1. IDENTIFICATION

Product identifier
Product Name
FLUORINE (20%), NITROGEN

Other means of identification
Safety data sheet number
LIND-M0086
UN/ ID no.
UN3306

Recommended use of the chemical and restrictions on use
Recommended Use
Industrial and professional use. Excimer laser gas.
Uses advised against
Consumer use

Details of the supplier of the safety data sheet
Linde Gas North America LLC - Linde Merchant Production Inc. - Linde LLC
575 Mountain Ave.
Murray Hill, NJ 07974
Phone: 908-464-8100
www.lindeus.com

Linde Gas Puerto Rico, Inc.
Road 869, Km 1.8
Barrio Palmas, Catano, PR 00962
Phone: 787-641-7445
www.pr.lindegas.com

Linde Canada Limited
5860 Chedworth Way
Mississauga, Ontario L5R 0A2
Phone: 905-501-1700
www.lindecanada.com

* May include subsidiaries or affiliate companies/divisions.

For additional product information contact your local customer service.

Emergency telephone number
Company Phone Number
800-232-4726 (Linde National Operations Center, US)
905-501-0802 (Canada)
CHEMTREC: 1-800-424-9300 (North America) +1-703-527-3887 (International)
OSHA Regulatory Status
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

<table>
<thead>
<tr>
<th>Hazard Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity - Inhalation (Gases)</td>
<td>Category 2</td>
</tr>
<tr>
<td>Skin corrosion/ irritation</td>
<td>Category 1 Sub-category A</td>
</tr>
<tr>
<td>Serious eye damage/ eye irritation</td>
<td>Category 1</td>
</tr>
<tr>
<td>Specific target organ toxicity (single exposure)</td>
<td>Category 3</td>
</tr>
<tr>
<td>Oxidizing gases</td>
<td>Category 1</td>
</tr>
<tr>
<td>Gases under pressure</td>
<td>Compressed gas</td>
</tr>
</tbody>
</table>

Label elements

Signal word: Danger

Hazard Statements
May cause or intensify fire; oxidizer
Contains gas under pressure; may explode if heated
Fatal if inhaled
Causes severe skin burns and eye damage
Corrosive to the respiratory tract

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 oil and grease
Do not breathe gas.
Wash hands thoroughly after handling
Use and store only outdoors or in a well ventilated place
Wear protective gloves, protective clothing, eye protection, respiratory protection, and/ or face protection
Use backflow preventive device in piping
Use only with equipment of compatible materials of construction and rated for cylinder pressure
Use only with equipment passivated before use
Use only with equipment cleaned for oxygen service
Do not open valve until connected to equipment prepared for use
Open valve slowly
Close valve after each use and when empty
When returning cylinder, install leak tight valve outlet cap or plug

Precautionary Statements - Response
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/ physician.
IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower. Wash contaminated clothing before reuse.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Immediately call a POISON CENTER or doctor/ physician
In case of fire: Stop leak if safe to do so
3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS No.</th>
<th>Volume %</th>
<th>Chemical Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen</td>
<td>7727-37-9</td>
<td>60 - 100</td>
<td>N₂</td>
</tr>
<tr>
<td>Fluorine</td>
<td>7782-41-4</td>
<td>10 - 30</td>
<td>F₂</td>
</tr>
</tbody>
</table>

Composition listed covers broad ranges rather than exact percentages for specific products.

4. FIRST AID MEASURES

**Description of first aid measures**

**General advice**
Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.

**Inhalation**
Remove to fresh air and keep comfortable for breathing. If breathing is difficult, give oxygen. If breathing has stopped, give artificial respiration. Get medical attention immediately.

**Skin contact**
Wash off immediately with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Dermal burns may be treated with calcium gluconate gel or slurry in water or glycerine. This compound binds the active fluorides in an insoluble form and limits burn extension and pain. Immediate medical attention is required.

**Eye contact**
Immediately flush eyes with running water for at least 30 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Keep eye wide open while rinsing. Do not rub affected area. Immediate medical attention is required.

