

## Praxair Material Safety Data Sheet

### 1. Chemical Product and Company Identification

<b>Product Name:</b> Compressed gas, oxidizing, n.o.s. (neon, fluorine) (MSDS No. P-19-6410)	<b>Trade Names:</b> Not applicable.
<b>Chemical Name:</b> Mixtures of Neon and Fluorine	<b>Synonyms:</b> Not applicable.
<b>Chemical Family:</b> Not applicable.	<b>Product Grades:</b> None assigned.
<b>Telephone:</b> <b>Emergencies:</b> 1-800-645-4633* <b>CHEMTREC:</b> 1-800-424-9300* <b>Routine:</b> 1-800-PRAXAIR	<b>Company Name:</b> Praxair, Inc. 39 Old Ridgebury Road Danbury, CT 06810-5113

*\*Call emergency numbers 24 hours a day only for spills, leaks, fire, exposure, or accidents involving this product. For routine information, contact your supplier, Praxair sales representative, or call 1-800-PRAXAIR (1-800-772-9247).*

### 2. Hazards Identification

#### EMERGENCY OVERVIEW

**DANGER! Oxidizing, high-pressure gas.**

**May be fatal if inhaled.**

**May accelerate combustion.**

**Can cause eye and respiratory tract irritation.**

**May cause kidney damage.**

**Self-contained breathing apparatus and protective clothing  
must be worn by rescue workers.**

**Under ambient conditions, this is a colorless, odorless gas.**

**OSHA REGULATORY STATUS:** The components of this mixture are considered hazardous by the OSHA Hazard Communications Standard (29 CFR 1910.1200).

#### POTENTIAL HEALTH EFFECTS:

##### Effects of a Single (Acute) Overexposure

**Inhalation.** May be fatal if inhaled at high concentrations. Asphyxiant. Effects are due to lack of oxygen. Moderate concentrations may cause headache, drowsiness, dizziness, excitation, excess salivation, vomiting, and unconsciousness. Lack of oxygen can kill.

**Skin Contact.** No harm expected.

**Swallowing.** This product is a gas at normal temperature and pressure.

**Eye Contact.** May cause eye irritation.

**Effects of Repeated (Chronic) Overexposure.** No harm expected.

**Other Effects of Overexposure.** May damage the kidneys. Asphyxiant. Lack of oxygen can kill.

**Medical Conditions Aggravated by Overexposure.** Inhalation may aggravate asthma and inflammatory or fibrotic pulmonary disease.

Product: Compressed gas, oxidizing, n.o.s. P-19-6410  
(neon, fluorine)

Date: August 2010

**CARCINOGENICITY:** None of the components of this mixture is listed by NTP, OSHA, and IARC.

**POTENTIAL ENVIRONMENTAL EFFECTS:** None known. For further information, see section 12, Ecological Information.

### 3. Composition/Information on Ingredients

See section 16 for important information about mixtures.

COMPONENT	CAS NUMBER	CONCENTRATION
Fluorine	7782-41-4	1%
Neon	7440-01-9	99%

### 4. First Aid Measures

**INHALATION:** Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, qualified personnel may give oxygen. Call a physician.

**SKIN CONTACT:** An unlikely route of exposure. This product is a gas at normal temperature and pressure.

**SWALLOWING:** An unlikely route of exposure. This product is a gas at normal temperature and pressure.

**EYE CONTACT:** Immediately flush eyes thoroughly with water for at least 15 minutes. Hold the eyelids open and away from the eyeballs to ensure that all surfaces are thoroughly flushed. Immediately see a physician, preferably an ophthalmologist.

**NOTES TO PHYSICIAN:** *There is no specific antidote. Treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient.*

Contact the Poison Control Center in your area for additional information on patient management and follow-up.

