

SECTION: 1. Product and company identification

1.1. Product identifier

| | |
|-------------------------------|---|
| Product form | : Substance |
| Substance name | : Nitrogen, compressed |
| Chemical name | : Nitrogen |
| CAS-No. | : 7727-37-9 |
| Formula | : N ₂ |
| Other means of identification | : Trade name: LASER Nitrogen, LASER Nitrogen Ultra, MAPAX@N; Nitrogen Lasershield GR4.8; Nitrogen Lasershield GR5.0 COHERENT P/N 1304720 |

1.2. Relevant identified uses of the substance or mixture and uses advised against

| | |
|------------------------------|-----------------------------------|
| Use of the substance/mixture | : Industrial and professional use |
|------------------------------|-----------------------------------|

1.3. Details of the supplier of the safety data sheet

Linde Inc.
10 Riverview Drive
Danbury, CT 06810-6268, USA
www.lindeus.com

Electronics gas products 1-800-932-0624 or 1-908-329-9700
Linde Inc. 1-844-44LINDE (1-844-445-4633)

For additional product information contact your local customer service.

1.4. Emergency telephone number

| | |
|------------------|------------------------------------|
| Emergency number | : Onsite Emergency: 1-800-645-4633 |
|------------------|------------------------------------|

CHEMTREC, 24 hr/day 7 days/week
— Within USA: 1-800-424-9300, Outside USA: 001-703-527-3887
(collect calls accepted, Contract 17729)

SECTION 2: Hazard identification

2.1. Classification of the substance or mixture

GHS-US classification

Simple asphyxiant SIAS
Press. Gas (Comp.) H280

2.2. Label elements

GHS US labelling

Hazard pictograms (GHS US)



GHS04

| | |
|-----------------------------------|---|
| Signal word (GHS US) | : Warning |
| Hazard statements (GHS US) | : H280 - CONTAINS GAS UNDER PRESSURE; MAY EXPLODE IF HEATED OSHA-H01 - MAY DISPLACE OXYGEN AND CAUSE RAPID SUFFOCATION |
| Precautionary statements (GHS US) | : P202 - Do not handle until all safety precautions have been read and understood. P271+P403 - Use and store only outdoors or in a well-ventilated place. CGA-PG05 - Use a back flow preventive device in the piping. CGA-PG10 - Use only with equipment rated for cylinder pressure. CGA-PG12 - Do not open valve until connected to equipment prepared for use. |

Nitrogen, compressed

Safety Data Sheet LIND-P086

This SDS conforms to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication.

Issue date: 02/17/2015 Revision date: 10/03/2024 Supersedes: 03/25/2022 SDS US Version: 2.4

CGA-PG06 - Close valve after each use and when empty.
CGA-PG02 - Protect from sunlight when ambient temperature exceeds 52°C (125°F).
P304, P340, P313 - IF INHALED: Remove person to fresh air and keep comfortable for breathing. Get medical advice/attention.

2.3. Other hazards

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/information on ingredients

3.1. Substances

Name : Nitrogen, compressed
CAS-No. : 7727-37-9

| Name | Product identifier | % |
|----------|---------------------|------------|
| Nitrogen | (CAS-No.) 7727-37-9 | 99.5 – 100 |

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures after inhalation : Remove to fresh air and keep at rest in a position comfortable for breathing. If not breathing, give artificial respiration. If breathing is difficult, trained personnel should give oxygen. Call a physician.

First-aid measures after skin contact : Adverse effects not expected from this product.

First-aid measures after eye contact : Adverse effects not expected from this product. In case of eye irritation: Rinse immediately with plenty of water. Consult an ophthalmologist if irritation persists.

First-aid measures after ingestion : Ingestion is not considered a potential route of exposure.

4.2. Most important symptoms and effects, both acute and delayed

4.3. Indication of any immediate medical attention and special treatment needed

None.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Use extinguishing media appropriate for surrounding fire.

5.2. Special hazards arising from the substance or mixture

Reactivity : Under certain conditions, nitrogen can react violently with lithium, neodymium, titanium (above 1472°F/800°C), or magnesium to form nitrides. At high temperature, it can also combine with oxygen and hydrogen.

5.3. Advice for firefighters

Firefighting instructions : Evacuate all personnel from the danger area. Use self-contained breathing apparatus (SCBA) and protective clothing. Immediately cool containers with water from maximum distance. Stop flow of gas if safe to do so, while continuing cooling water spray. Remove ignition sources if safe to do so. Remove containers from area of fire if safe to do so. On-site fire brigades must comply with OSHA 29 CFR 1910.156 and applicable standards under 29 CFR 1910 Subpart L—Fire Protection.

Protection during firefighting : Compressed gas: asphyxiant. Suffocation hazard by lack of oxygen.

Special protective equipment for fire fighters : Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire fighters.

Specific methods : Use fire control measures appropriate for the surrounding fire. Exposure to fire and heat radiation may cause gas containers to rupture. Cool endangered containers with water spray jet from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems.

Stop flow of product if safe to do so.

Use water spray or fog to knock down fire fumes if possible.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Evacuate area. Ensure adequate air ventilation. Wear self-contained breathing apparatus when entering area unless atmosphere is proven to be safe. Stop leak if safe to do so.

6.1.1. For non-emergency personnel

6.1.2. For emergency responders

6.2. Environmental precautions

No additional information available

6.3. Methods and material for containment and cleaning up

6.4. Reference to other sections

See also sections 8 and 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Wear leather safety gloves and safety shoes when handling cylinders. Protect containers from physical damage; do not drag, roll, slide or drop. While moving cylinder, always keep in place removable valve cover. Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. Never insert an object (e.g. wrench, screwdriver, pry bar) into cap openings; doing so may damage the valve and cause a leak. Use an adjustable strap wrench to remove over-tight or rusted caps. Slowly open the valve. If the valve is hard to open, discontinue use and contact your supplier. Close the container valve after each use; keep closed even when empty. Never apply flame or localized heat directly to any part of the container. High temperatures may damage the container and could cause the pressure relief device to fail prematurely, venting the container contents. For other precautions in using this product, see section 16.

Safe use of the product : **The suitability of this product as a component in underwater breathing gas mixtures** is to be determined by or under the supervision of personnel experienced in the use of underwater breathing gas mixtures and familiar with the physiological effects, methods employed, frequency and duration of use, hazards, side effects, and precautions to be taken.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store in a cool, well-ventilated place. Store and use with adequate ventilation. Store only where temperature will not exceed 125°F (52°C). Firmly secure containers upright to keep them from falling or being knocked over. Install valve protection cap firmly in place by hand. Store full and empty containers separately. Use a first-in, first-out inventory system to prevent storing full containers for long periods.

OTHER PRECAUTIONS FOR HANDLING, STORAGE, AND USE: When handling product under pressure, use piping and equipment adequately designed to withstand the pressures to be encountered. Never work on a pressurized system. Use a back flow preventive device in the piping. Gases can cause rapid suffocation because of oxygen deficiency; store and use with adequate ventilation. If a leak occurs, close the container valve and blow down the system in a safe and environmentally correct manner in compliance with all international, federal/national, state/provincial, and local laws; then repair the leak. Never place a container where it may become part of an electrical circuit.

7.3. Specific end use(s)

None.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

| Nitrogen, compressed (7727-37-9) | |
|----------------------------------|-----------------|
| ACGIH | Not established |
| USA OSHA | Not established |
| Nitrogen (7727-37-9) | |
| ACGIH | Not established |
| USA OSHA | Not established |

8.2. Exposure controls

| | |
|----------------------------------|--|
| Appropriate engineering controls | : Use a local exhaust system with sufficient flow velocity to maintain an adequate supply of air in the worker's breathing zone. Mechanical (general): General exhaust ventilation may be acceptable if it can maintain an adequate supply of air. |
| Eye protection | : Wear safety glasses with side shields. |
| Skin and body protection | : Wear metatarsal shoes and work gloves for cylinder handling, and protective clothing where needed. Wear appropriate chemical gloves during cylinder changeout or wherever contact with product is possible. |
| Respiratory protection | : When workplace conditions warrant respirator use, follow a respiratory protection program that meets or exceeds the requirements of the appropriate Health and Safety Regulations. Use an air-supplied or air-purifying cartridge if the action level is exceeded. Ensure that the respirator has the appropriate protection factor for the exposure level. If cartridge type respirators are used, the cartridge must be appropriate for the chemical exposure. For emergencies or instances with unknown exposure levels, use a self-contained breathing apparatus (SCBA). |

