

Safety Data Sheet



Section 1: Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product identifier

Product Name | Nitrogen Trifluoride (1 ppm to 99%) and Argon, Helium, Neon, or Nitrogen (Balance)

Product Code | 60055

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

Relevant identified use(s) | Semiconductor Uses

1.3 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

1.4 Emergency telephone number

Manufacturer | 800-424-9300 - CHEMTREC

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

Section 2: Hazards Identification

EU/EEC

According to Regulation (EC) No 1272/2008 (CLP)/REACH 1907/2006 [amended by 453/2010]

According to EU Directive 67/548/EEC (DSD) or 1999/45/EC (DPD)

2.1 Classification of the substance or mixture

CLP | Oxidizing Gases 1 - H270
Compressed Gas - H280
Acute Toxicity Inhalation 4 - H332
Specific Target Organ Toxicity Repeated Exposure 2 - H373

DSD/DPD | Oxidizing (O)
Harmful (Xn)
R8, R20, R48/20

2.2 Label Elements

CLP

DANGER



Hazard statements | H270 - May cause or intensify fire; oxidizer
 H280 - Contains gas under pressure; may explode if heated
 H332 - Harmful if inhaled
 H373 - May cause damage to organs - liver and kidney through prolonged or repeated exposure via Inhalation

Precautionary statements

Prevention | P220 - Keep/Store away from clothing and other combustible materials.
 P244 - Keep reduction valves free from grease and oil.
 P260 - Do not breathe gas.
 P271 - Use only outdoors or in a well-ventilated area.

Response | P370+P376 - In case of fire: Stop leak if safe to do so.
 P304+P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
 P312 - Call a POISON CENTER or doctor/physician if you feel unwell.
 P314 - Get medical advice/attention if you feel unwell.

Storage/Disposal | P403 - Store in a well-ventilated place.
 P501 - Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

DSD/DPD



Risk phrases | R8 - Contact with combustible material may cause fire.
 R20 - Harmful by inhalation.
 R48/20 - Harmful: danger of serious damage to health by prolonged exposure through inhalation.

2.3 Other Hazards

CLP | Nitrogen Trifluoride is a chemical asphyxiant and causes the formation of methemoglobinemia.
 According to Regulation (EC) No. 1272/2008 (CLP) this material is considered hazardous.

DSD/DPD | Nitrogen Trifluoride is a chemical asphyxiant and causes the formation of methemoglobinemia.
 This product is considered dangerous according to the European Directive 67/548/EEC.

United States (US)

According to OSHA 29 CFR 1910.1200 HCS

2.1 Classification of the substance or mixture

OSHA HCS 2012 | Oxidizing Gases 1 - H270
 Compressed Gas - H280
 Acute Toxicity Inhalation 4 - H332
 Specific Target Organ Toxicity Repeated Exposure 2 - H373

2.2 Label elements

OSHA HCS 2012

DANGER



Hazard statements | May cause or intensify fire; oxidizer - H270
 Contains gas under pressure; may explode if heated - H280
 Harmful if inhaled - H332
 May cause damage to organs - liver and kidney through prolonged or repeated exposure via Inhalation - H373

Precautionary statements

Prevention | Keep/Store away from clothing and other combustible materials. - P220
 Keep reduction valves free from grease and oil. - P244
 Do not breathe gas. - P260
 Use only outdoors or in a well-ventilated area. - P271

Response | In case of fire: Stop leak if safe to do so. - P370+P376
 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. - P304+P340
 Call a POISON CENTER or doctor/physician if you feel unwell. - P312
 Get medical advice/attention if you feel unwell. - P314

Storage/Disposal | Store in a well-ventilated place. - P403
 Dispose of content and/or container in accordance with local, regional, national, and/or international regulations. - P501

2.3 Other hazards

OSHA HCS 2012 | Nitrogen Trifluoride is a chemical asphyxiant and causes the formation of methemoglobinemia. Under United States Regulations (29 CFR 1910.1200 - Hazard Communication Standard), this product is considered hazardous.

