Safety Data Sheet
2979

Section 1: Product and Company Identification

Absolute Accuracy
4591 S Wayside Dr
Houston, TX 77087
(832) 571-2387

Product Code: 2979
Part Number: 2979
Synonyms:
Recommended Use:
Usage Restrictions:

Section 2: Hazards Identification

Danger

Hazard Classification:
Acute Gas Inhale Toxicity (Category 1)
Corrosive To Metal (Category 1)
Gases Under Pressure
Oxidizing Gas (Category 1)
Skin Corrosion (Category 1.A)

Hazard Statements:
Causes severe skin burns and eye damage
Contains gas under pressure; may explode if heated
Fatal if inhaled
May be corrosive to metals
May cause or intensify fire; oxidizer

Precautionary Statements
Prevention:
Do not breathe dust/fume/gas/mist/ vapors/spray..
[In case of inadequate ventilation] wear respiratory protection.
Keep and store away from clothing and combustible materials.
Wash thoroughly after handling.
Keep reduction valves/valves and fittings free from oil and grease.
Use only outdoors or in a well-ventilated area.
Wear protective gloves, protective clothing, eye protection and face protection.
Keep only in original container.

Response:
If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
Immediately call a poison center or doctor.
In case of fire: Stop leak if safe to do so.
Absorb spillage to prevent material damage.
Specific treatment is urgent.
If swallowed: Rinse mouth. Do NOT induce vomiting.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If inhaled: Remove person to fresh air and keep comfortable for breathing.

Storage:
Store in a well-ventilated place. Keep container tightly closed.
Protect from sunlight.
Store locked up.
Store in corrosive resistant container with a resistant inner liner.

Disposal:
Dispose of contents and/or container in accordance with applicable regulations.

Section 3: Composition/Information on Ingredients

	CAS #	Concentration
Fluorine	7782-41-4	5%
Nitrogen	7727-37-9	BALANCE

	Chemical Substance	Chemical Family	Trade Names
Fluorine	Fluorine	Halogens	Fluorine-19
Nitrogen	NITROGEN, COMPRESSED GAS	Inorganic gases	DIATOMIC NITROGEN; DINITROGEN; NITROGEN; NITROGEN-14; NITROGEN GAS; UN 1066; N2

Section 4: First Aid Measures

	Skin Contact	Eye Contact	Ingestion	Inhalation	Note to Physicians
Fluorine	Prevent skin contact. Wash affected area with soap and water, and rinse for 15 minutes. For exposure to liquid, immediately warm frostbite area with warm water not to exceed 105F (41C). Seek medical attention immediately.	For contact with the liquid, immediately flush eyes thoroughly with warm water for at least 15 minutes. Seek medical attention immediately.	Seek medical attention immediately.	Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, qualified personnel may give oxygen. Seek medical attention immediately.	
Nitrogen	Wash exposed skin with soap and water.	Flush eyes with plenty of water.	If a large amount is swallowed, get medical attention.	If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.	For inhalation, consider oxygen.

Section 5: Fire Fighting Measures

	Suitable Extinguishing Media	Products of Combustion	Protection of Firefighters
Fluorine	Use extinguishing media suitable for surrounding fire.	toxic combustion products including hydrogen fluoride and oxygen difluoride	▪ Emergency or planned entry into unknown concentrations or IDLH conditions: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode (APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus ▪ (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against the compound of concern Any appropriate escape-type, self-contained breathing apparatus
Nitrogen	Non-flammable. Use suitable extinguishing media for surrounding fire. Cylinders may rupture or explode if exposed to heat.	Non-flammable	▪ Respiratory protection may be needed for frequent or heavy exposure.

Section 6: Accidental Release Measures

	Personal Precautions	Environmental Precautions	Methods for Containment
Fluorine	Immediately evacuate all personnel from danger area. Use self-contained breathing apparatus and protective clothing where needed. Shut off leak if without risk. Ventilate area of leak or move cylinder to a well-ventilated area. Before reentering area, especially confined spaces, check for sufficient oxygen with an appropriate device. Remove all sources of ignition.	Prevent waste from contaminating the surrounding environment. Keep personnel away. Discard any product, residue, disposable container, or liner in an environmentally acceptable manner, in full compliance with federal, state, and local regulations. If necessary, call your local supplier for assistance.	Contain large spills with a dike; pump product into recovery drums.
Nitrogen	Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas.	No significant effects from contamination expected.	Stop leak if possible without personal risk.

