

**Nitrogen**

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MATERIAL SAFETY DATA SHEET**SECTION 1 - IDENTIFICATION**

Product identifier : **Nitrogen**

Product Code(s) : N2

Product Use : Inert gas for pressurization of hydraulic accumulators.

Chemical Family : Inorganic nitrogen compound; Inert gas .

Supplier's name and address: **Parker Hannifin Corporation**
Global Accumulator Division
10711 N. Second Street
Machesney Park, IL, U.S.A.
61115

Manufacturer's name and address: **Refer to Supplier**

Information Telephone # : (815) 636-4100 (Monday - Friday, 8:00am - 5:00pm, Central Standard Time)

24 Hr. Emergency Tel # : INFOTRAC - (800) 535-5053 (Within Continental US); (352) 323-3500 (Outside US)

SECTION 2 - HAZARDS IDENTIFICATION

Classification : WHMIS information: This product is a WHMIS Controlled Product. It meets one or more of the criteria for a controlled product provided in Part IV of the Canadian Controlled Products Regulations (CPR). WHMIS classification:
Class A (Pressurized containers)

OSHA: This material is classified as hazardous under OSHA regulations (29CFR 1910.1200). Hazardous classification:
Compressed gas

Emergency Overview : Colourless gas. No odour.

Caution!
Compressed gas. Closed containers may explode when overheated.
Asphyxiant, can replace oxygen in confined area.

POTENTIAL HEALTH EFFECTS:**Signs and symptoms of short-term (acute) exposure**

Inhalation : Simple asphyxiant - this product does not contain oxygen and may cause asphyxia in confined spaces. Oxygen content in the area must not fall below 18% or harmful effects will result. In extremely high concentrations, product may act as an asphyxiant and cause increased breathing and pulse rates, fatigue and unconsciousness. As asphyxiation progresses, nausea, vomiting, prostration and loss of consciousness may result, eventually leading to convulsions, coma and death.

Skin : No known effect. Not an irritant.

Eyes : No known effect. Not an irritant.

Ingestion : Not an expected route of entry under normal conditions of use. (gas)

Effects of long-term (chronic) exposure

: None reported.

Carcinogenic status : See TOXICOLOGICAL INFORMATION, Section 11.

Additional health hazards : See TOXICOLOGICAL INFORMATION, Section 11.

Potential environmental effects : See ECOLOGICAL INFORMATION, Section 12.



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SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

<u>Ingredients</u>	<u>CAS #</u>	<u>Wt.%</u>
Nitrogen	7727-37-9	100%

SECTION 4 - FIRST AID MEASURES

- Inhalation** : Wear personal protective equipment. A self contained breathing apparatus should be used in emergency situations or instances where exposure levels are not known. Immediately remove person to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen by qualified medical personnel only. Seek immediate medical attention/advice.
- Skin contact** : Not normally required.
- Eye contact** : Not normally required.
- Ingestion** : Not an expected route of entry.
- Notes For Physician** : Treat symptomatically.

SECTION 5 - FIRE FIGHTING MEASURES

- Fire hazards/conditions of flammability** : Not flammable under normal conditions of use. Closed containers may explode with conditions of extreme heat. Asphyxiant, can replace oxygen in confined area. Suffocation, if air is displaced by vapours.
- Flammability classification (OSHA 29 CFR 1910.1200)** : Non-flammable.
- Oxidizing properties** : None known.
- Explosion data: Sensitivity to mechanical impact / static discharge** : Not expected to be sensitive to mechanical impact or static discharge.
- Suitable extinguishing media** : Use media suitable to the surrounding fire such as water fog or fine spray, alcohol foams, carbon dioxide and dry chemical.
- Special fire-fighting procedures/equipment** : Evacuate personnel to safe areas. Firefighters should wear proper protective equipment and self-contained breathing apparatus with full face piece operated in positive pressure mode. If feasible, stop the flow of gas. Move containers from fire area if safe to do so. Shield personnel to protect from venting or rupturing containers. Cool closed containers exposed to fire with water spray. Stay away from ends of cylinders and withdraw immediately in case of rising sounds or discolouration of containers.
- Hazardous combustion products** : None known.
- NFPA Rating** : 0 - Minimal 1 - Slight 2 - Moderate 3 - Serious 4 - Severe
: *Health:* 0 *Flammability:* 0 *Instability:* 0 *Special Hazards:* None

SECTION 6 - ACCIDENTAL RELEASE MEASURES

- Personal precautions** : Restrict access to area until completion of clean-up. Keep all other personnel upwind and away from the spill/release. Ensure clean-up is conducted by trained personnel only. All persons dealing with clean-up should wear the appropriate protective equipment including self-contained breathing apparatus. Refer to Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION, for additional information on acceptable personal protective equipment.
- Environmental precautions** : Ensure spilled product does not enter confined areas.



