Universal Industrial Gases, Inc.

SAFETY DATA SHEET

Material Name: Nitrogen, Compressed Gas **SDS ID: UIG-N2-G01-R0**

Section 1 – Product and Company Identification	
Product Identifier:	Nitrogen
Other means of identification:	Nitrogen Gas, N2, GAN (Gaseous Nitrogen), Di-atomic nitrogen, Compressed Nitrogen, Food Grade Nitrogen, Nitrogen NF
Product Uses:	Industrial manufacturing including inerting, medical, metals processing, foods, etc.
Supplier Details:	Universal Industrial Gases, Inc 3001 Emrick Blvd, Suite 320 Bethlehem, PA 18020 USA
Emergency Phone Number:	(610) 559-7967

Section 2 – Hazards Identification	
Classification in accordance with paragraph (d) of §1910.1200	Gas Under Pressure – Compressed gas Simple asphyxiant
Signal word Hazard statement(s) Symbol Precautionary statement	Warning Gas in pipelines may be under pressure, cylinders may explode if heated May displace oxygen and cause rapid suffocation  Read completely and follow all Safety Data Sheets before use Colorless, odorless gas Never enter an area where nitrogen may have caused an oxygen deficiency Ensure proper ventilation Use equipment and materials rated for service Protect cylinders from sunlight, store in ventilated area Rapid release of compressed gas may cause frostbite if contacted
Hazards not otherwise classified	None
Toxicity	Non-toxic but may displace oxygen which can cause dizziness, unconsciousness and death by asphyxiation.

Section 3 – Compositions / Information of Ingredients	
Chemical Name & Formula	Nitrogen, N2
Common Name and Synonyms	Nitrogen Gas, N2, GAN (Gaseous Nitrogen), Di-atomic nitrogen, Compressed Nitrogen, Food Grade Nitrogen, Nitrogen NF
CAS Number	7727-37-9, Nitrogen Compressed
Purity	Nominally 100%, typically provided >99%, by volume. NOTE: Some on-site nitrogen generated gas can be as low as 95%, with balance being primarily oxygen.

Section 4 – First Aid Measures	
Inhalation	Simple asphyxiant, may cause acute effects including dizziness, drowsiness, nausea, rapid breathing, unconsciousness, and death. Immediately remove victim to fresh air containing sufficient oxygen. If not breathing provide artificial respiration or oxygen by trained personnel, get immediate medical attention. Rescuers must not enter an oxygen deficient area without self contained breathing apparatus.
Skin Contact	No adverse effects expected from gas at normal temperature. Very cold gas may cause frostbite.
Eye Contact	No adverse effects normally expected from gas. Avoid high pressure or very cold gas. Remove contact lenses. Flush with water, seek medical attention if irritation persists.
Ingestion	Not an expected route of exposure, refer to inhalation section above.
Most important symptoms, effects, acute and delayed	Refer to asphyxiation acute effects as per inhalation above
Immediate medical attention and special treatment needed	If symptoms occur, seek medical advice and attention.

Section 5 – Fire Fighting Measures	
Suitable extinguishing media	Nitrogen is not flammable, will not burn. Use appropriate extinguishing media for surrounding fire.
Special hazards arising (e.g. nature of any hazardous combustion process)	If product under pressure in closed contained, heat from fire may cause pressure to rise and container to burst. Cool any containers with water if possible. Under certain high temperature conditions, nitrogen may react violently to form nitrides with certain metals such as lithium, titanium, magnesium.
Special protective equipment and precautions for firefighters	Wear appropriate protective gear and self-contained breathing apparatus. Never attempt to rescue a suspected asphyxiation victim without proper precautions, training and equipment to also avoid exposure to oxygen deficient conditions.

Section 6 – Accidental Release Measures	
Personal precautions, protective equipment, emergency procedures	First responders should ensure oxygen concentration in area is safe (>19.5%) or be trained and use self-contained breathing apparatus before attempting to rescue a victim. Evacuate personnel to safe area, do not allow personnel to walk or drive in area that is potentially oxygen deficient. Use oxygen monitors to ensure adequate oxygen levels. Never enter suspected oxygen deficient area without being properly trained and wearing a self-contained breathing apparatus.
Methods and materials for containment and clean up	Isolate any leaking sources of nitrogen if it can be done safely. Ventilate the area if possible.

Section 7 – Handling and Storage	
Precautions for safe handling	Protect system components against physical damage. Use adequate ventilation. Avoid inhalation and potential confined space areas, use oxygen monitors where appropriate. Never work on a pressurized system. Wear gloves when moving cylinders. Safety glasses always recommended when working with compressed gases. Refer to CGA Safety Bulletin SB-2 “Oxygen Deficient Atmospheres” for additional recommendations.
Conditions for safe storage, including any incompatibilities	Use storage containers, piping, valves and fittings designed for storage and distribution of Gaseous Nitrogen. Protect cylinders against physical damage. Store in cool, dry, well-ventilated, fireproof area, away from flammable materials and corrosive atmospheres. Store away from heat and ignition sources and out of direct sunlight. Do not store near elevators, corridors or loading docks. Do not allow area where cylinders are stored to exceed 52°C (125°F). Move cylinders with a suitable hand-truck. Do not drag, slide or roll cylinders. Do not drop cylinders or permit them to strike each other. Secure cylinders firmly. Leave the valve protection cap in-place (where provided) until cylinder is placed into service and after it is taken out of service. Use designated CGA fittings and other support equipment. Do not heat cylinder by any means to increase the discharge rate of the product from the cylinder. Use check valve or trap in discharge line to prevent hazardous backflow into the cylinder. Do not use oils or grease on gas-handling fittings or equipment.