### 5. Fire Fighting Measures

**FLAMMABLE PROPERTIES:** Oxidizing gas. May accelerate combustion. Avoid contact with combustible materials.

**SUITABLE EXTINGUISHING MEDIA:** CO<sub>2</sub>, dry chemical, water spray, or fog

**PRODUCTS OF COMBUSTION:** Unknown. See section 10 for hazardous decomposition products.

**PROTECTION OF FIREFIGHTERS: DANGER! Oxidizing, high-pressure gas.** Evacuate all personnel from danger area. Do not approach area without self-contained breathing apparatus and protective clothing. Immediately cool cylinders with water spray from maximum distance, and then move them away from fire if without risk. If cylinders are leaking, reduce toxic vapors with water spray or fog, taking care not to spray water directly on leaking gas. Shut off leak if without risk. Reverse flow into cylinder may cause rupture. (See section 16.) On-site fire brigades must comply with OSHA 29 CFR 1910.156.

Product: Compressed gas, oxidizing, n.o.s. P-19-6410  
(neon, fluorine)

Date: August 2010

**Specific Physical and Chemical Hazards.** Heat of fire can build pressure in cylinder and cause it to rupture. Cylinders are equipped with a pressure relief device. (Exceptions may exist where authorized by DOT.) No part of a cylinder should be subjected to a temperature higher than 125°F (52°C). If venting or leaking gas catches fire, do not extinguish flames. Flammable gas may spread from leak, creating an explosive re-ignition hazard. Vapors can be irritating and may burn skin and eyes on contact. Before entering area, especially confined areas, check atmosphere with approved explosion meter.

**Protective Equipment and Precautions for Firefighters.** Firefighters should wear self-contained breathing apparatus and full fire-fighting turnout gear.

## 6. Accidental Release Measures

### STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

**DANGER! Oxidizing, high-pressure gas.**

**Personal Precautions.** May accelerate combustion. Avoid contact with combustible materials. Evacuate all personnel from danger area. Do not approach area without self-contained breathing apparatus and protective clothing. Reduce vapors with fog or fine water spray. Reverse flow into cylinder may cause rupture. Shut off flow if without risk. Ventilate area or move cylinder to a well-ventilated area. Prevent runoff from contaminating surrounding environment. Poisonous, flammable, corrosive vapors may spread from spill. Before entering area, especially a confined area, check atmosphere with an appropriate device.

**Environmental Precautions.** 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.

## 7. Handling and Storage

**PRECAUTIONS TO BE TAKEN IN HANDLING:** Avoid breathing gas. 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. Slowly open the valve. If the valve is hard to open, discontinue use and contact your supplier. Close the valve after each use; keep closed even when empty. For other precautions, see section 16.

**PRECAUTIONS TO BE TAKEN IN STORAGE:** Store and use with adequate ventilation, away from oil, grease, and other hydrocarbons. Always secure cylinders upright to keep them from falling or being knocked over. Install cap, if provided, when not in use. Screw valve protection cap firmly in place by hand. Cylinder temperature should not exceed 125°F (52°C). Store full and empty cylinders separately. Use a first-in, first-out inventory system to prevent storing full cylinders for long periods.

### RECOMMENDED PUBLICATIONS:

For further information on storage, handling, and use see Praxair publication P-14-153, *Guidelines for Handling Gas Cylinders and Containers*. Obtain from your local supplier.

**8. Exposure Controls/Personal Protection**

COMPONENT	OSHA PEL	ACGIH TLV-TWA (2010)
Fluorine	0.1 ppm	1 ppm
Neon	Simple asphyxiant	Simple asphyxiant

TLV-TWAs should be used as a guide in the control of health hazards and not as fine lines between safe and dangerous concentrations.

IDLH = 25 ppm (Fluorine)

**ENGINEERING CONTROLS:**

**Local Exhaust.** Insufficient. See special.

**Mechanical (General).** Not recommended as a primary ventilation system to control worker's exposure. See special.

**Special.** A closed system.

**Other.** See special.

**PERSONAL PROTECTIVE EQUIPMENT:**

**Skin Protection.** Wear neoprene gloves and metatarsal shoes when handling cylinders. Select in accordance with OSHA 29 CFR 1910.132 and 1910.133. Regardless of protective equipment, never touch live electrical parts.

