Safety Data Sheet

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

1.1 Product identifier

Product Name | **Nitrous Oxide (1.0-50.0%) and Hexafluoroethane (Balance)**

Product Code | 60053

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
Specific Target Organ Toxicity Single Exposure 3: Narcotic Effects - H336
Germ Cell Mutagenicity 2 - H341
Reproductive Toxicity 2 - H361
Specific Target Organ Toxicity Repeated Exposure 2 - H373

DSD/DPD | Oxidizing (O)
Toxic (T)
Harmful (Xn)
Mutagenic Substances - Category 2
Substances Toxic To Reproduction - Category 2
R8, R46, R48, R60

2.2 Label Elements

CLP

DANGER

Hazard statements | H270 - May cause or intensify fire; oxidizer
H280 - Contains gas under pressure; may explode if heated
H336 - May cause drowsiness or dizziness
H341 - Suspected of causing genetic defects.
H361 - Suspected of damaging fertility or the unborn child.
H373 - May cause damage to organs - Nervous System, Bone Marrow through prolonged or repeated exposure

Precautionary statements

Prevention | P201 - Obtain special instructions before use.
P202 - Do not handle until all safety precautions have been read and understood.
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.
P281 - Use personal protective equipment as required.

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.
P308+P313 - IF exposed or concerned: Get medical advice/attention.

Storage/Disposal | P403+P233 - Store in a well-ventilated place. Keep container tightly closed.
P405 - Store locked up.
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.
R46 - May cause heritable genetic damage.
R48 - Danger of serious damage to health by prolonged exposure.
R60 - May impair fertility.

Safety phrases | S45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S53 - Avoid exposure - obtain special instructions before use.

2.3 Other Hazards

CLP | This material is a simple asphyxiant. May displace or reduce oxygen available for breathing especially in confined spaces.
According to Regulation (EC) No. 1272/2008 (CLP) this material is considered hazardous.

DSD/DPD | This material is a simple asphyxiant. May displace or reduce oxygen available for breathing especially in confined spaces.
According to European Directive 1999/45/EC this material is considered dangerous.

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
Specific Target Organ Toxicity Single Exposure 3: Narcotic Effects - H336
Germ Cell Mutagenicity 2 - H341

Reproductive Toxicity 2 - H361
Specific Target Organ Toxicity Repeated Exposure 2 - H373
Simple Asphyxiant

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
May cause drowsiness or dizziness - H336
Suspected of causing genetic defects. - H341
Suspected of damaging fertility or the unborn child. - H361
May cause damage to organs - Nervous System, Bone Marrow through prolonged or repeated exposure - H373
May displace oxygen and cause rapid suffocation.

Precautionary statements

Prevention

Obtain special instructions before use. - P201
Do not handle until all safety precautions have been read and understood. - P202
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
Wear protective gloves/protective clothing/eye protection/face protection. - P280

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
IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician. - P309+P311

Storage/Disposal

Store in a well-ventilated place. Keep container tightly closed. - P403+P233
Store locked up. - P405
Dispose of content and/or container in accordance with local, regional, national, and/or international regulations. - P501

2.3 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

2.1 Classification of the substance or mixture

WHMIS

Compressed Gas - A
Oxidizing - C
Other Toxic Effects - D2A

2.2 Label elements

WHMIS

Compressed Gas - A
Oxidizing - C
Other Toxic Effects - D2A

2.3 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).

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**	**%**	**Classifications According to Regulation/Directive**
Nitrous Oxide	**CAS:**10024-97-2 **EC Number:**	1% TO 50%	**EU DSD/DPD:** Self Classified - O R8; Mutagen 2, T,R46; Repr 2, T, R60; Xi R67; Xn R48 **EU CLP:** Self Classified - Ox. Gas 1, H270; Press. Gas - Comp., H280; Muta. 2, H341; Repr. 2, H361; STOT SE 3: Narc., H336; STOT RE 2 (Nervous system, Bone Marrow), H373 **OSHA HCS 2012:** Ox. Gas 1; Press. Gas - Comp.; Muta. 2; Repr. 2; STOT SE 3: Narc.; STOT RE 2 (Nervous system, Bone Marrow)
Hexafluoroethane	**CAS:**76-16-4 **EINECS:**200-939-8	Balance	**EU DSD/DPD:** Not Classified **EU CLP:** Self Classified - Press. Gas- Comp., H280 **OSHA HCS 2012:** Press. Gas - Comp.; Simp. Asphyx.