Canada

According to WHMIS

2.1 Classification of the substance or mixture

WHMIS | Compressed Gas - A
 Oxidizing - C
 Very Toxic - D1A

2.2 Label elements

WHMIS



| Compressed Gas - A
 Oxidizing - C
 Very Toxic - D1A

2.3 Other hazards

WHMIS

| Nitrogen Trifluoride is a chemical asphyxiant and causes the formation of methemoglobinemia.
 In Canada, the product mentioned above is considered hazardous under the Workplace Hazardous Materials Information System (WHMIS).

2.4 Other information

NFPA



Section 3 - Composition/Information on Ingredients

3.1 Substances

- Material does not meet the criteria of a substance in accordance with Regulation (EC) No 1272/2008.

3.2 Mixtures

Composition				
Chemical Name	Identifiers	%	LD50/LC50	Classifications According to Regulation/Directive
Argon	CAS:7440-37-1 EC Number:231-147-0	0% TO 99.9%	NDA	EU DSD/DPD: Not Classified EU CLP: Self Classified - Press. Gas - Comp., H280 OSHA HCS 2012: Press. Gas - Comp.; Simp. Asphyx.
Helium	CAS:7440-59-7 EINECS:231-168-5	0% TO 99.9%	NDA	EU DSD/DPD: Not Classified EU CLP: Self Classified - Press. Gas - Comp., H280 OSHA HCS 2012: Press. Gas - Comp.; Simp. Asphyx.
Nitrogen	CAS:7727-37-9 EINECS:231-783-9	0% TO 99.9%	NDA	EU DSD/DPD: Not Classified EU CLP: Self Classified - Press. Gas - Comp., H280 OSHA HCS 2012: Press. Gas - Comp.; Simp. Asphyx.
Neon	CAS:7440-01-9 EINECS:231-110-9	0% TO 99.9%	NDA	EU DSD/DPD: Not Classified EU CLP: Self Classified - Press. Gas - Comp., H280 OSHA HCS 2012: Press. Gas - Comp.; Simp. Asphyx.
Nitrogen trifluoride	CAS:7783-54-2 EINECS:232-007-1	0.0001% TO 99%	Inhalation-Rat LC50 • 6700 ppm 1 Hour(s)	EU DSD/DPD: Self Classified - O, R8 Xn, R20; R48/20 EU CLP: Self Classified - Ox. Gas 1, H270; Press. Gas - Comp., H280; Acute Tox. 4, H332; STOT RE 2 , H373 OSHA HCS 2012: Ox. Gas 1; Press. Gas - Comp.; Acute Tox. 4 (Inhl); STOT RE 2 (Liver, Kidney, Inhl)

Section 4 - First Aid Measures

4.1 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. 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. Get medical attention immediately if symptoms occur.

Ingestion

- First aid is not expected to be necessary if material is used under ordinary conditions and as recommended. Never give anything by mouth to an unconscious person. Do NOT induce vomiting.

4.2 Most important symptoms and effects, both acute and delayed

- Refer to Section 11 - Toxicological Information.

4.3 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.

4.4 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 - Firefighting Measures

5.1 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

5.2 Special hazards arising from the substance or mixture

Unusual Fire and Explosion Hazards | May ignite combustibles (wood, paper, oil, clothing, etc.)
Some may react explosively with fuels.
Containers may explode when heated.
Ruptured cylinders may rocket.

Hazardous Combustion Products | No data available

5.3 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

6.1 Personal precautions, protective equipment and emergency procedures

Personal Precautions | Ventilate the area before entry. Do not walk through spilled material. Wear appropriate personal protective equipment, avoid direct contact. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

Emergency Procedures | LARGE SPILL: Consider initial downwind evacuation for at least 500 meters (1/3 mile).
Ventilate closed spaces before entering. Keep unauthorized personnel away. Keep out of low areas. Stay upwind. Keep combustibles (wood, paper, oil, etc.) away from spilled material.

6.2 Environmental precautions

- Prevent entry into waterways, sewers, basements or confined areas.