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- Spill response/cleanup** : Ventilate area of release. Eliminate all ignition sources. Leaks in lines to equipment set-ups can be identified by painting suspected sites with soapy water. Leaks can be located by bubble formation. Stop spill or leak at source if safely possible. If leak cannot be stopped, move cylinders to an open space. Isolate the area until all gas has dispersed. Notify the appropriate authorities as required.
- Prohibited materials** : None known.
- Special spill response procedures** : If a spill/release in excess of the EPA reportable quantity is made into the environment, immediately notify the national response center in the United States (phone: 1-800-424-8802).
US CERCLA Reportable quantity (RQ): None reported.

SECTION 7 - HANDLING AND STORAGE

- Safe Handling procedures** : Before handling, it is very important that engineering controls are operating, and that protective equipment requirements and personal hygiene measures are being followed. People working with this chemical should be properly trained regarding its hazards and its safe use. Oxygen content in the area must not fall below 18% or harmful effects will result. Use only in well-ventilated areas. Avoid inhaling gas. Keep away from extreme heat and flame. Protect cylinders from damage. Open valves slowly to prevent rapid decompression. Shut flow off at cylinder valve and not just at the regulator after use. Do not puncture or incinerate containers.
- Storage requirements** : Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Store in a cool, dry, well ventilated area, away from heat and ignition sources. Do not store in direct sunlight. Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel. Inspect periodically for damage or leaks.
- Incompatible materials** : Lithium ; carbon ;Ozone ;calcium ;Oxygen ;Hydrogen Neodymium Strontium Zirconium Barium
- Special packaging materials** : Always keep in containers made of the same materials as the supply container.

SECTION 8 - EXPOSURE CONTROLS AND PERSONAL PROTECTION

<u>Exposure Limits</u>				
<u>Ingredients</u>	<u>ACGIH TLV</u>		<u>OSHA PEL</u>	
	<u>TWA</u>	<u>STEL</u>	<u>PEL</u>	<u>STEL</u>
Nitrogen	Simple asphyxiant	N/Av	N/Av	N/Av

- Ventilation and engineering measures** : Provide exhaust ventilation or other engineering controls to keep the airborne concentration of vapours below their respective threshold limit value. Recommended monitoring procedures Provide sufficient air exchange and/or exhaust in work rooms. Oxygen content in the area must not fall below 18% or harmful effects will result.
- Respiratory protection** : If engineering controls and work practices are not effective in controlling exposure to this material, then wear suitable approved respiratory protection. Confirmation of which type of respirator is most suitable for the intended application should be obtained from respiratory protection suppliers.
- Skin protection** : Not required under normal conditions of handling.
- Eye / face protection** : Chemical splash goggles are recommended. A full face shield may also be necessary.
- Other protective equipment** : An eyewash station and safety shower should be made available in the immediate working area. Other equipment may be required depending on workplace standards.
- General hygiene considerations** : Avoid inhaling gas. Do not eat, drink or smoke when using this product. Handle in accordance with good industrial hygiene and safety practice.