	Methods for Cleanup	Other Information
Fluorine	Soak up small spills with absorbent material.	
Nitrogen	N/A	N/A

Section 7: Handling and Storage

	Handling	Storage
Fluorine	Store and use with adequate ventilation. Firmly secure cylinders upright to keep them from falling or being knocked over. Screw valve protection cap firmly in place by hand. Store only where temperature will not exceed 125F (52C). Store full and empty cylinders separately. Use a first-in, first-out inventory system to prevent storing full cylinders for long periods.	Do not get liquid in eyes, on skin, or clothing. Do not smoke in areas where fluorocarbons are used. Wash hands thoroughly after handling fluorocarbons or materials sprayed with them, especially before eating or smoking. Protect cylinders from damage. Use a suitable hand truck to move cylinders; do not drag, roll, slide, or drop. Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve. 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. Open valve slowly. Close cylinder valve after each use; keep closed even when empty. If valve is hard to open, discontinue use and contact your supplier.
Nitrogen	Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101.	Keep separated from incompatible substances.

Section 8: Exposure Controls/Personal Protection

	Exposure Guidelines
Fluorine	NIOSH/OSHA Up to 1 ppm: (APF = 10) Any supplied-air respirator Up to 2.5 ppm: (APF = 25) Any supplied-air respirator operated in a continuous-flow mode Up to 5 ppm: (APF = 50) Any self-contained breathing apparatus with a full facepiece (APF = 50) Any supplied-air respirator with a full facepiece Up to 25 ppm: (APF = 2000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
Nitrogen	NITROGEN, COMPRESSED GAS: NITROGEN: ACGIH (simple asphyxiant)

Engineering Controls

Handle only in fully enclosed systems.

	Eye Protection	Skin Protection	Respiratory Protection
Fluorine	Wear splash resistant safety goggles.	Wear chemically resistant clothing.	Emergency or planned entry into unknown concentrations or IDLH conditions: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode (APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus
Nitrogen	Eye protection not required, but recommended.	Protective clothing is not required.	Respiratory protection may be needed for frequent or heavy exposure.

General Hygiene considerations

- Avoid breathing vapor or mist
- Avoid contact with eyes and skin
- Wash thoroughly after handling and before eating or drinking

Section 9: Physical and Chemical Properties

	Physical State	Appearance	Color	Change in Appearance	Physical Form	Odor	Taste
Fluorine	Gas	Yellow to green	Yellow to green	N/A	Gas or liquid	Pungent, irritating	N/A
Nitrogen	Gas	Clear	Colorless	N/A	Gas	Odorless	Tasteless

	Flash Point	Flammability	Partition Coefficient	Autoignition Temperature	Upper Explosive Limits	Lower Explosive Limits
Fluorine	Nonflammable	N/A	N/A	Nonflammable	N/A	N/A
Nitrogen	Not flammable	Not available	Not available	Nonflammable	Nonflammable	Nonflammable

	Boiling Point	Freezing Point	Vapor Pressure	Vapor Density	Specific Gravity	Water Solubility	pH	Odor Threshold	Evaporation Rate	Viscosity
Fluorine	-307F	-363F	760 mm Hg at -306.2 F	1.695 (relative to air)	1.5127 at -306.6 F	Reacts with water	N/A	0.035 ppm	N/A	N/A
Nitrogen	-321 F (-196 C)	-346 F (-210 C)	760 mmHg @ -196 C	0.967 (Air=1)	Not applicable	1.6% @ 20 C	Not applicable	Not available	Not applicable	0.01787 cP @ 27 C

	Molecular Weight	Molecular Formula	Density	Weight per Gallon	Volatility by Volume	Volatility	Solvent Solubility
Fluorine	38	F2	@ 21.1C (70F): 0.106 lb./ft3 (1.70 kg/m3)	N/A	N/A	N/A	
Nitrogen	28.0134	N2	1.2506 g/L	Not available	100%	1	Soluble: Liquid ammonia

Section 10: Stability and Reactivity

	Stability	Conditions to Avoid	Incompatible Materials
Fluorine	Reacts violently with all combustible materials, except the metal containers in which it is shipped. Reacts with H2O to form hydrofluoric acid.	Reacts violently with all combustible materials, except the metal containers in which it is shipped. Reacts with H2O to form hydrofluoric acid.	Water, nitric acid, oxidizers, organic compounds
Nitrogen	Stable at normal temperatures and pressure.	Stable at normal temperatures and pressure.	Metals, oxidizing materials

	Hazardous Decomposition Products	Possibility of Hazardous Reactions
Fluorine	Toxic combustion products including hydrogen fluoride and oxygen difluoride	Will not polymerize
Nitrogen	Oxides of nitrogen	Will not polymerize.