6.3 Methods and material for containment and cleaning up

Containment/Clean-up Measures

- Stop leak if you can do it without risk.
- Allow substance to evaporate.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Use water spray to reduce vapors; do not put water directly on leak, spill area or inside container.
- Isolate area until gas has dispersed.
- Keep combustibles (wood, paper, oil, etc.) away from spilled material.

6.4 Reference to other sections

- Refer to Section 8 - Exposure Controls/Personal Protection and Section 13 - Disposal Considerations.

Section 7 - Handling and Storage

7.1 Precautions for safe handling

Handling

- Use only with adequate ventilation. Ventilate closed spaces before entering. Wear appropriate personal protective equipment, avoid direct contact. Do not breathe gas. 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.

7.2 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.

7.3 Specific end use(s)

- Refer to Section 1.2 - Relevant identified uses.

Section 8 - Exposure Controls/Personal Protection

8.1 Control parameters

Exposure Limits/Guidelines						
	Result	ACGIH	Canada Ontario	Canada Quebec	France	Ireland
Nitrogen trifluoride (7783-54-2)	TWAs	10 ppm TWA	10 ppm TWA	10 ppm TWAEV; 29 mg/m3 TWAEV	10 ppm TWA [VME]; 30 mg/m3 TWA [VME]	10 ppm TWA; 30 mg/m3 TWA
	STELs	Not established	Not established	Not established	Not established	15 ppm STEL; 45 mg/m3 STEL
Exposure Limits/Guidelines (Con't.)						
	Result	Israel	NIOSH	OSHA	OSHA Vacated	Portugal
Nitrogen trifluoride (7783-54-2)	TWAs	10 ppm TWA	10 ppm TWA; 29 mg/m3 TWA	10 ppm TWA; 29 mg/m3 TWA	10 ppm TWA; 29 mg/m3 TWA	10 ppm TWA [VLE-MP]
Exposure Limits/Guidelines (Con't.)						
	Result	Spain				
Nitrogen trifluoride (7783-54-2)	TWAs	10 ppm TWA [VLA-ED]; 30 mg/m3 TWA [VLA-ED]				

Exposure Control Notations

Portugal

- Argon (7440-37-1): **Simple Asphyxiants:** (Simple Asphyxiant)
- Helium (7440-59-7): **Simple Asphyxiants:** (Simple Asphyxiant)
- Nitrogen (7727-37-9): **Simple Asphyxiants:** (Simple Asphyxiant)
- Neon (7440-01-9): **Simple Asphyxiants:** (Simple Asphyxiant)

Ireland

- Argon (7440-37-1): **Simple Asphyxiants:** (Asphyxiant)
- Helium (7440-59-7): **Simple Asphyxiants:** (Asphyxiant)
- Nitrogen (7727-37-9): **Simple Asphyxiants:** (Asphyxiant)
- Neon (7440-01-9): **Simple Asphyxiants:** (Asphyxiant)

Spain

- Argon (7440-37-1): **Simple Asphyxiants:** (simple asphyxiant)
- Helium (7440-59-7): **Simple Asphyxiants:** (simple asphyxiant)
- Nitrogen (7727-37-9): **Simple Asphyxiants:** (simple asphyxiant)
- Neon (7440-01-9): **Simple Asphyxiants:** (simple asphyxiant)

8.2 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**

- Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or symptoms are experienced.

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

Section 9 - Physical and Chemical Properties

9.1 Information on Physical and Chemical Properties

Material Description			
Physical Form	Gas	Appearance/Description	Colorless gas with pungent odor.
Color	Colorless	Odor	Pungent
Particulate Size	Data lacking	Odor Threshold	Data lacking
General Properties			
Boiling Point	-120.1 C(-184.18 F) Nitrogen Trifluoride	Melting Point	-206.8 C(-340.24 F) Nitrogen Trifluoride
Decomposition Temperature	Data lacking	pH	Data lacking
Specific Gravity/Relative Density	2.46 Water=1 Nitrogen Trifluoride	Water Solubility	Partially Soluble Nitrogen Trifluoride
Viscosity	Data lacking	Explosive Properties	Data lacking
Oxidizing Properties:	Data lacking		
Volatility			

Vapor Pressure	> 33400 mmHg (torr) @ -40.15 C(-40.27 F)	Vapor Density	Data lacking
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		

9.2 Other Information

- No additional physical and chemical parameters noted.