Section 8 – Exposure Controls / Personal Protection	
Permissible exposure limits	There are no exposure limits for this product. Oxygen levels should be kept above 19.5% for all personnel.
Appropriate Engineering Controls	Adequate ventilation. Low Oxygen monitors and alarms in areas where oxygen deficiency is possible. Pressurized systems to have relief valves properly sized, calibrated and vented.
Individual protection measures / personal protective equipment	Use self-contained breathing apparatus for entering any suspected oxygen deficient area. Personnel oxygen monitors. Gloves and safety shoes for handling containers/cylinders. Safety glasses / face protection if exposure to discharged gases, eye wash station. Check systems regularly for leaks.

Section 9 – Physical and Chemical Properties			
Property	**Value**	**Property**	**Value**
Appearance	Colorless	Upper/Lower Explosive Limit	NA
Odor	Odorless	Vapor Pressure	NA
Odor Threshold	NA	Vapor Density	0.0725 lb/ft3 @ 70°F 1.16 kg/m3 @ 21.1°C
Molecular Weight	28.01 g/mol	Specific Volume	13.80 ft3/lb @ 70°F 0.861 m3/kg @ 21.1 °C
pH	NA	Relative Density to Air (=1)	0.97
Melting / Freezing Point	-346°F / -210°C	Solubility	Slight in water
Boiling Point	-321°F / -196°C	Partition Coefficient: n-octanol / water	NA
Flash Point	NA	Auto Ignition Temperature	NA
Evaporation Rate	NA	Decomposition Temperature	NA
Flammability	Non-flammable	Viscosity (dynamic)	0.0175 centipoise @70°F

Section 10 – Stability and Reactivity	
Reactivity	Not reactive under normal conditions
Chemical Stability	Stable at normal temperatures and pressures
Possibility of Hazardous Reactions	None typically but will react with metals such as lithium, titanium, and magnesium at high temperatures.
Conditions to Avoid	Exposure to certain reactive metals at high temperatures High concentrations causing oxygen deficiency atmosphere leading to asphyxiation effects (see sections 4, 6, 7 & 8)
Incompatible Materials	None known
Hazardous Decomposition Products	None

Section 11 Toxicology Information	
Information on likely routes of exposure	No chemical toxicity Inhalation – simple asphyxiant Ingestion – not an expected route Skin – no affects expected normally, cold gas may cause frostbite Eye – no effects expected normally, cold gas may cause frostbite
Symptoms related to physical, chemical, toxicological characteristics	As a simple asphyxiant, the presence of high concentrations causing an oxygen deficiency in air has symptoms which include dizziness, drowsiness, nausea, unconsciousness, and death.
Delayed, Immediate, chronic effects from short and long term exposure	As a simple asphyxiant, the immediate effects of high concentrations causing oxygen deficiency in air include dizziness, drowsiness, nausea, unconsciousness, and death.
Numerical measures of toxicity	LD50 – not available LC50 – not available
Carcinogen Listing	Not carcinogenic

Section 12 – Ecological Information	
Ecotoxicity	None
Persistence and degradability	Not applicable. Normal air is approximately 78% nitrogen by volume.
Bio-accumulative potential	No information available
Mobility in Soil	No information available
Other Adverse effects	No known other effects

Section 13 – Disposal Considerations	
Waste residues and disposal guidelines	Product will normally dissipate in air. Dispose of any contents or containers in accordance with applicable regulations. Cylinders should be returned in original shipping container/method with any valves closed and protective plugs or caps securely in place.

Section 14 – Transport Information	
US DOT UN ID Number	UN1066
UN Proper Shipping Name	Nitrogen, compressed
DOT Transportation Hazard Class	DOT Class 2.2 (Non-Flammable compressed gas) Emergency Response Guide No. 121 
Packing Group	Not Applicable
Environmental Hazards	None
Transport Bulk Codes	Not Applicable
Special Precautions	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. Isolate area to avoid personnel exposure or other vehicles entering the area. High pressure gas cylinders should have outlet valves closed, with plugs/valve caps secured in place. Load space must be separated from driver compartment. Cylinders should be firmly secured from moving or falling during transport.

Section 15 - Regulatory Information
US Federal TSCA 8(a) CDR - exempted
US EPA SARA Title III Section 312 hazard Category: Sudden release of pressure hazard
US States Right-To-Know Lists: Massachusetts, New Jersey, Pennsylvania

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Section 16 – Other Information

US Nation Fire Protection Agency (NFPA) hazard ratings:

(Scale of 0 to 4, with 0 = lowest increasing to 4 = highest hazard, refer to NFPA for details related to the relative rating for each category)

Health: 0
Fire: 0
Reactivity: 0
Special: SA (Simple Asphyxiant)

US Hazardous Material Information System (HMIS) ratings:

(Scale: 0 = minimal, 1 = slight, 2= moderate, 3 = serious, 4 = severe)

HEALTH	0
FLAMMABILITY	0
PHYSICAL HAZARDS	3

New SDS: 29 June 2018 Rev 0

USE OF THIS INFORMATION:

Universal Industrial Gases, Inc. offers this information to promote the safe use of this product through awareness of hazards and safety information. Those who use or transport or sell this product to others should:
1) Disseminate this information internally to all workplace areas, employees, agents and contractors likely to encounter this product
2) Provide supplemental hazards awareness, safety information, operation and maintenance procedures to the workplace areas and employees, agents and contractors likely to encounter this product
3) Furnish this information to all their customers who purchase this product
4) Ask each purchaser or user of the product to notify its employees and customers of the product hazards and safety information.

DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES:

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