**Ingestion**
Not an expected route of exposure.

**Self-protection of the first aider**
RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS. Use personal protective equipment. Avoid contact with skin, eyes and clothing. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**Most important symptoms and effects, both acute and delayed**

**Symptoms**
Due to fluorine component in mixture, product may cause respiratory irritation, coughing, breathing difficulty. Inhalation of corrosive fumes/ gases may cause coughing, choking, headache, dizziness, and weakness for several hours. Pulmonary edema may occur with tightness in the chest, shortness of breath, bluish skin, decreased blood pressure, and increased heart rate. May cause burns of eyes, skin and mucous membranes. Symptoms may be delayed.

**Indication of any immediate medical attention and special treatment needed**
Delayed pulmonary edema may occur. For dermal exposure, the use of 2.5-33% calcium gluconate or carbonate gel or slurry has been recommended. The gel is either placed into a surgical glove into which the affected extremity is then placed or applied directly on the burn. This compound binds...
with the active fluorides in an insoluble form and limits burn extension and pain. Calcium chloride should not be used.

5. FIRE-FIGHTING MEASURES

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

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. This is a strong oxidizer and will react vigorously or explosively with many materials including fuels. Will support and accelerate combustion of combustible materials (wood, paper, oil, debris, etc). The product causes burns of eyes, skin and mucous membranes. Thermal decomposition can lead to release of irritating and toxic gases and vapors. Contact with water will cause hydrolysis to Hydrofluoric acid. Do not allow runoff from fire-fighting to enter drains or water courses. Runoff may pollute waterways. Cylinders may rupture under extreme heat.

Protective equipment and precautions for firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Corrosive hazard. Wear chemically protective gloves/ clothing and eye/ face protection.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions
Evacuate personnel to safe areas. Keep people away from and upwind of spill/ leak. Ensure adequate ventilation, especially in confined areas. Monitor concentration of released product. Eliminate all ignition sources if safe to do so. Use personal protection recommended in Section 8. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.

Environmental precautions
Prevent spreading of vapors through sewers, ventilation systems and confined areas.

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.

Methods for cleaning up
Return cylinder to Linde or an authorized distributor.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling
Handle only in areas with extensive venting capabilities, preferably a gas handling cabinet. Consider installation of fluorine gas detection equipment in handling areas. Any detection of fluorine odor should trigger immediate response and corrective action. Gas handling equipment must be cleaned for oxygen service. Equipment must be dry, purged with dry nitrogen or other inert gas and meticulously leak checked before connecting cylinder to system. Open valve slowly. Prior to disconnecting cylinder from system, manifold and pigtails must be purged with inert gas. Keep valves and fittings free from oil and grease. Use only equipment of compatible materials of construction. Most metals form a passive fluoride film with low pressure fluorine that protects the metals from further corrosion. The reaction with metals and fluorine is relatively slow at room
temperature, but becomes vigorous and self-sustaining if the temperature is elevated. Monel® and nickel are preferred for high temperature applications. Teflon® is the preferred gasket material. Keep equipment scrupulously dry. Many of the metal fluorides are water soluble so that the passive film corrosion protection may be destroyed if wetted with water. Use only with equipment passivated before use. If handling fluorine mixes greater than 5%, it is recommended that equipment be passivated by exposing it to <3% fluorine at 100 psig for several hours. Mixtures of greater than 35% fluorine in inert gas should be handled in systems designed for 100% fluorine. Process valves should be opened and closed with remote controlled extensions passing through a suitable barricade for additional protection.

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. "NO SMOKING" signs should be posted in storage and use areas.

Protect cylinders from physical damage; do not drag, roll, slide or drop. When moving cylinders, even for short distance, use a cart designed to transport cylinders. Never attempt to lift a cylinder by its valve protection cap. Never insert an object (e.g. wrench, screw driver, 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 backflow preventive device in piping. Use only with equipment rated for cylinder pressure. 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.

### 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

Fluorine present in this mixture will react with nearly all organic and inorganic materials. Reactions of Fluorine with bases may be violent. Combustible material. Water. Moisture.

### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### Control parameters

#### Exposure Guidelines

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>NIOSH IDLH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluorine</td>
<td>STEL: 2 ppm TWA: 1 ppm TWA: 2.5 mg/ m³ F</td>
<td>TWA: 0.1 ppm TWA: 0.2 mg/ m³ TWA: 2.5 mg/ m³ F TWA: 2.5 mg/ m³ dust (vacated) TWA: 0.1 ppm (vacated) TWA: 0.2 mg/ m³ (vacated) TWA: 2.5 mg/ m³</td>
<td>IDLH: 25 ppm TWA: 0.1 ppm TWA: 0.2 mg/ m³</td>
</tr>
</tbody>
</table>

ACGIH TLV: American Conference of Governmental Industrial Hygienists - Threshold Limit Value. OSHA PEL: Occupational Safety and Health Administration - Permissible Exposure Limits. NIOSH IDLH: Immediately Dangerous to Life or Health Immediately Dangerous to Life or Health.

Other Information

Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992).
Appropriate engineering controls

Engineering Controls
Showers. Eyewash stations. Ventilation systems. Exhaust gas should be vented to a gas treatment system. 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
Tight sealing safety goggles. Face protection 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 fire/flame resistant/retardant clothing. Appropriate protective and chemical resistant gloves, clothing and splash protection, or fully encapsulating vapor protective clothing to prevent exposure. For materials of construction consult protective clothing manufacturer's specifications.

Respiratory protection
Use positive pressure airline respirator with escape cylinder or self contained breathing apparatus for oxygen-deficient atmospheres (<19.5%). If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

General Hygiene Considerations
Handle in accordance with good industrial hygiene and safety practice. Do not get in eyes, on skin, or on clothing. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing before re-use. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product.

### 9. PHYSICAL AND CHEMICAL PROPERTIES

| Information on basic physical and chemical properties |
|---|---|---|---|---|
| Physical state | Compressed gas |
| Appearance | Colorless. |
| Odor | Odorless to pungent. |
| Odor threshold | 0.02 - 0.126 ppm (Fluorine) |
| pH | No data available |
| Melting point | No data available |
| Evaporation rate | Not applicable |
| Fire Hazard | Yes |
| Lower flammability limit: | Not applicable |
| Upper flammability limit: | Not applicable |
| Flash point | Not applicable |
| Autoignition temperature | No data available |
| Decomposition temperature | No data available |
| Partition coefficient | No data available |
| Kinematic viscosity | Not applicable |

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Molecular weight</th>
<th>Boiling point</th>
<th>Vapor Pressure</th>
<th>Vapor density (air =1)</th>
<th>Gas Density kg/m³ @ 20°C</th>
<th>Critical Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen</td>
<td>28.01</td>
<td>-196 °C</td>
<td>Above critical temperature</td>
<td>0.97</td>
<td>1.153</td>
<td>146.9 °C</td>
</tr>
<tr>
<td>Fluorine</td>
<td>38</td>
<td>-188.2 °C</td>
<td>Above critical temperature</td>
<td>1.3</td>
<td>1.57</td>
<td>-128.8 °C</td>
</tr>
</tbody>
</table>

### 10. STABILITY AND REACTIVITY
Reactivity
Fluorine may react with water or moist air to form hydrogen fluoride or hydrofluoric acid

Chemical stability
Stable under normal conditions.

Explosion data
- Sensitivity to Mechanical Impact: None.
- Sensitivity to Static Discharge: None.

Possibility of Hazardous Reactions
Fluorine is the most powerful oxidizer known. It reacts with virtually all organic and inorganic substances, except some inert gases, perfluorinated hydrocarbons and some metals which have been "passivated".

Conditions to avoid
Heat, flames and sparks.

Incompatible materials
Fluorine present in this mixture will react with nearly all organic and inorganic materials. Reactions of Fluorine with bases may be violent. Combustible material. Water. Moisture.