Section 10: Stability and Reactivity

10.1 Reactivity

- No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

- Stable under normal temperatures and pressures.

10.3 Possibility of hazardous reactions

- Hazardous polymerization will not occur.

10.4 Conditions to avoid

- Excess heat, sparks, open flame.

10.5 Incompatible materials

- The Nitrogen Trifluoride component of this gas mixture presents a severe explosion hazard by chemical reaction in the presence of reducing agents, especially when under pressure. Nitrogen Trifluoride can react violently when ignited with hydrogen. Nitrogen Trifluoride can react violently with ammonia, carbon monoxide, diborane, hydrogen, hydrogen sulfide, methane, and tetrafluorohydrazine. Nitrogen Trifluoride is incompatible with charcoal, and hydrogen-containing compounds. Nitrogen Trifluoride reacts with metals, such as copper, bismuth, arsenic, antimony, stainless steel and mercury, at elevated temperatures (350°C [662°F]). Nitrogen Trifluoride may react explosively with when exposed to combustible material, or oil, grease, and other hydrocarbon materials.

10.6 Hazardous decomposition products

- Decomposition of this gas mixture, which occurs at temperatures of more than 530°C (1000°F), will generate hydrogen fluoride and a variety of nitrogen, fluoride, and oxy-fluorine compounds.

Section 11 - Toxicological Information

11.1 Information on toxicological effects

Components		
Nitrogen trifluoride (0.0001% TO 99%)	7783-54-2	Acute Toxicity: Inhalation-Monkey LC50 • 7500 ppm 1 Hour(s); <i>Lungs, Thorax, or Respiration:</i> Cyanosis; Blood:Metheinglobincinia-Carboxyhemoglobin ; Inhalation-Rat LC50 • 6700 ppm 1 Hour(s); <i>Lungs, Thorax, or Respiration:</i> Dyspnea; Lungs, Thorax, or Respiration: Cyanosis; Lungs, Thorax, or Respiration: Respiratory stimulation ; Multi-dose Toxicity: Inhalation-Rat TDLo • 100 ppm 7 Hour(s) 19 Week(s)-Intermittent; <i>Liver:</i> Fatty liver degeneration; Kidney, Ureter, and Bladder: Interstitial nephritis; Blood: Changes in spleen

GHS Properties	Classification
Acute toxicity	EU/CLP • Acute Toxicity - Inhalation 4 OSHA HCS 2012 • Acute Toxicity - Inhalation 4
Aspiration Hazard	EU/CLP • Classification criteria not met OSHA HCS 2012 • Classification criteria not met
Carcinogenicity	EU/CLP • Classification criteria not met OSHA HCS 2012 • Classification criteria not met
Germ Cell Mutagenicity	EU/CLP • Classification criteria not met OSHA HCS 2012 • Classification criteria not met
Skin corrosion/Irritation	EU/CLP • Classification criteria not met OSHA HCS 2012 • Classification criteria not met
Skin sensitization	EU/CLP • Classification criteria not met OSHA HCS 2012 • Classification criteria not met
STOT-RE	EU/CLP • Specific Target Organ Toxicity Repeated Exposure 2 OSHA HCS 2012 • Specific Target Organ Toxicity Repeated Exposure 2
STOT-SE	EU/CLP • Classification criteria not met OSHA HCS 2012 • Classification criteria not met
Toxicity for Reproduction	EU/CLP • Classification criteria not met OSHA HCS 2012 • Classification criteria not met
Respiratory sensitization	EU/CLP • Classification criteria not met OSHA HCS 2012 • Classification criteria not met
Serious eye damage/Irritation	EU/CLP • Classification criteria not met OSHA HCS 2012 • Classification criteria not met

Potential Health Effects

Inhalation

- Acute (Immediate) | Harmful if inhaled.
- Chronic (Delayed) | Long term inhalation of Nitrogen trifluoride has caused liver and kidney damage in animal experiments.