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SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Physical state	: Gas	Appearance	: colourless
Odour	: odourless	Odour threshold	: odourless
pH	: N/Ap		
Boiling point	: - 195.8°C (- 320.4°F)	Specific gravity	: N/Ap
Melting/Freezing point	: - 210°C (- 346°F)	Coefficient of water/oil distribution	: Log P (oct) = 0.92
Vapour pressure (mmHg @ 20° C / 68° F)	: N/Ap. Colourless gas at room temperature.	Solubility in water	: Insoluble or very slightly soluble in water.
Vapour density (Air = 1)	: 0.967 @ 21.1°C	Evaporation rate (n-Butyl acetate = 1)	: N/Ap
Volatile organic Compounds (VOC's)	: N/Ap	Volatiles (% by weight)	: N/Av
Flash point	: Non-flammable.		
Flash point Method	: N/Ap	Auto-ignition temperature	: N/Ap
Lower flammable limit (% by vol.)	: N/Ap	Upper flammable limit (% by vol.)	: N/Ap
Flame Projection Length	: N/Ap	Flashback observed	: N/Ap
Viscosity	: N/Av		
Absolute pressure of container	: N/Av		

Molecular Weight: 28.013

Molecular formula: N2

Section 10: Stability And Reactivity

Stability and reactivity	: Stable under the recommended storage and handling conditions prescribed.
Hazardous polymerization	: Hazardous polymerization does not occur.
Conditions to avoid	: High temperatures. Ensure adequate ventilation, especially in confined areas.
Materials To Avoid And Incompatibility	: See Section 7 (Handling and Storage) for further details.
Hazardous decomposition products	: None known, refer to hazardous combustion products in Section 5.

SECTION 11 - TOXICOLOGICAL INFORMATION

Target organs	: Respiratory system
Routes of exposure	: <i>Inhalation:</i> YES <i>Skin Absorption:</i> NO <i>Skin & Eyes:</i> NO <i>Ingestion:</i> NO
Toxicological data	: There is no available data for the product itself, only for the ingredients. See below for individual ingredient acute toxicity data.

<u>Ingredients</u>	<u>LC₅₀(4hr)</u>	<u>LD₅₀</u>	
	<u>inh, rat</u>	<u>(Oral, rat)</u>	<u>(Rabbit, dermal)</u>
Nitrogen	N/Av	N/Ap	N/Ap

Carcinogenic status	: No components are listed as carcinogens by ACGIH, IARC, OSHA or NTP.
Reproductive effects	: Not expected to have other reproductive effects.
Teratogenicity	: Not expected to be a teratogen.
Mutagenicity	: Not expected to be mutagenic in humans.
Epidemiology	: No information available.
Sensitization to material	: Not expected to be a skin or respiratory sensitizer.
Synergistic materials	: No information available.
Irritancy	: Not an irritant.
other important hazards	: None known.

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Conditions aggravated by overexposure

: Pre-existing skin, eye and respiratory disorders.

SECTION 12 - ECOLOGICAL INFORMATION**Ecotoxicity** : No data is available on the product itself.**Mobility** : No information available.**Persistence** : No information available.**Bioaccumulation potential** : No information available.**Other Adverse Environmental effects**

: No information available.

SECTION 13 - DISPOSAL CONSIDERATIONS**Handling for Disposal** : See Section 7 (Handling and Storage) for further details. Allow to safely dissipate into atmosphere. Do not puncture or incinerate containers.**Methods of Disposal** : Return to vendor with cylinder valve tightly closed and valve cap in place. Dispose in accordance with all applicable federal, state, provincial and local regulations. Contact your local, state, provincial or federal environmental agency for specific rules.**RCRA** : If this product, as supplied, becomes a waste in the United States, it may meet the criteria of a hazardous waste as defined under RCRA, Title 40 CFR 261. It is the responsibility of the waste generator to determine the proper waste identification and disposal method. For disposal of unused or waste material, check with local, state and federal environmental agencies.**SECTION 14: TRANSPORT INFORMATION**

Regulatory Information	UN Number	Shipping Name	Class	Packing Group	Label
TDG	UN3164	ARTICLES, PRESSURIZED, HYDRAULIC	2.2	none	
TDG Additional information	May be shipped as a LIMITED QUANTITY in containers no larger than 125 mL, in packages not exceeding 30 kg gross mass. Under the TDGR, refer to Section 1.17 for additional exemption information, if shipping under this exemption.				
49CFR/DOT	UN3164	Articles, pressurized pneumatic or hydraulic	2.2	none	
49CFR/DOT Additional information	For shipping exceptions, refer to section 173.306 of the 49 CFR. The following DOT Special permit applies to this product: DOT-SP 1862				

SECTION 15 - REGULATORY INFORMATION**US Federal Information:**

TSCA: All listed ingredients appear on the Toxic Substances Control Act (TSCA) inventory.