**Eye/Face Protection.** Wear safety glasses when handling cylinders. Select eye protection in accordance with OSHA 29 CFR 1910.133.

**Respiratory Protection.** A respiratory protection program that meet OSHA 29 CFR 1910.134, ANSI Z88.2, or MSHA 30 CFR 72.710 (where applicable) requirements must be followed whenever workplace conditions warrant respirator use. 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 (e.g., an organic vapor cartridge). For emergencies or instances with unknown exposure levels, use a self-contained breathing apparatus.

**9. Physical and Chemical Properties**

<b>APPEARANCE:</b>	Colorless gas	
<b>ODOR:</b>	None	
<b>ODOR THRESHOLD:</b>	Not available.	
<b>PHYSICAL STATE:</b>	Gas at normal temperature and pressure	
<b>pH:</b>	Not applicable.	
<b>MELTING POINT</b> at 1 atm:	Not available.	
<b>BOILING POINT</b> at 1 atm:	Not available.	
<b>FLASH POINT</b> (test method):	Not available.	
<b>EVAPORATION RATE</b> (Butyl Acetate = 1):	Not available.	
<b>FLAMMABILITY:</b>	Not applicable.	
<b>FLAMMABLE LIMITS IN AIR</b> , % by volume:	<b>LOWER:</b> Not applicable.	<b>UPPER:</b> Not applicable.
<b>VAPOR PRESSURE</b> at 68°F (20°C):	Not available.	

Product: Compressed gas, oxidizing, n.o.s. P-19-6410  
(neon, fluorine)

Date: August 2010

<b>VAPOR DENSITY</b> at 70°F (21.1°C) and 1 atm:	Not available.
<b>SPECIFIC GRAVITY</b> (H <sub>2</sub> O = 1) at 19.4°F (-7°C):	Not available.
<b>SPECIFIC GRAVITY</b> (Air = 1) at 70°F (21.1°C) and 1 atm:	Not available.
<b>SOLUBILITY IN WATER</b> , % by wt:	Negligible
<b>PARTITION COEFFICIENT: n-octanol/water:</b>	Not available.
<b>AUTOIGNITION TEMPERATURE:</b>	Not available.
<b>DECOMPOSITION TEMPERATURE:</b>	Not available.
<b>PERCENT VOLATILES BY VOLUME:</b>	100
<b>MOLECULAR WEIGHT:</b>	Not applicable.
<b>MOLECULAR FORMULA:</b>	Mixtures of Ne & F

### 10. Stability and Reactivity

**CHEMICAL STABILITY:**  Unstable  Stable

**CONDITIONS TO AVOID:** None known.

**INCOMPATIBLE MATERIALS:** Combustible materials.

**HAZARDOUS DECOMPOSITION PRODUCTS:** Thermal decomposition may produce hydrofluoric acid and oxygen difluoride.

**POSSIBILITY OF HAZARDOUS REACTIONS:**  May Occur  Will Not Occur

Thermal decomposition may produce hydrofluoric acid and oxygen difluoride.

### 11. Toxicological Information

**ACUTE DOSE EFFECTS:** LC<sub>50</sub> for F, 1 hr, rat = 185 ppm. Neon is a simple asphyxiant.

**STUDY RESULTS:** None known about this mixture.

### 12. Ecological Information

**ECOTOXICITY:** No known effects.

**OTHER ADVERSE EFFECTS:** No adverse ecological effects expected. The components of this mixture do not contain any Class I or Class II ozone-depleting chemicals.

### 13. Disposal Considerations

**WASTE DISPOSAL METHOD:** Do not attempt to dispose of residual or unused quantities. Return cylinder to supplier.

Product: Compressed gas, oxidizing, n.o.s. P-19-6410  
(neon, fluorine)

Date: August 2010

### 14. Transport Information

<b>DOT/IMO SHIPPING NAME:</b> Compressed gas, oxidizing, n.o.s. (neon, fluorine)			
<b>HAZARD CLASS:</b> 2.2	<b>PACKING GROUP/Zone:</b> NA*	<b>IDENTIFICATION NUMBER:</b> UN3156	<b>PRODUCT RQ:</b> 10 lb**
<b>SHIPPING LABEL(s):</b> NONFLAMMABLE GAS, OXIDIZER			
<b>PLACARD (when required):</b> NONFLAMMABLE GAS, OXIDIZER			

\*NA = Not applicable.

\*\* For Fluorine (F)

**SPECIAL SHIPPING INFORMATION:** Cylinders should be transported in a secure position, in a well-ventilated vehicle. Cylinders transported in an enclosed, non-ventilated compartment of a vehicle can present serious safety hazards.

Shipment of compressed gas cylinders that have been filled without the owner's consent is a violation of federal law [49 CFR 173.301(b)].

**MARINE POLLUTANTS:** The components of this mixture are not listed as marine pollutants by DOT.

### 15. Regulatory Information

The following selected regulatory requirements may apply to this product. Not all such requirements are identified. Users of this product are solely responsible for compliance with all applicable federal, state, and local regulations.

#### U.S. FEDERAL REGULATIONS:

EPA (ENVIRONMENTAL PROTECTION AGENCY)

CERCLA: COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT OF 1980 (40 CFR Parts 117 and 302):

**Reportable Quantity (RQ):** 10 lb (4.54 kg) for F

SARA: SUPERFUND AMENDMENT AND REAUTHORIZATION ACT:

**SECTIONS 302/304:** Require emergency planning based on Threshold Planning Quantity (TPQ) and release reporting based on Reportable Quantities (RQ) of Extremely Hazardous Substances (EHS) (40 CFR Part 355):

**TPQ:** 500 lb (226.8 kg) for F

**EHS RQ (40 CFR 355):** 10 lb (4.54 kg) for F

**SECTIONS 311/312:** Require submission of MSDSs and reporting of chemical inventories with identification of EPA hazard categories. The hazard categories for this product are as follows:

**IMMEDIATE:** Yes

**PRESSURE:** Yes

**DELAYED:** Yes

**REACTIVITY:** No

**FIRE:** Yes

**SECTION 313:** Requires submission of annual reports of release of toxic chemicals that appear in 40 CFR Part 372.

Fluorine is subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) and 40CFR Part 372.

**40 CFR 68: RISK MANAGEMENT PROGRAM FOR CHEMICAL ACCIDENTAL RELEASE PREVENTION:** Requires development and implementation of risk

Product: Compressed gas, oxidizing, n.o.s. P-19-6410  
(neon, fluorine)

Date: August 2010

management programs at facilities that manufacture, use, store, or otherwise handle regulated substances in quantities that exceed specified thresholds.

Fluorine is listed as a regulated substance in quantities of 1000 lb (454 kg) or greater.

**TSCA: TOXIC SUBSTANCES CONTROL ACT:** The components of this mixture are listed on the TSCA inventory.

**OSHA: OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION:**

29 CFR 1910.119: PROCESS SAFETY MANAGEMENT OF HIGHLY HAZARDOUS CHEMICALS: Requires facilities to develop a process safety management program based on Threshold Quantities (TQ) of highly hazardous chemicals.

Fluorine is listed in Appendix A as a highly hazardous chemical in quantities of 1000 lb (454 kg) or greater.

#### STATE REGULATIONS:

**CALIFORNIA:** None of the components of this mixture are listed by California under the SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 (Proposition 65).

**PENNSYLVANIA:** The components of this mixture are subject to the PENNSYLVANIA WORKER AND COMMUNITY RIGHT-TO-KNOW ACT (35 P.S. Sections 7301-7320).