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

Other

- Acute (Immediate) | Nitrogen Trifluoride is a chemical asphyxiant and causes the formation of methemoglobinemia.

Section 12 - Ecological Information

12.1 Toxicity

| Material data lacking.

12.2 Persistence and degradability

| Material data lacking.

12.3 Bioaccumulative potential

| Material data lacking.

12.4 Mobility in Soil

| Material data lacking.

12.5 Results of PBT and vPvB assessment

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

12.6 Other adverse effects

| No studies have been found.

Section 13 - Disposal Considerations

13.1 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. (Argon, Nitrogen Trifluoride) or (Helium, Nitrogen Trifluoride) or (Neon, Nitrogen Trifluoride) or (Nitrogen, Nitrogen Trifluoride)	2.2	NDA	NDA
TDG	UN1956	COMPRESSED GAS, N.O.S. (Argon, Nitrogen Trifluoride) or (Helium, Nitrogen Trifluoride) or (Neon, Nitrogen Trifluoride) or (Nitrogen, Nitrogen Trifluoride)	2.2	NDA	NDA
IMO/IMDG	UN1956	COMPRESSED GAS, N.O.S. (Argon, Nitrogen Trifluoride) or (Helium, Nitrogen Trifluoride) or (Neon, Nitrogen Trifluoride) or (Nitrogen, Nitrogen Trifluoride)	2.2	NDA	NDA
IATA/ICAO	UN1956	Compressed gas, n.o.s. (Argon, Nitrogen Trifluoride) or (Helium, Nitrogen Trifluoride) or (Neon, Nitrogen Trifluoride) or (Nitrogen, Nitrogen Trifluoride)	2.2	NDA	NDA

14.6 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.

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

| Not relevant.

Section 15 - Regulatory Information

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

SARA Hazard Classifications | Pressure(Sudden Release of), Fire

State Right To Know				
Component	CAS	MA	NJ	PA
Argon	7440-37-1	Yes	Yes	Yes
Helium	7440-59-7	Yes	Yes	Yes
Neon	7440-01-9	Yes	Yes	Yes
Nitrogen	7727-37-9	Yes	Yes	Yes
Nitrogen trifluoride	7783-54-2	Yes	Yes	Yes

Inventory						
Component	CAS	Canada DSL	Canada NDSL	China	EU EINECS	EU ELNICS
Argon	7440-37-1	Yes	No	Yes	Yes	No
Helium	7440-59-7	Yes	No	Yes	Yes	No
Neon	7440-01-9	Yes	No	Yes	Yes	No
Nitrogen	7727-37-9	Yes	No	Yes	Yes	No
Nitrogen trifluoride	7783-54-2	Yes	No	Yes	Yes	No

Inventory (Con't.)		
Component	CAS	TSCA
Argon	7440-37-1	Yes
Helium	7440-59-7	Yes
Neon	7440-01-9	Yes
Nitrogen	7727-37-9	Yes
Nitrogen trifluoride	7783-54-2	Yes

Canada

Labor

Canada - WHMIS - Classifications of Substances

• Neon	7440-01-9	A
• Nitrogen trifluoride	7783-54-2	A, D1A
• Argon	7440-37-1	A
• Nitrogen	7727-37-9	A
• Helium	7440-59-7	A

Canada - WHMIS - Ingredient Disclosure List

• Neon	7440-01-9	Not Listed
• Nitrogen trifluoride	7783-54-2	1 %
• Argon	7440-37-1	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

Environment

Canada - CEPA - Priority Substances List

• Neon	7440-01-9	Not Listed
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• Nitrogen trifluoride	7783-54-2	Not Listed
• Argon	7440-37-1	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