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

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. Avoid contact with skin, eyes, and clothing. 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. Do not allow area where cylinders are stored to exceed 52C (125F).

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	Germany DFG	Germany TRGS
						100 ppm TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are

Nitrous Oxide (10024-97-2)	TWAs	50 ppm TWA	25 ppm TWA; 45 mg/m3 TWA	50 ppm TWAEV; 90 mg/m3 TWAEV	Not established	observed, exposure factor 2); 180 mg/m3 TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, exposure factor 2)
	Ceilings	Not established	Not established	Not established	200 ppm Peak; 360 mg/m3 Peak	Not established
	MAKs	Not established	Not established	Not established	100 ppm TWA MAK; 180 mg/m3 TWA MAK	Not established

Exposure Limits/Guidelines (Con't.)

	Result	Ireland	Israel	NIOSH	Portugal	Spain
Nitrous Oxide (10024-97-2)	TWAs	50 ppm TWA; 90 mg/m3 TWA	50 ppm TWA	25 ppm TWA (over the time exposed to waste anesthetic gas); 46 mg/m3 TWA (over the time exposed to waste anesthetic gas)	50 ppm TWA [VLE-MP]	50 ppm TWA [VLA-ED]; 92 mg/m3 TWA [VLA-ED]

Exposure Limits/Guidelines (Con't.)

	Result	Sweden
Nitrous Oxide (10024-97-2)	STELs	500 ppm STV; 900 mg/m3 STV
	TWAs	100 ppm LLV; 180 mg/m3 LLV

Exposure Control Notations

Portugal

- Nitrous Oxide (10024-97-2): **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen)

Germany DFG

- Nitrous Oxide (10024-97-2): **Pregnancy:** (no risk to embryo/fetus if exposure limits adhered to)

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

LLV = Limit Level Value is the exposure limit for 8-hour work day

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

TWAEV = Time-Weighted Average Exposure Value

MAK = Maximale Arbeitsplatz Konzentration is the maximum permissible concentration

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

NIOSH = National Institute of Occupational Safety and Health

Section 9 - Physical and Chemical Properties

9.1 Information on Physical and Chemical Properties

Material Description			
Physical Form	Gas	Appearance/Description	Colorless gas with a sweet odor.
Color	Colorless	Odor	Sweet odor.
Odor Threshold	Not relevant		
General Properties			
Boiling Point	-78.2 C(-108.76 F) Hexafluoroethane	Melting Point	Data lacking
Decomposition Temperature	Data lacking	pH	Not relevant
Specific Gravity/Relative Density	5.545 Water=1 Hexafluoroethane	Water Solubility	Negligible Hexafluoroethane
Viscosity	Data lacking	Explosive Properties	Not explosive.
Oxidizing Properties:	Oxidizing gas.		
Volatility			
Vapor Pressure	445 psia Hexafluoroethane	Vapor Density	6.68 kg/m³ Hexafluoroethane
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 following materials are not compatible with the Hexafluoroethane component: polystyrene, alkaline and alkaline earth metals (such as sodium, potassium, lithium, barium, and magnesium, powdered aluminum). Metals such as silver, brass, bonze and copper may enhance the decomposition of Hexafluoroethane at elevated

temperatures. Hexafluoroethane may also decompose in the presence of moisture and alloys which contain more than 2% magnesium. When the level of Nitrous Oxide is high, this gas mixture may be incompatible with oils, grease, alkali metals, aluminum, boron, tin oxide, lithium hydride tungsten carbide. Nitrous Oxide forms explosive mixtures with phosphine, ammonia, carbon monoxide, hydrogen sulfide, hydrogen, and acetylene. This compound decomposes explosively at high temperatures, producing nitrogen and oxygen. This reaction will occur at lower temperatures in the presence of catalytic surfaces (i.e. silver, platinum, cobalt, copper oxides, or nickel oxides).