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

| | |
|--|--------------------------|
| Physical state | : Gas |
| Appearance | : Colourless gas. |
| Molecular mass | : 28 g/mol |
| Colour | : Colourless. |
| Odour | : Odourless. |
| Odour threshold | : No data available |
| pH | : Not applicable. |
| Relative evaporation rate (butylacetate=1) | : No data available |
| Relative evaporation rate (ether=1) | : Not applicable. |
| Melting point | : -210 °C |
| Freezing point | : No data available |
| Boiling point | : -195.8 °C |
| Flash point | : No data available |
| Critical temperature | : -149.9 °C |
| Auto-ignition temperature | : Non flammable. |
| Decomposition temperature | : No data available |
| Flammability | : No data available |
| Vapour pressure | : Not applicable. |
| Critical pressure | : 3390 kPa |
| Relative vapour density at 20°C | : No data available |
| Relative density | : No data available |
| Density | : 1.16 kg/m ³ |

| | |
|---|---------------------|
| Relative gas density | : 0.97 |
| Solubility | : Water: 20 mg/l |
| Partition coefficient n-octanol/water (Log Pow) | : Not applicable. |
| Partition coefficient n-octanol/water (Log Kow) | : Not applicable. |
| Viscosity, kinematic | : Not applicable. |
| Viscosity, dynamic | : Not applicable. |
| Explosive properties | : Not applicable. |
| Oxidizing properties | : None. |
| Explosive limits | : No data available |

9.2. Other information

Additional information : None.

SECTION 10: Stability and reactivity

10.1. Reactivity

Under certain conditions, nitrogen can react violently with lithium, neodymium, titanium (above 1472°F/800°C), or magnesium to form nitrides. At high temperature, it can also combine with oxygen and hydrogen.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

May occur.

10.4. Conditions to avoid

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

10.5. Incompatible materials

None.

10.6. Hazardous decomposition products

None.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

| | |
|-----------------------------|------------------|
| Acute toxicity (oral) | : Not classified |
| Acute toxicity (dermal) | : Not classified |
| Acute toxicity (inhalation) | : Not classified |

| | |
|-----------------------------------|---------------------|
| Skin corrosion/irritation | : Not classified |
| | pH: Not applicable. |
| Serious eye damage/irritation | : Not classified |
| | pH: Not applicable. |
| Respiratory or skin sensitisation | : Not classified |
| Germ cell mutagenicity | : Not classified |
| Carcinogenicity | : Not classified |
| Reproductive toxicity | : Not classified |
| STOT-single exposure | : Not classified |
| STOT-repeated exposure | : Not classified |
| Aspiration hazard | : Not applicable |

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : No ecological damage caused by this product.

12.2. Persistence and degradability

| Nitrogen, compressed (7727-37-9) | |
|----------------------------------|--|
| Persistence and degradability | No ecological damage caused by this product. |
| Nitrogen (7727-37-9) | |
| Persistence and degradability | No ecological damage caused by this product. |

12.3. Bioaccumulative potential

| Nitrogen, compressed (7727-37-9) | |
|---|--|
| Partition coefficient n-octanol/water (Log Pow) | Not applicable. |
| Partition coefficient n-octanol/water (Log Kow) | Not applicable. |
| Bioaccumulative potential | No ecological damage caused by this product. |
| Nitrogen (7727-37-9) | |
| Partition coefficient n-octanol/water (Log Pow) | Not applicable for inorganic products. |
| Partition coefficient n-octanol/water (Log Kow) | Not applicable. |
| Bioaccumulative potential | No ecological damage caused by this product. |

12.4. Mobility in soil

| Nitrogen, compressed (7727-37-9) | |
|----------------------------------|--|
| Mobility in soil | No data available. |
| Ecology - soil | No ecological damage caused by this product. |
| Nitrogen (7727-37-9) | |
| Mobility in soil | No data available. |
| Ecology - soil | No ecological damage caused by this product. |

12.5. Other adverse effects

Effect on the ozone layer : None.

Effect on global warming : None.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product/Packaging disposal recommendations : Dispose of contents/container in accordance with local/regional/national/international regulations. Contact supplier for any special requirements.

SECTION 14: Transport information

In accordance with DOT

Transport document description (DOT) : UN1066 Nitrogen, compressed, 2.2

UN-No.(DOT) : UN1066

Proper Shipping Name (DOT) : Nitrogen, compressed

Transport hazard class(es) (DOT) : 2.2

Hazard labels (DOT) : 2.2 - Non-flammable gas



Additional information

Emergency Response Guide (ERG) Number : 121 (UN1066);120 (UN1977)

Other information : No supplementary information available.

Special transport precautions : Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency. Before transporting product containers:

- Ensure there is adequate ventilation.
- Ensure that containers are firmly secured.
- Ensure valve is closed and not leaking.
- Ensure valve outlet cap nut or plug (where provided) is correctly fitted.
- Ensure valve protection device (where provided) is correctly fitted.

