, Linde offers special services and support.

If any of the services listed are needed, please contact us at [1-844-44LINDE \(1-844-445-4633\)](tel:1-844-44LINDE) and a member of our Customer Service team will provide you with next steps.

- | | | |
|--|---|--|
| → Customer-requested tank painting | → Pressure washing | → Installation, relocation, or removal of permanent or temporary Supply System |
| → Relocation of equipment (permanent or temporary) | → Services on customer-owned tanks | → Custom services completed on site |
| → Modifications to existing equipment | → Annual tank inspection | → Trailer purge |
| → Installation of accessory equipment | → Pressure adjustment | |
| → Vaporizer de-icing | → Piping work | |
| → Repair of customer-caused damage | → Repairs associated with improper use of Supply System | |

The following charges apply to services performed on Linde or customer owned Supply Systems for Argon, Carbon Dioxide, Helium, Hydrogen, Nitrogen, and Oxygen. If you are unsure if services performed on your Supply System will be billed to you, please contact your Account Manager. Billable services performed will be invoiced per charges in the schedule and are subject to change.

Customer Service Technician Rates for All Services

Labor, portal-to-portal, weekdays	\$260/hour, \$1,000 minimum charge
Labor, portal-to-portal, weekends & holidays	\$395/hour, \$1,500 minimum charge
Travel, portal-to-portal	\$2.75 per mile
Warm Tank Fill	\$1,950/tank (including labor and miles)
Customer Owned Tank Inspection	\$1,450/supply system (including labor and miles)
Extra charges may apply if additional work is required during a technician visit, including parts, crane or freight charges (e.g. during Supply System installations, removals, relocations), and other miscellaneous expenses.	

Trailer Purging

Small Trailer/ISO	\$2,500 / trailer
Nitrogen/Oxygen	\$2,500 / trailer
Argon	\$6,000 / trailer
Hydrogen	\$10,000 / trailer
Carbon Dioxide	\$2,500 / trailer

A purchase order number is required before any services are performed. Please be prepared to provide a purchase order number when calling **1-844-44LINDE (1-844-445-4633)** for service requests.



Customer—Owned Tank Checklist

NOTE: This form must be completed before Linde fills your tank. Accurate completion of this checklist ensures safe operating conditions for the customer and for Linde drivers.

Customer Name _____

Customer Address _____

(Street, City, State, Zip)

Tank Information

Is this tank outdoors? ☐ Yes ☐ No (IF NO, STOP!! CALL CUSTOMER SERVICE.)

Tank Manufacturer and Model No. _____

Manufacturer's Serial No. _____ Year Built _____ National Board No. _____

Product _____ Tank Capacity (gal/ton) _____ Tank fills at _____ inches

Tank Configuration: ☐ Vertical ☐ Horizontal ☐ Sphere

Inner Tank Material of Construction* _____

Tank Maximum Allowable Working Pressure (psig) _____

Tank Pressure Relief Valve—Set Pressure (psig) _____ Size _____

CO₂ Tank Back Pressure Regulator—Set Pressure (psig) _____ Size _____

Rupture Disk (if applicable)—Set Pressure (psig) _____ Size _____

CO₂ Fill Connection Size: ☐ CGA 1½ inch ☐ CGA 2 inch ☐ Other _____

* Linde Customer Service Personnel: Refer to Customer Service Standard CS-02-01, Cross-Functional Work Process Key Safety Policies, Section 1.6, for the policy on cryogenic tanks with aluminum inner containers in oxygen service.

Safety Parameters

Customer or Tank Owner: Please verify that each of the following safety conditions are met. (Check box that applies.)

	Yes	No	N/A
1. Tank has manufacturer's nameplate that indicates that the tank meets ASME code requirements, is suitable for the product service indicated above, specifies maximum allowable working pressure (MAWP), and specifies maximum and minimum working temperature.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Tank is equipped with ASME coded pressure relief valve(s) sized to relieve product at the MAWP. Each relief valve meets the capacity requirements specified in the manufacturer's instruction manual.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Tank is equipped with rupture disk(s) sized to relieve product at tank test pressure.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Pressure relief devices have been inspected and will protect all equipment against damage if the pressure should rise to MAWP. Also: a) There is no isolation valve between tank and relief devices. b) No cracks or other mechanical damage are present. c) No leaks are present, as evidenced by frost, sound, or escaping gas. d) Adjacent piping is not deformed. e) Relief device outlets are open and free to discharge. f) Relief devices discharge away from areas where personnel operate valves. g) Relief devices do not discharge against the tank surface.	<input type="checkbox"/>	<input type="checkbox"/>	
5. If tank is vacuum-jacketed, it is equipped with vacuum jacket relief devices.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Customer—Owned Tank Checklist

	Yes	No	N/A
6. The pipes and valves that may be exposed to cryogenic liquid or gas are made of aluminum, brass or bronze alloys, copper, or stainless steel (carbon steel is acceptable for CO ₂ ; PVC is not acceptable).	<input type="checkbox"/>	<input type="checkbox"/>	
7. On argon, nitrogen, or oxygen tank, a trycock (95% valve) is installed and verified to be unobstructed. Note: Contents gauge does not qualify as a fill termination device on these tanks.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Tee fix (I): Union Carbide and Taylor Wharton 500–6000 gallon tanks manufactured between 1964 and 1983 had the stainless steel liquid line slip-fitted and braised over the branch connection of the brass tee. This configuration is not acceptable.			
8a. If within this manufacturing range, has the tee fix been retrofitted?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8b. If within this manufacturing range and not retrofitted, is the temporary clamp and support fix in place?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Tee fix (II): Union Carbide and Taylor Wharton vertical and horizontal 9000–13,000 gallon tanks up to 355 psig MAWP manufactured between 1970 and 1985 had the stainless steel liquid and gas lines joined to a brass tee. This configuration may not be acceptable.			
9a. If within this manufacturing range and construction, have the joints been inspected for leakage?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9b. If within this manufacturing range and construction, and if either of the joints have leaked, have the tees been repaired/replaced?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10a. Is this vessel compliant with CGA Position Statement PS-8 or CGA P-59 regarding overpressure protection (OPP)?	<input type="checkbox"/>	<input type="checkbox"/>	
10b. If answer to 10a is Yes, what type of OPP device is installed?			
11. Are all areas where liquid product can be trapped (e.g., between two valves: between check valve and isolation valve: between isolation valve and fill connection cap) protected from overpressurization by a block line relief device?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Are the hand wheels of valves that will be operated by the driver (fill valves, trycock, blowdown) no more than 5 feet above grade or work platform?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Does the tank have both a liquid phase (bottom) and a gas phase (top) fill valve?	<input type="checkbox"/>	<input type="checkbox"/>	
14. Are tank fill lines at least 1 inch outer diameter with at least 3/4 inch nominal pipe size fill valves?	<input type="checkbox"/>	<input type="checkbox"/>	
15. If a Micro Bulk tank, is the tank also fitted with a 1.5 inch CGA fill connection that bypasses any automated fill termination device, such as a floating ball stop check valve or "Sure-Fill"?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. If tank operating pressure is greater than 250 psig, is the tank equipped with a local filling pump?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. If tank operating pressure is greater than 250 psig, and the tank is NOT equipped with a local filling pump, is it permissible to lower tank pressure during a fill without first notifying site personnel?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Customer Representative _____ Date _____

Customer Representative Signature (required) _____

Phone No. _____ Email _____

Linde Number (to be filled in by Linde Customer Service) _____