10.6 Hazardous decomposition products

Due to the presence of Hexafluoroethane, when this gas mixture is exposed to fire, it may decompose yielding toxic products (e.g., hydrogen fluoride, carbonyl fluoride).

Section 11 - Toxicological Information

11.1 Information on toxicological effects

Components		
Nitrous Oxide (1% TO 50%)	10024-97-2	**Mutagen:** DNA Inhibition • Inhalation-Human • 50 pph 24 Hour(s); Micronucleus test • Inhalation-Human • 1000 µg/L 18 Year(s)-Intermittent; **Reproductive:** Inhalation-Rat TCLo • 1 pph 8 Hour(s)(1-21D preg); *Reproductive Effects:Effects on Embryo or Fetus*:**Extra embryonic structures**; *Reproductive Effects:Effects on Embryo or Fetus*:**Fetal death**

GHS Properties	Classification
Acute toxicity	**EU/CLP** • Classification criteria not met **OSHA HCS 2012** • Classification criteria not met
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** • Germ Cell Mutagenicity 2 **OSHA HCS 2012** • Germ Cell Mutagenicity 2
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** • Specific Target Organ Toxicity Single Exposure 3: Narcotic Effects **OSHA HCS 2012** • Specific Target Organ Toxicity Single Exposure 3: Narcotic Effects
Toxicity for Reproduction	**EU/CLP** • Toxic to Reproduction 2 **OSHA HCS 2012** • Toxic to Reproduction 2
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) | May affect the central nervous system. Symptoms may include dizziness, drowsiness, lethargy, coma and death. If this material is released in a small, poorly ventilated area (i.e. an enclosed or confined space), an oxygen-deficient environment may occur. Individuals breathing such an atmosphere may experience symptoms which include headaches, ringing in ears, dizziness, drowsiness, unconsciousness, nausea, vomiting, and depression of all the senses. Under some circumstances of over-exposure, death may occur. The following effects associated with decreased levels of oxygen: increase in breathing and pulse rate, emotional upset, abnormal fatigue, nausea, vomiting, collapse, loss of consciousness, convulsive movements, respiratory collapse and death.

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

Other

Chronic (Delayed) | Repeated exposure to Nitrous Oxide can damage the nervous system, causing numbness and weakness in the arms and legs and may damage the bone marrow and affect blood cell production.

Mutagenic Effects | Suspected of causing genetic defects.

Reproductive Effects | Nitrous oxide has been shown to cause birth defects in rats. May be a teratogen in humans.

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.(Nitrous Oxide, Hexafluoroethane)	2.2	NDA	NDA
TDG	UN1956	COMPRESSED GAS, N.O.S. (Nitrous Oxide, Hexafluoroethane)	2.2	NDA	NDA
IMO/IMDG	UN1956	COMPRESSED GAS, N.O.S. (Nitrous Oxide, Hexafluoroethane)	2.2	NDA	NDA
IATA/ICAO	UN1956	Compressed gas n.o.s.(Nitrous Oxide, Hexafluoroethane)	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 | Acute, Chronic, Fire, Pressure(Sudden Release of)

State Right To Know				
Component	**CAS**	**MA**	**NJ**	**PA**
Hexafluoroethane	76-16-4	No	Yes	No
Nitrous Oxide	10024-97-2	Yes	Yes	Yes

Inventory						
Component	**CAS**	**Canada DSL**	**Canada NDSL**	**China**	**EU EINECS**	**EU ELNICS**
Hexafluoroethane	76-16-4	Yes	No	Yes	Yes	No
Nitrous Oxide	10024-97-2	Yes	No	Yes	Yes	No

Inventory (Con't.)		
Component	**CAS**	**TSCA**
Hexafluoroethane	76-16-4	Yes
Nitrous Oxide	10024-97-2	Yes