Transport by sea

UN-No. (IMDG) : 1066
 Proper Shipping Name (IMDG) : NITROGEN, COMPRESSED
 Transport hazard class(es) (IMDG) : 2.2
 Division (IMDG) : 2.2 - Non-flammable, non-toxic gases
 EmS-No. (1) : F-C
 EmS-No. (2) : S-V

Other information : No supplementary information available.

Air transport

UN-No. (IATA) : 1066
 Proper Shipping Name (IATA) : Nitrogen, compressed
 Transport hazard class(es) (IATA) : 2.2

SECTION 15: Regulatory information

15.1. US Federal regulations

| Nitrogen, compressed (7727-37-9) | | |
|--|-----------------------------------|-------------|
| Listed on the United States TSCA (Toxic Substances Control Act) inventory | | |
| SARA Section 311/312 Hazard Classes | Sudden release of pressure hazard | |
| All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory. | | |
| Nitrogen | CAS-No. 7727-37-9 | 99.5 – 100% |

15.2. International regulations

CANADA

| Nitrogen, compressed (7727-37-9) | |
|---|--|
| Listed on the Canadian DSL (Domestic Substances List) | |
| Nitrogen, Medipure Liquid Nitrogen (7727-37-9) | |
| Listed on the Canadian DSL (Domestic Substances List) | |

EU-Regulations

| Nitrogen, compressed (7727-37-9) | |
|--|--|
| Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances) | |

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15.2.2. National regulations

Nitrogen, compressed (7727-37-9)

Listed introduction on Australian Industrial Chemicals Introduction Scheme (AICIS Inventory)
 Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
 Listed on KECL/KECI (Korean Existing Chemicals Inventory)
 Listed on NZIoC (New Zealand Inventory of Chemicals)
 Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
 Listed on INSQ (Mexican National Inventory of Chemical Substances)
 Listed on the TCSI (Taiwan Chemical Substance Inventory)

15.3. US State regulations

Nitrogen, compressed(7727-37-9)

| | |
|---|---|
| U.S. - California - Proposition 65 - Carcinogens List | No |
| U.S. - California - Proposition 65 - Developmental Toxicity | No |
| U.S. - California - Proposition 65 - Reproductive Toxicity - Female | No |
| U.S. - California - Proposition 65 - Reproductive Toxicity - Male | No |
| State or local regulations | U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List |

Nitrogen, Medipure Liquid Nitrogen (7727-37-9)

| | | | | |
|---|---|---|---|----------------------------------|
| U.S. - California - Proposition 65 - Carcinogens List | U.S. - California - Proposition 65 - Developmental Toxicity | U.S. - California - Proposition 65 - Reproductive Toxicity - Female | U.S. - California - Proposition 65 - Reproductive Toxicity - Male | No significant risk level (NSRL) |
| No | No | No | No | |

Nitrogen, Medipure Liquid Nitrogen (7727-37-9)

U.S. - Massachusetts - Right To Know List
 U.S. - New Jersey - Right to Know Hazardous Substance List
 U.S. - Pennsylvania - RTK (Right to Know) List

SECTION 16: Other information

Other information

: When you mix two or more chemicals, you can create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an industrial hygienist or other trained person when you evaluate the end product. Before using any plastics, confirm their compatibility with this product.

Linde asks users of this product to study this SDS and become aware of the product hazards and safety information. To promote safe use of this product, a user should (1) notify employees, agents, and contractors of the information in this SDS and of any other known product hazards and safety information, (2) furnish this information to each purchaser of the product, and (3) ask each purchaser to notify its employees and customers of the product hazards and safety information.

The opinions expressed herein are those of qualified experts within Linde Inc. We believe that the information contained herein is current as of the date of this Safety Data Sheet. Since the use of this information and the conditions of use are not within the control of Linde Inc, it is the user's obligation to determine the conditions of safe use of the product.

Linde SDSs are furnished on sale or delivery by Linde or the independent distributors and suppliers who package and sell our products. To obtain current SDSs for these products, contact your sales representative, local distributor, or supplier, or download from www.lindeus.com.

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Revision date

: 10/03/2024

NFPA health hazard

: 0 - Materials that, under emergency conditions, would offer no hazard beyond that of ordinary combustible materials.

NFPA fire hazard

: 0 - Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand.

NFPA instability

: 0 - Material that in themselves are normally stable, even under fire conditions.

NFPA specific hazard

: SA - Materials that are simple asphyxiants.



SDS US (GHS HazCom 2012) - Linde 2022

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.