Section 11: Toxicology Information

Acute Effects

	Oral LD50	Dermal LD50	Inhalation

	Oral LD50	Dermal LD50	Inhalation
Nitrogen	Not available	Not available	Nausea, vomiting, difficulty breathing, headache, drowsiness, dizziness, tingling sensation, loss of coordination, convulsions, coma

	Eye Irritation	Skin Irritation	Sensitization
Fluorine	Irritation (possibly severe), tearing, eye damage	Causes chemical burns. Laryngeal spasm, wheezing; pulmonary edema; in animals: liver, kidney damage	Acute toxicity, Category 1, inhalation; H330: Fatal if inhaled. Skin corrosion, Category 1A; H314: Causes severe skin burns and eye damage.
Nitrogen	Contact with rapidly expanding gas may cause burns or frostbite	No information on significant adverse effects	Difficulty breathing

Chronic Effects

	Carcinogenicity	Mutagenicity	Reproductive Effects	Developmental Effects
Fluorine	Not a carcinogen	Available.	Not established	No data
Nitrogen	Not hazardous	Not available	Not available	No data

Section 12: Ecological Information

Fate and Transport

	Eco toxicity	Persistence / Degradability	Bioaccumulation / Accumulation	Mobility in Environment
Fluorine	Fish toxicity: TLm (trout) time period not specified = 2.3 ppm (fresh water) Invertibrate toxicity: Not available Algal toxicity: Not available Phyto toxicity: EC50 (Lemna minor duckweed) 4 weeks = > 60,000 µg/L Other toxicity: N/A	Persistence: Fluorine will react to form hydrofluoric acid which will be dissipated by natural alkalinity. Biodegradation: Fluorine will biodegrade	Not available	Not mobile
Nitrogen	Fish toxicity: Not available Invertibrate toxicity: Not available Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available	Not available	Not available	Not available

Section 13: Disposal Considerations

Fluorine	Do not attempt to dispose of residual or unused quantities. Return cylinder to supplier.
Nitrogen	Dispose in accordance with all applicable regulations.

Section 14: Transportation Information

U.S. DOT 49 CFR 172.101

DOT Information For This Mixture

Shipping Name	Compressed gas, toxic, n.o.s. (Nitrogen, Fluorine)

UN Number	UN1955
Hazard Class	2.3
Hazard Information	POISON GAS Oxidizer Sub

Individual Component Information

	Proper Shipping Name	ID Number	Hazard Class or Division	Packing Group	Labeling Requirements	Passenger Aircraft or Railcar Quantity Limitations	Cargo Aircraft Only Quantity Limitations	Additional Shipping Description
Fluorine	Fluorine, compressed	UN 1045	2.3	N/A	Primary Hazard: Toxic Gas Subsidiary Hazard: Oxidizer Tertiary Hazard: Corrosive	Forbidden	Forbidden	N/A
Nitrogen	Nitrogen, compressed	UN1066	2.2	Not applicable	2.2	75 kg or L	150 kg	N/A

Canadian Transportation of Dangerous Goods

	Shipping Name	UN Number	Class	Packing Group / Risk Group
Fluorine	Fluorine, compressed	UN 1045	2.3	N/A
Nitrogen	Nitrogen, compressed	UN1066	2.2	Not applicable

Section 15: Regulatory Information

U.S. Regulations

	CERCLA Sections	SARA 355.30	SARA 355.40
Fluorine	10 lbs. RQ	500 LBS TPQ	10 LBS RQ
Nitrogen	Not regulated.	Not regulated.	Not regulated.

SARA 370.21

	Acute	Chronic	Fire	Reactive	Sudden Release
Fluorine	Yes	Yes	No	Yes	Yes
Nitrogen	Yes	No	No	No	Yes

SARA 372.65

Fluorine	Not available
Nitrogen	Not regulated.

OSHA Process Safety

Fluorine	Not available
Nitrogen	Not regulated.

State Regulations

	CA Proposition 65
Fluorine	Fluorine is not a listed substance for which the State of California requires warning under this statute.
Nitrogen	Not regulated.

Canadian Regulations

	WHMIS Classification
Fluorine	A, D1A, C, E
Nitrogen	A

National Inventory Status

	US Inventory (TSCA)	TSCA 12b Export Notification	Canada Inventory (DSL/NDSL)
Fluorine	Listed on inventory.	Not listed.	Listed on inventory.
Nitrogen	Listed on inventory.	Not listed.	Listed on inventory.

Section 16: Other Information

	NFPA Rating
Fluorine	HEALTH=4 FIRE=0 REACTIVITY=4 SPECIAL=W-2 OX
Nitrogen	HEALTH=0 FIRE=0 REACTIVITY=0 SPECIAL=SA

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard