# Safety Data Sheet

## Section 1: Identification

### Product identifier

**Product Name**
- **Krypton (2.0%), Fluorine (0.10%,) Neon (Balance) [Boston Scientific]**

**Product Code**
- MSDS No.: 90077

### Relevant identified uses of the substance or mixture and uses advised against

**Recommended use**
- Laser Gas

### Details of the supplier of the safety data sheet

**Manufacturer**
- Air Liquide

2700 Post Oak Blvd.
Houston, TX 77056
United States
www.us.airliquide.com
sds@airliquide.com

**Telephone (Technical)**
- 713-896-2896

**Telephone (Technical)**
- 800-819-1704

### Emergency telephone number

**Manufacturer**
- 800-424-9300 - CHEMTREC

**Manufacturer**
- +1 703-527-3887 - Outside United States

## Section 2: Hazard Identification

### United States (US)

**According to OSHA 29 CFR 1910.1200 HCS**

### Classification of the substance or mixture

**OSHA HCS 2012**
- Compressed Gas - H280
  Simple Asphyxiant

### Label elements

**OSHA HCS 2012**

**WARNING**

**Hazard statements**
- Contains gas under pressure; may explode if heated - H280
  May displace oxygen and cause rapid suffocation.

**Precautionary statements**

**Storage/Disposal**
- Store in a well-ventilated place. - P403

### Other hazards

**OSHA HCS 2012**
- Under United States Regulations (29 CFR 1910.1200 - Hazard Communication Standard), this product is considered hazardous.

## Canada

**According to WHMIS**

### Classification of the substance or mixture

**WHMIS**
- Compressed Gas - A

### Label elements

**WHMIS**

- Compressed Gas - A

### Other hazards

**WHMIS**
- This material is a simple asphyxiant. May displace or reduce oxygen available for breathing especially in confined spaces.
  In Canada, the product mentioned above is considered hazardous under the Workplace Hazardous Materials Information System (WHMIS).

## Section 3 - Composition/Information on Ingredients

### Substances

- Material does not meet the criteria of a substance.

### Mixtures

| Hazardous Components | | | | | |
|---|---|---|---|---|---|
| **Chemical Name** | **Identifiers** | **%(weight)** | **LD50/LC50** | **Classifications According to Regulation/Directive** | **Comments** |
| Neon | **CAS:**7440-01-9 | 97.9% | NDA | **OSHA HCS 2012:** Press. Gas - Comp; Simp. Asphyx. | % volume |
| Krypton | **CAS:**7439-90-9 | 2% | NDA | **OSHA HCS 2012:** Press. Gas- Comp. Simp. Asphyx. | % volume |
| Fluorine | **CAS:**7782-41-4 | 0.1% | Inhalation-Rat LC50 • 185 ppm 1 Hour(s) | **OSHA HCS 2012:** Press Gas - Comp; Skin Corr. 1A; Eye Dam. 1; Ox. Gas 1; Acute Tox 1 | % volume |

*See Section 16 for full text of H-statements and R-phrases.*

## Section 4: First-Aid Measures

### Description of first aid measures

**Inhalation**
- IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for

breathing. Administer oxygen if breathing is difficult. Give artificial respiration if victim is not breathing. If signs/symptoms continue, get medical attention.

**Skin**
- Although exposure is unlikely, in case of contact immediately flush skin with running water. If skin irritation develops get medical advice/attention.

**Eye**
- First aid is not expected to be necessary if material is used under ordinary conditions and as recommended. Get medical attention if symptoms occur. Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first five minutes, then continue rinsing eye.

**Ingestion**
- As this product is a gas, refer to the inhalation section. Never give anything by mouth to an unconscious person. Do NOT induce vomiting.

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

- Refer to Section 11 - Toxicological Information.

### Indication of any immediate medical attention and special treatment needed

**Notes to Physician**
- All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

### Other information

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves. RESCUERS SHOULD NOT ATTEMPT TO RETRIEVE VICTIMS OF EXPOSURE TO GASES WITHOUT ADEQUATE PERSONAL PROTECTIVE EQUIPMENT. At a minimum, Self-Contained Breathing Apparatus must be worn. Victim(s) who experience any adverse effect after over-exposure to this gas mixture must be taken for medical attention. Rescuers should be taken for medical attention if necessary. Take a copy of the label and the MSDS to physician or other health professional with victim(s).

## Section 5: Fire-Fighting Measures

### Extinguishing media

**Suitable Extinguishing Media**
- Use extinguishing agent suitable for type of surrounding fire.
  SMALL FIRES: Dry chemical or CO2.
  LARGE FIRES: Water spray or fog.