### 16. Other Information

Read and understand all labels and instructions supplied with all containers of this product.

**OTHER HAZARDOUS CONDITIONS OF HANDLING, STORAGE, AND USE: *Oxidizing, high-pressure gas.*** Use piping and equipment adequately designed to withstand pressures to be encountered. Use a backflow prevention device in any piping. Store and use with adequate ventilation at all times. Use only in a closed system constructed of corrosion-resistant materials and scrupulously kept dry. Purge system with a dry, inert gas before and after use. Prevent reverse flow. Reverse flow into cylinder may cause rupture. Use a check valve or other protective device in any line or piping from the cylinder. Never work on a pressurized system. If there is a leak, close the cylinder valve. Blow the system down in an environmentally safe manner in compliance with all federal, state, and local laws, and then repair the leak. Follow safe practices when returning cylinder to supplier. Ensure that the valve is closed, and then install valve outlet cap or plug, leak-tight. Never place a compressed gas cylinder where it may become part of an electrical circuit.

**Mixtures.** 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. Remember, chemicals have properties that can cause serious injury or death.

#### HAZARD RATING SYSTEMS:

##### NFPA RATINGS:

HEALTH = 3  
FLAMMABILITY = 0  
INSTABILITY = 2  
SPECIAL = OX

##### HMIS RATINGS:

HEALTH = 4  
FLAMMABILITY = 0  
PHYSICAL HAZARD = 0

#### STANDARD VALVE CONNECTIONS FOR U.S. AND CANADA:

**THREADED:**

CGA-670 (Low Pressure)

**PIN-INDEXED YOKE:**

Not applicable.

Product: Compressed gas, oxidizing, n.o.s. P-19-6410  
(neon, fluorine)

Date: August 2010

**ULTRA-HIGH-INTEGRITY CONNECTION:** Not applicable.

Use the proper CGA connections. **DO NOT USE ADAPTERS.** Additional limited-standard connections may apply. See CGA pamphlet V-1 listed below.

Ask your supplier about free Praxair safety literature as referred to in this MSDS and on the label for this product. Further information can be found in the following materials published by the Compressed Gas Association, Inc. (CGA), 4221 Walney Road, 5<sup>th</sup> Floor, Chantilly, VA 20151-2923, Telephone (703) 788-2700, <http://www.cganet.com/Publication.asp>.

- AV-1 *Safe Handling and Storage of Compressed Gases*
- P-1 *Safe Handling of Compressed Gases in Containers*
- SB-2 *Oxygen-Deficient Atmospheres*
- V-1 *Compressed Gas Cylinder Valve Inlet and Outlet Connections*
- *Handbook of Compressed Gases, Fourth Edition*



Product: Compressed gas, oxidizing, n.o.s. P-19-6410  
(neon, fluorine)

Date: August 2010

Praxair asks users of this product to study this MSDS and become aware of 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 MSDS 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 Praxair, Inc. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and the conditions of use of the product are not within the control of Praxair, Inc., it is the user's obligation to determine the conditions of safe use of the product.

---

Praxair MSDSs are furnished on sale or delivery by Praxair or the independent distributors and suppliers who package and sell our products. To obtain current MSDSs for these products, contact your Praxair sales representative or local distributor or supplier, or download from [www.praxair.com](http://www.praxair.com). If you have questions regarding Praxair MSDSs, would like the form number and date of the latest MSDS, or would like the names of the Praxair suppliers in your area, phone or write the Praxair Call Center (**Phone:** 1-800-PRAXAIR; **Address:** Praxair Call Center, Praxair, Inc., PO Box 44, Tonawanda, NY 14151-0044).

*Praxair* and the *Flowing Airstream* design are trademarks or registered trademarks of Praxair Technology, Inc. in the United States and/or other countries.



Praxair, Inc.  
39 Old Ridgebury Road  
Danbury, CT 06810-5113