China

Environment

China - Ozone Depleting Substances - First Schedule

• Neon	7440-01-9	Not Listed
• Nitrogen trifluoride	7783-54-2	Not Listed
• Argon	7440-37-1	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

China - Ozone Depleting Substances - Second Schedule

• Neon	7440-01-9	Not Listed
• Nitrogen trifluoride	7783-54-2	Not Listed
• Argon	7440-37-1	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

China - Ozone Depleting Substances - Third Schedule

• Neon	7440-01-9	Not Listed
• Nitrogen trifluoride	7783-54-2	Not Listed
• Argon	7440-37-1	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

Other

China - Annex I & II - Controlled Chemicals Lists

• Neon	7440-01-9	Not Listed
• Nitrogen trifluoride	7783-54-2	Not Listed
• Argon	7440-37-1	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

China - Dangerous Goods List

• Neon	7440-01-9	(compressed or refrigerated liquid)
• Nitrogen trifluoride	7783-54-2	
• Argon	7440-37-1	(compressed or refrigerated liquid)
• Nitrogen	7727-37-9	(compressed or refrigerated liquid)
• Helium	7440-59-7	(compressed or refrigerated liquid)

China - Export Control List - Part I Chemicals

• Neon	7440-01-9	Not Listed
• Nitrogen trifluoride	7783-54-2	Not Listed
• Argon	7440-37-1	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

Europe

Other

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Classification

• Neon	7440-01-9	Not Listed
• Nitrogen trifluoride	7783-54-2	Not Listed
• Argon	7440-37-1	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Concentration Limits

• Neon	7440-01-9	Not Listed
• Nitrogen trifluoride	7783-54-2	Not Listed
• Argon	7440-37-1	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Labelling

• Neon	7440-01-9	Not Listed
• Nitrogen trifluoride	7783-54-2	Not Listed
• Argon	7440-37-1	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Notes - Substances and Preparations

• Neon	7440-01-9	Not Listed
• Nitrogen trifluoride	7783-54-2	Not Listed
• Argon	7440-37-1	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Safety Phrases

• Neon	7440-01-9	Not Listed
• Nitrogen trifluoride	7783-54-2	Not Listed
• Argon	7440-37-1	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

Germany

Environment

Germany - TA Luft - Types and Classes

• Neon	7440-01-9	Not Listed
• Nitrogen trifluoride	7783-54-2	Not Listed
• Argon	7440-37-1	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

Germany - Water Classification (VwVwS) - Annex 1

• Neon	7440-01-9	Not Listed
• Nitrogen trifluoride	7783-54-2	Not Listed
• Argon	7440-37-1	ID Number 1348, not considered hazardous to water ID Number 1351, not

• Nitrogen	7727-37-9	considered hazardous to water
• Helium	7440-59-7	Not Listed

Germany - Water Classification (VwVwS) - Annex 2 - Water Hazard Classes

• Neon	7440-01-9	Not Listed
• Nitrogen trifluoride	7783-54-2	Not Listed
• Argon	7440-37-1	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

Germany - Water Classification (VwVwS) - Annex 3

• Neon	7440-01-9	Not Listed
• Nitrogen trifluoride	7783-54-2	Not Listed
• Argon	7440-37-1	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

Other**Germany - Specifically Regulated Chemicals in TRGS**

• Neon	7440-01-9	Not Listed
• Nitrogen trifluoride	7783-54-2	Not Listed
• Argon	7440-37-1	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

Portugal**Other****Portugal - Prohibited Substances**

• Neon	7440-01-9	Not Listed
• Nitrogen trifluoride	7783-54-2	Not Listed
• Argon	7440-37-1	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

United Kingdom**Environment****United Kingdom - Pollution Inventory - Schedule 1 - Thresholds for Releases to Air**

• Neon	7440-01-9	Not Listed
• Nitrogen trifluoride	7783-54-2	Not Listed
• Argon	7440-37-1	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

Other**United Kingdom - Workplace Exposure Limits (WELs) - Substances in Review**