**Unsuitable Extinguishing Media**
- No data available

### Special hazards arising from the substance or mixture

**Unusual Fire and Explosion Hazards**
- Containers may explode when heated.
  Ruptured cylinders may rocket.

**Hazardous Combustion Products**
- No data available

### Advice for firefighters

- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.
  Always wear thermal protective clothing when handling refrigerated/cryogenic liquids.
  Wear positive pressure self-contained breathing apparatus (SCBA).
  Move containers from fire area if you can do it without risk.
  FIRE: If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.
  FIRE INVOLVING TANKS: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
  FIRE INVOLVING TANKS: Cool containers with flooding quantities of water until well after fire is out.
  FIRE INVOLVING TANKS: Do not direct water at source of leak or safety devices; icing may occur.

FIRE INVOLVING TANKS: Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
FIRE INVOLVING TANKS: ALWAYS stay away from tanks engulfed in fire.

## Section 6 - Accidental Release Measures

### Personal precautions, protective equipment and emergency procedures

**Personal Precautions**

- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Do not touch or walk through spilled material. Ventilate the area before entry.

**Emergency Procedures**

- Stop leak if you can do it without risk. Keep unauthorized personnel away. Keep out of low areas. Stay upwind. Do not direct water at spill or source of leak. LARGE SPILL: Consider initial downwind evacuation for at least 500 meters (1/3 mile)

### Environmental precautions

- No data available

### Methods and material for containment and cleaning up

**Containment/Clean-up Measures**

- Stop leak if you can do it without risk.
Do not direct water at spill or source of leak.
Use water spray to reduce vapors; do not put water directly on leak, spill area or inside container.
If possible, turn leaking containers so that gas escapes rather than liquid.
Isolate area until gas has dispersed.
Ventilate the area.
Allow substance to evaporate.

## Section 7 - Handling and Storage

### Precautions for safe handling

**Handling**

- Use only with adequate ventilation. Ventilate closed spaces before entering. Be aware of any signs of dizziness or fatigue, especially if work is done in a poorly ventilated area; exposures to fatal concentrations of this gas mixture could occur without any significant warning symptoms, due to olfactory fatigue or oxygen deficiency. Cylinders should be firmly secured to prevent falling or being knocked-over. Do not attempt to repair, adjust, or in any other way modify cylinders. If there is a malfunction or another type of operational problem, contact nearest distributor immediately. Empty containers retain product residue and can be hazardous. Do not cut, weld, puncture or incinerate container.

### Conditions for safe storage, including any incompatibilities

**Storage**

- Store in a cool, dry, well-ventilated place. Protect cylinders against physical damage. Cylinders should be firmly secured to prevent falling or being knocked-over.

## Section 8 - Exposure Controls/Personal Protection

### Control parameters

| Exposure Limits/Guidelines | | | | | | |
|---|---|---|---|---|---|---|
| | **Result** | **ACGIH** | **Canada Ontario** | **Canada Quebec** | **NIOSH** | **OSHA** |
| Fluorine (7782-41-4) | STELs | 2 ppm STEL | 2 ppm STEL | Not established | Not established | Not established |
| | TWAs | 1 ppm TWA | 1 ppm TWA | 0.1 ppm TWAEV; 0.2 mg/m3 TWAEV | 0.1 ppm TWA; 0.2 mg/m3 TWA | 0.1 ppm TWA; 0.2 mg/m3 TWA |

**Exposure Control Notations**

**Canada Ontario**

•Neon (7440-01-9): **Simple Asphyxiants:** (Simple asphyxiant)

**Canada Quebec**

•Neon (7440-01-9): **Simple Asphyxiants:** (Simple asphyxiant)

**ACGIH**

•Neon (7440-01-9): **Simple Asphyxiants:** (Simple asphyxiant)

### Exposure Limits Supplemental

**ACGIH**

•Neon (7440-01-9): **TLV Basis - Critical Effects:** (asphyxia)

•Fluorine (7782-41-4): **TLV Basis - Critical Effects:** (eye, skin and upper respiratory tract irritation)

## Exposure controls

**Engineering Measures/Controls**

- Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Use explosion-proof - electrical, ventilating and/or lighting equipment.

**Personal Protective Equipment**

**Respiratory**

- No data available

**Eye/Face**

- Wear safety glasses.

**Skin/Body**

- Wear leather gloves when handling cylinders.

**Environmental Exposure Controls**

- Follow best practice for site management and disposal of waste. Controls should be engineered to prevent release to the environment, including procedures to prevent spills, atmospheric release and release to waterways.