CERCLA Reportable Quantity (RQ) (40 CFR 117.302): None reported.

SARA TITLE III: Sec. 302, Extremely Hazardous Substances, 40 CFR 355: No Extremely Hazardous Substances are present in this material.

SARA TITLE III: Sec. 311 and 312, MSDS Requirements, 40 CFR 370 Hazard Classes: Pressurized gas hazard. Under SARA Sections 311 and 312, the EPA has established threshold quantities for the reporting of hazardous chemicals. The current thresholds are 500 pounds for the threshold planning quantity (TPQ), whichever is lower, for extremely hazardous substances and 10,000 pounds for all other hazardous chemicals.

SARA TITLE III: Sec. 313, Toxic Chemicals Notification, 40 CFR 372: This material is not subject to SARA notification requirements, since it does not contain any Toxic Chemical constituents above de minimus concentrations.



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US State Right to Know Laws:

California Proposition 65: To the best of our knowledge, this product does not contain any chemicals known to the State of California to cause cancer or reproductive harm.

Other U.S. State "Right to Know" Lists: The following chemicals are specifically listed by individual States: Nitrogen (MA, MN, NJ, PA).

International Information:

Canadian Environmental Protection Act (CEPA) information: All ingredients listed appear on the Domestic Substances List (DSL).

WHMIS information: This product is a WHMIS Controlled Product. It meets one or more of the criteria for a controlled product provided in Part IV of the Canadian Controlled Products Regulations (CPR). Refer to Section 2 for a WHMIS Classification for this product.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and this MSDS contains all the information required by the CPR.

SECTION 16 - OTHER INFORMATION

HMIS Rating	:	* - Chronic hazard	0 - Minimal	1 - Slight	2 - Moderate	3 - Serious	4 - Severe
		<i>Health:</i>	0	<i>Flammability:</i>	0	<i>Reactivity:</i>	0

Legend



- : ACGIH: American Conference of Governmental Industrial Hygienists
- CAS: Chemical Abstract Services
- CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act of 1980
- DOT: Department of Transportation
- EPA: Environmental Protection Agency
- HMIS: Hazardous Materials Identification System
- HSDB: Hazardous Substances Data Bank
- IARC: International Agency for Research on Cancer
- IATA: International Air Transport Association
- ICAO: International Civil Aviation Organisation
- Inh: Inhalation
- LC: Lethal Concentration
- LD: Lethal Dose
- MA: Massachusetts
- MN: Minnesota
- MSHA: Mine Safety and Health Administration
- N/Ap: Not Applicable
- N/Av: Not Available
- NFPA: National Fire Protection Association
- NIOSH: National Institute of Occupational Safety and Health
- NJ: New Jersey
- NTP: National Toxicology Program
- OSHA: Occupational Safety and Health Administration
- PA: Pennsylvania
- PEL: Permissible exposure limit
- RCRA: Resource Conservation and Recovery Act
- RI: Rhode Island
- RTECS: Registry of Toxic Effects of Chemical Substances
- SARA: Superfund Amendments and Reauthorization Act
- STEL: Short Term Exposure Limit
- TDG: Canadian Transportation of Dangerous Goods Act & Regulations
- TLV: Threshold Limit Values
- TSCA: Toxic Substance Control Act
- TWA: Time Weighted Average
- WHMIS: Workplace Hazardous Materials Identification System



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- References** :
1. ACGIH, Threshold Limit Values and Biological Exposure Indices for 2013.
 2. International Agency for Research on Cancer Monographs, searched 2013.
 3. Canadian Centre for Occupational Health and Safety, CCInfoWeb databases, 2013 (Chempendium, HSDB, RTECs).
 4. Material Safety Data Sheet from manufacturer.
 5. US EPA Title III List of Lists - October 2013 version.
 6. California Proposition 65 List - February 8, 2013 version.

<p>Prepared for: Parker Hannifin Corporation Global Accumulator Division Machesney Park, IL, U.S.A., 61115 Telephone: (815) 636-4100 Please direct all enquiries to Parker Hannifin Corp.</p>	
<p>Prepared by: ICC The Compliance Center Inc. http://www.thecompliancecenter.com</p>	

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END OF DOCUMENT