Hazardous Decomposition Products
Hydrogen fluoride. Oxygen difluoride.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Inhalation
Pungent odor of fluorine provides warning of release. Mice exposed to sublethal concentrations (LC50: 150 ppm/1 hr.) of fluorine experienced pulmonary irritation and delayed focal necrosis of the liver and kidney. Corrosive to respiratory system.

Skin contact
Corrosive. Causes severe irritation and or burns. Fluorine may react with water or moist air to form hydrogen fluoride or hydrofluoric acid. Prolonged skin contact may result in localized burns and pain which are not immediately noticeable. Symptoms may be delayed requiring first aid treatment.

Eye contact
Causes serious eye damage.

Ingestion
Not an expected route of exposure.

Information on toxicological effects

Symptoms
Due to fluorine component in mixture, product may cause respiratory irritation, coughing, breathing difficulty. Inhalation of corrosive fumes/ gases may cause coughing, choking, headache, dizziness, and weakness for several hours. Pulmonary edema may occur with tightness in the chest, shortness of breath, bluish skin, decreased blood pressure, and increased heart rate. Symptoms may be delayed.

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

<table>
<thead>
<tr>
<th>Condition</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin corrosion/irritation</td>
<td>Category 1A</td>
</tr>
<tr>
<td>Serious eye damage/eye irritation</td>
<td>Category 1.</td>
</tr>
<tr>
<td>Irritation</td>
<td>Corrosive to living tissue.</td>
</tr>
<tr>
<td>Corrosivity</td>
<td>Not classified.</td>
</tr>
<tr>
<td>Sensitization</td>
<td>Not classified.</td>
</tr>
<tr>
<td>Germ cell mutagenicity</td>
<td>Not classified.</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>This product does not contain any carcinogens or potential carcinogens listed by OSHA, IARC or NTP.</td>
</tr>
<tr>
<td>Reproductive toxicity</td>
<td>Not classified.</td>
</tr>
<tr>
<td>STOT - single exposure</td>
<td>Category 3. Respiratory system.</td>
</tr>
<tr>
<td>STOT - repeated exposure</td>
<td>Not classified.</td>
</tr>
<tr>
<td>Chronic toxicity</td>
<td>Extended low level systemic absorption of fluorides may cause fluorosis, an abnormal calcification pattern of the skeletal system. Chronic exposure to corrosive fumes/ gases may cause erosion of</td>
</tr>
</tbody>
</table>
the teeth followed by jaw necrosis. Bronchial irritation with chronic cough and frequent attacks of pneumonia are common. Gastrointestinal disturbances may also be seen.

Eyes, Skin, Respiratory system, Skeletal system, Kidney, Liver.

Not applicable.

Target Organ Effects  
Aspiration hazard

Numerical measures of toxicity

Component Level Information:

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Oral LD50</th>
<th>Dermal LD50</th>
<th>Inhalation LC50</th>
<th>Inhalation LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluorine 7782-41-4</td>
<td>-</td>
<td>-</td>
<td>= 185 ppm (Rat) 1 h</td>
<td>185 ppm (Rat) 1 hr</td>
</tr>
</tbody>
</table>

Product Information

Oral LD50  
No information available.

Dermal LD50  
No information available.

Inhalation LC50  
No information available.

The following values are calculated based on chapter 3.1 of the GHS document.

ATEmix (inhalation-gas) 462.5 ppm

12. ECOLOGICAL INFORMATION

Ecotoxicity

May cause pH changes in in aqueous ecological systems.

Persistence and degradability

Not applicable.

Bioaccumulation

No information available.

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Disposal 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 INFORMATION

DOT

UN/ID no. UN3306
Proper shipping name Compressed gas, toxic, oxidizing, corrosive, n.o.s.
Hazard Class 2.3
Subsidiary class 5.18
Special Provisions 1
Description UN3306, Compressed gas, toxic, oxidizing, corrosive, n.o.s.(Fluorine, Nitrogen), 2.3 (5.1 8)
Additional Description: "Toxic-Inhalation Hazard Zone B".
Additional Marking Requirements: "Inhalation Hazard".
Emergency Response Guide Number 124