**Key to abbreviations**

ACGIH = American Conference of Governmental Industrial Hygiene

NIOSH = National Institute of Occupational Safety and Health

OSHA = Occupational Safety and Health Administration

STEL = Short Term Exposure Limits are based on 15-minute exposures

TWA = Time-Weighted Averages are based on 8h/day, 40h/week exposures

TWAEV = Time-Weighted Average Exposure Value

## Section 9 - Physical and Chemical Properties

## Information on Physical and Chemical Properties

| | | | |
|---|---|---|---|
| **Material Description** | | | |
| Physical Form | Gas | Appearance/Description | Colorless gas with pungent odor. |
| Color | Colorless | Odor | Pungent |
| Odor Threshold | Data lacking | | |
| **General Properties** | | | |
| Boiling Point | -246.1 C(-410.98 F)<br>Neon | Melting Point | -249 C(-416.2 F)<br>Neon |
| Decomposition Temperature | Data lacking | pH | Data lacking |
| Specific Gravity/Relative Density | Data lacking | Water Solubility | 0.014 % @ 0 C(32 F)<br>Neon |
| Viscosity | Data lacking | | |
| **Volatility** | | | |
| Vapor Pressure | Data lacking | Vapor Density | 0.74 Air=1 |
| Evaporation Rate | Data lacking | | |
| **Flammability** | | | |
| Flash Point | Not relevant | UEL | Not relevant |

| | | | |
|---|---|---|---|
| LEL | Not relevant | Autoignition | Not relevant |
| Flammability (solid, gas) | Not flammable. | | |
| **Environmental** | | | |
| Octanol/Water Partition coefficient | Data lacking | | |

## Section 10: Stability and Reactivity

### Reactivity

- No dangerous reaction known under conditions of normal use.

### Chemical stability

- Stable under normal temperatures and pressures.

### Possibility of hazardous reactions

- No data available

### Conditions to avoid

- No data available

### Incompatible materials

- No data available

### Hazardous decomposition products

- No data available

## Section 11 - Toxicological Information

### Information on toxicological effects

| Component Name | CAS | Data |
|---|---|---|
| Fluorine (0.1%) | 7782-41-4 | **Acute Toxicity:** ihl-rat LC50:185 ppm/1H;<br>**Irritation:** eye-rat 140 ppm/30M |

| GHS Properties | Classification |
|---|---|
| **Acute toxicity** | **OSHA HCS 2012** • Classification criteria not met |
| **Aspiration Hazard** | **OSHA HCS 2012** • Classification criteria not met |
| **Carcinogenicity** | **OSHA HCS 2012** • Classification criteria not met |
| **Germ Cell Mutagenicity** | **OSHA HCS 2012** • Classification criteria not met |
| **Respiratory sensitization** | **OSHA HCS 2012** • Classification criteria not met |
| **Serious eye damage/Irritation** | **OSHA HCS 2012** • Classification criteria not met |
| **Skin corrosion/Irritation** | **OSHA HCS 2012** • Classification criteria not met |
| **Skin sensitization** | **OSHA HCS 2012** • Classification criteria not met |
| **STOT-RE** | **OSHA HCS 2012** • Classification criteria not met |
| **STOT-SE** | **OSHA HCS 2012** • Classification criteria not met |
| **Toxicity for Reproduction** | **OSHA HCS 2012** • Classification criteria not met |

### Potential Health Effects

### Inhalation

**Acute (Immediate)**
- This material is a simple asphyxiant. May displace or reduce oxygen available for breathing especially in confined spaces.

**Chronic (Delayed)**
- No data available

### Skin

**Acute (Immediate)**
- Under normal conditions of use, no health effects are expected.

**Chronic (Delayed)**
- No data available

### Eye

**Acute (Immediate)**
- Under normal conditions of use, no health effects are expected.

**Chronic (Delayed)**
- No data available

### Ingestion

**Acute (Immediate)**
- Under normal conditions of use, no health effects are expected.

**Chronic (Delayed)**
- No data available

**Key to abbreviations**

LC = Lethal Concentration

## Section 12 - Ecological Information

### Toxicity

- No data available

### Persistence and degradability

- No data available

### Bioaccumulative potential

- No data available

### Mobility in Soil

- No data available

### Results of PBT and vPvB assessment

- PBT and vPvB assessment has not been conducted for this material.

### Other adverse effects

## Section 13 - Disposal Considerations

### Waste treatment methods

**Product waste**
- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

**Packaging waste**
- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

## Section 14 - Transport Information

| | 14.1 UN number | 14.2 UN proper shipping name | 14.3 Transport hazard class(es) | 14.4 Packing group | 14.5 Environmental hazards |
|---|---|---|---|---|---|
| **DOT** | UN1956 | Compressed gas, n.o.s. (Neon, Krypton) | 2.2 | NDA | NDA |
| **TDG** | UN1956 | COMPRESSED GAS, N.O.S. (Neon, Krypton) | 2.2 | NDA | NDA |
| **IMO/IMDG** | UN1956 | COMPRESSED GAS, N.O.S. (Neon, Krypton) | 2.2 | NDA | NDA |
| **IATA/ICAO** | UN1956 | Compressed gas, n.o.s. (Neon, Krypton) | 2.2 | NDA | NDA |

**Special precautions for user**

- Cylinders should be transported in a secure position, in a well-ventilated vehicle. The transportation of compressed gas cylinders in automobiles or in closed-body vehicles can present serious safety hazards. If transporting these cylinders in vehicles, ensure these cylinders are not exposed to extremely high temperatures (as may occur in an enclosed vehicle on a hot day). Additionally, the vehicle should be well-ventilated during transportation.