• Neon	7440-01-9	Not Listed
• Nitrogen trifluoride	7783-54-2	Not Listed
• Argon	7440-37-1	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

United Kingdom - List of Dangerous Substances in Water

• Neon	7440-01-9	Not Listed
• Nitrogen trifluoride	7783-54-2	Not Listed
• Argon	7440-37-1	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

United States

Labor

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

• Neon	7440-01-9	Not Listed
• Nitrogen trifluoride	7783-54-2	5000 lb TQ
• Argon	7440-37-1	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

U.S. - OSHA - Specifically Regulated Chemicals

• Neon	7440-01-9	Not Listed
• Nitrogen trifluoride	7783-54-2	Not Listed
• Argon	7440-37-1	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

Environment

U.S. - CAA (Clean Air Act) - 1990 Hazardous Air Pollutants

• Neon	7440-01-9	Not Listed
• Nitrogen trifluoride	7783-54-2	Not Listed
• Argon	7440-37-1	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

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

• Neon	7440-01-9	Not Listed
• Nitrogen trifluoride	7783-54-2	Not Listed
• Argon	7440-37-1	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

U.S. - CERCLA/SARA - Radionuclides and Their Reportable Quantities

• Neon	7440-01-9	Not Listed
• Nitrogen trifluoride	7783-54-2	Not Listed
• Argon	7440-37-1	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

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

• Neon	7440-01-9	Not Listed
• Nitrogen trifluoride	7783-54-2	Not Listed
• Argon	7440-37-1	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

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

• Neon	7440-01-9	Not Listed
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• Nitrogen trifluoride	7783-54-2	Not Listed
• Argon	7440-37-1	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

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

• Neon	7440-01-9	Not Listed
• Nitrogen trifluoride	7783-54-2	Not Listed
• Argon	7440-37-1	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

U.S. - CERCLA/SARA - Section 313 - PBT Chemical Listing

• Neon	7440-01-9	Not Listed
• Nitrogen trifluoride	7783-54-2	Not Listed
• Argon	7440-37-1	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

United States - California**Environment****U.S. - California - Proposition 65 - Carcinogens List**

• Neon	7440-01-9	Not Listed
• Nitrogen trifluoride	7783-54-2	Not Listed
• Argon	7440-37-1	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

U.S. - California - Proposition 65 - Developmental Toxicity

• Neon	7440-01-9	Not Listed
• Nitrogen trifluoride	7783-54-2	Not Listed
• Argon	7440-37-1	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

U.S. - California - Proposition 65 - Maximum Allowable Dose Levels (MADL)

• Neon	7440-01-9	Not Listed
• Nitrogen trifluoride	7783-54-2	Not Listed
• Argon	7440-37-1	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

U.S. - California - Proposition 65 - No Significant Risk Levels (NSRL)

• Neon	7440-01-9	Not Listed
• Nitrogen trifluoride	7783-54-2	Not Listed
• Argon	7440-37-1	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

U.S. - California - Proposition 65 - Reproductive Toxicity - Female

• Neon	7440-01-9	Not Listed
• Nitrogen trifluoride	7783-54-2	Not Listed
• Argon	7440-37-1	Not Listed
• Nitrogen	7727-37-9	Not Listed

• Helium	7440-59-7	Not Listed
U.S. - California - Proposition 65 - Reproductive Toxicity - Male		
• Neon	7440-01-9	Not Listed
• Nitrogen trifluoride	7783-54-2	Not Listed
• Argon	7440-37-1	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

United States - Pennsylvania

Labor

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

• Neon	7440-01-9	Not Listed
• Nitrogen trifluoride	7783-54-2	Not Listed
• Argon	7440-37-1	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances

• Neon	7440-01-9	Not Listed
• Nitrogen trifluoride	7783-54-2	Not Listed
• Argon	7440-37-1	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

15.2 Chemical Safety Assessment

| No Chemical Safety Assessment has been carried out.

Section 16 - Other Information

Last Revision Date | 09/December/2014

Preparation Date | 09/December/2014

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.

Key to abbreviations

NDA = No Data Available