TDG

UN/ID no. UN3306
Proper shipping name Compressed gas, toxic, oxidizing, corrosive, n.o.s.
Hazard Class 2.3
Subsidiary class 5.1 8
Description UN3306, Compressed gas, toxic, oxidizing, corrosive, n.o.s. (Fluorine, Nitrogen), 2.3 (5.1 8)

MEX
UN/ID no. UN3306
Proper shipping name Compressed gas, toxic, oxidizing, corrosive, n.o.s.
Hazard Class 2.3
Subsidiary class 5.1 8
Description UN3306, Compressed gas, toxic, oxidizing, corrosive, n.o.s. (Fluorine, Nitrogen), 2.3 (5.1 8)

IATA Forbidden

IMDG
UN/ID no. UN3306
Proper shipping name Compressed gas, toxic, oxidizing, corrosive, n.o.s.
Hazard Class 2.3
Subsidiary hazard class 5.1 8
EmS-No. F-C, S-W
Special Provisions 274
Description UN3306, Compressed gas, toxic, oxidizing, corrosive, n.o.s. (Fluorine, Nitrogen), 2.3 (5.1 8)

ADR
UN/ID no. UN3306
Proper shipping name Compressed gas, toxic, oxidizing, corrosive, n.o.s.
Hazard Class 2.3
Classification code 1TOC
Tunnel restriction code (C/D)
Special Provisions 274
Description UN3306, Compressed gas, toxic, oxidizing, corrosive, n.o.s. (Fluorine, Nitrogen), 2.3 (5.1 8), (C/D)
Labels 5.1 8

15. REGULATORY INFORMATION

International Inventories
TSCA Complies
DSL 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 contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>SARA 313 - Threshold Values %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluorine - 7782-41-4</td>
<td>1.0</td>
</tr>
</tbody>
</table>

SARA 311/312 Hazard Categories

- Acute Health Hazard: Yes
- Chronic Health Hazard: Yes
- Fire Hazard: Yes
- Sudden release of pressure hazard: Yes
- Reactive Hazard: No
CERCLA
This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302).

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Hazardous Substances RQs</th>
<th>CERCLA/ SARA RQ</th>
<th>Reportable Quantity (RQ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluorine 7782-41-4</td>
<td>10 lb</td>
<td>10 lb</td>
<td>10 lb 4.54 kg</td>
</tr>
</tbody>
</table>

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, contains one or more regulated substances with specified thresholds under 40 CFR Part 68 or regulated as a highly hazardous chemical pursuant to the 29 CFR Part 1910.110 with specified thresholds:

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>U.S. - CAA (Clean Air Act) - Accidental Release Prevention - Toxic Substances</th>
<th>U.S. - CAA (Clean Air Act) - Accidental Release Prevention - Flammable Substances</th>
<th>U.S. - OSHA - Process Safety Management - Highly Hazardous Chemicals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluorine 7782-41-4</td>
<td>1000 lb</td>
<td></td>
<td>1000 lb</td>
</tr>
</tbody>
</table>

US State Regulations

California Proposition 65
This product does not contain any Proposition 65 chemicals

U.S. State Right-to-Know Regulations

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>New Jersey</th>
<th>Massachusetts</th>
<th>Pennsylvania</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neon 7440-01-9</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Argon 7440-37-1</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Helium 7440-59-7</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Xenon 7440-63-3</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Nitrogen 7727-37-9</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Fluorine 7782-41-4</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

International Regulations

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Carcinogenicity</th>
<th>Exposure Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluorine</td>
<td></td>
<td>Mexico: TWA 1 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mexico: TWA 2 mg/ m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mexico: TWA 2.5 mg/ m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mexico: STEL 2 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mexico: STEL 4 mg/ m³</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>NPRI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluorine</td>
<td>X</td>
</tr>
</tbody>
</table>

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16. OTHER INFORMATION

<table>
<thead>
<tr>
<th>NFPA</th>
<th>Health hazards</th>
<th>Flammability</th>
<th>Instability</th>
<th>Physical and Chemical Properties</th>
</tr>
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<td>OX W2</td>
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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.

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End of Safety Data Sheet