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

- Not relevant.

## Section 15 - Regulatory Information

### Safety, health and environmental regulations/legislation specific for the substance or mixture

**SARA Hazard Classifications**

- Acute, Pressure(Sudden Release of)

| State Right To Know | | | | |
|---|---|---|---|---|
| **Component** | **CAS** | **MA** | **NJ** | **PA** |
| Neon | 7440-01-9 | Yes | Yes | Yes |
| Krypton | 7439-90-9 | No | No | No |
| Fluorine | 7782-41-4 | Yes | Yes | Yes |

| Inventory | | | |
|---|---|---|---|
| **Component** | **CAS** | **Canada DSL** | **TSCA** |
| Neon | 7440-01-9 | Yes | Yes |
| Krypton | 7439-90-9 | Yes | Yes |
| Fluorine | 7782-41-4 | Yes | Yes |

### Australia

**Labor**

**Australia - List of Designated Hazardous Substances - Classification**

- Neon 7440-01-9 97.9% Not Listed
- Krypton 7439-90-9 2% Not Listed
- Fluorine 7782-41-4 0.1% O, T+, C R8, R26, R35

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### Canada

### Labor

**Canada - WHMIS - Classifications of Substances**

- Neon 7440-01-9 97.9% A
- Krypton 7439-90-9 2% A
- Fluorine 7782-41-4 0.1% A, D1A, E, F

**Canada - WHMIS - Ingredient Disclosure List**

- Neon 7440-01-9 97.9% Not Listed
- Krypton 7439-90-9 2% Not Listed
- Fluorine 7782-41-4 0.1% 1 %

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## United States

### Labor

**U.S. - OSHA - Process Safety Management - Highly Hazardous Chemicals**

- Neon 7440-01-9 97.9% Not Listed
- Krypton 7439-90-9 2% Not Listed
- Fluorine 7782-41-4 0.1% 1000 lb TQ

### Environment

**U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities**

- Neon 7440-01-9 97.9% Not Listed
- Krypton 7439-90-9 2% Not Listed
- Fluorine 7782-41-4 0.1% 10 lb final RQ; 4.54 kg final RQ

**U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs**

- Neon 7440-01-9 97.9% Not Listed
- Krypton 7439-90-9 2% Not Listed
- Fluorine 7782-41-4 0.1% 10 lb EPCRA RQ

**U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs**

- Neon 7440-01-9 97.9% Not Listed
- Krypton 7439-90-9 2% Not Listed
- Fluorine 7782-41-4 0.1% 500 lb TPQ

**U.S. - CERCLA/SARA - Section 313 - Emission Reporting**

- Neon 7440-01-9 97.9% Not Listed

- Krypton 7439-90-9 2% Not Listed
- Fluorine 7782-41-4 0.1% 1.0 % de minimis concentration

**U.S. - RCRA (Resource Conservation & Recovery Act) - Hazardous Constituents - Appendix VIII to 40 CFR 261**

- Neon 7440-01-9 97.9% Not Listed
- Krypton 7439-90-9 2% Not Listed
- Fluorine 7782-41-4 0.1% waste number P056

**U.S. - RCRA (Resource Conservation & Recovery Act) - P Series Wastes - Acutely Toxic Wastes**

- Neon 7440-01-9 97.9% Not Listed
- Krypton 7439-90-9 2% Not Listed
- Fluorine 7782-41-4 0.1% waste number P056

## United States - Pennsylvania

**Labor**

**U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List**

- Neon 7440-01-9 97.9% Not Listed
- Krypton 7439-90-9 2% Not Listed
- Fluorine 7782-41-4 0.1%

## Chemical Safety Assessment

- No Chemical Safety Assessment has been carried out.

## Section 16 - Other Information

| | |
|---|---|
| **Last Revision Date** | • 06/March/2013 |
| **Preparation Date** | • 06/March/2013 |
| **Disclaimer/Statement of Liability** | • To the best of Air Liquide's knowledge, the information contained herein is reliable and accurate as of this date; however, accuracy, suitability or completeness are not guaranteed and no warranties of any type, either express or implied, are provided. The information contained herein relates only to this specific product. If this gas mixture is combined with other materials, all component properties must be considered. Data may be changed from time to time. Be sure to consult the latest edition. |