Canada

Labor

Canada - WHMIS - Classifications of Substances

• Nitrous Oxide	10024-97-2	A, C, D2A
• Hexafluoroethane	76-16-4	A

Canada - WHMIS - Ingredient Disclosure List

• Nitrous Oxide	10024-97-2	0.1 %
• Hexafluoroethane	76-16-4	Not Listed

Environment

Canada - CEPA - Priority Substances List

• Nitrous Oxide	10024-97-2	Not Listed
• Hexafluoroethane	76-16-4	Not Listed

China

Environment

China - Ozone Depleting Substances - First Schedule

• Nitrous Oxide	10024-97-2	Not Listed
• Hexafluoroethane	76-16-4	Not Listed

China - Ozone Depleting Substances - Second Schedule

• Nitrous Oxide	10024-97-2	Not Listed
• Hexafluoroethane	76-16-4	Not Listed

China - Ozone Depleting Substances - Third Schedule

• Nitrous Oxide	10024-97-2	Not Listed
• Hexafluoroethane	76-16-4	Not Listed

Other

China - Annex I & II - Controlled Chemicals Lists

• Nitrous Oxide	10024-97-2	Not Listed
• Hexafluoroethane	76-16-4	Not Listed

China - Dangerous Goods List

• Nitrous Oxide	10024-97-2	(including refrigerated liquid)
• Hexafluoroethane	76-16-4	

China - Export Control List - Part I Chemicals

• Nitrous Oxide	10024-97-2	Not Listed
• Hexafluoroethane	76-16-4	Not Listed

Europe

Other

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

• Nitrous Oxide	10024-97-2	Not Listed
• Hexafluoroethane	76-16-4	Not Listed

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

• Nitrous Oxide	10024-97-2	Not Listed
• Hexafluoroethane	76-16-4	Not Listed

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

• Nitrous Oxide	10024-97-2	Not Listed

• Hexafluoroethane	76-16-4	Not Listed

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

• Nitrous Oxide	10024-97-2	Not Listed
• Hexafluoroethane	76-16-4	Not Listed

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

• Nitrous Oxide	10024-97-2	Not Listed
• Hexafluoroethane	76-16-4	Not Listed

Germany

Environment

Germany - TA Luft - Types and Classes

• Nitrous Oxide	10024-97-2	Not Listed
• Hexafluoroethane	76-16-4	Not Listed

Germany - Water Classification (VwVwS) - Annex 1

• Nitrous Oxide	10024-97-2	Not Listed
• Hexafluoroethane	76-16-4	Not Listed

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

• Nitrous Oxide	10024-97-2	ID Number 767, hazard class 1 - low hazard to waters
• Hexafluoroethane	76-16-4	Not Listed

Germany - Water Classification (VwVwS) - Annex 3

• Nitrous Oxide	10024-97-2	Not Listed
• Hexafluoroethane	76-16-4	Not Listed

Other

Germany - Specifically Regulated Chemicals in TRGS

• Nitrous Oxide	10024-97-2	Not Listed
• Hexafluoroethane	76-16-4	Not Listed

Portugal

Other

Portugal - Prohibited Substances

• Nitrous Oxide	10024-97-2	Not Listed
• Hexafluoroethane	76-16-4	Not Listed

United Kingdom

Environment

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

• Nitrous Oxide	10024-97-2	10000 kg
• Hexafluoroethane	76-16-4	Not Listed

Other

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

• Nitrous Oxide	10024-97-2	Not Listed
• Hexafluoroethane	76-16-4	Not Listed

United Kingdom - List of Dangerous Substances in Water

• Nitrous Oxide	10024-97-2	Not Listed

• Hexafluoroethane	76-16-4	Not Listed

United States

Labor

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

• Nitrous Oxide	10024-97-2	Not Listed
• Hexafluoroethane	76-16-4	Not Listed

U.S. - OSHA - Specifically Regulated Chemicals

• Nitrous Oxide	10024-97-2	Not Listed
• Hexafluoroethane	76-16-4	Not Listed

Environment

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

• Nitrous Oxide	10024-97-2	Not Listed
• Hexafluoroethane	76-16-4	Not Listed

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

• Nitrous Oxide	10024-97-2	Not Listed
• Hexafluoroethane	76-16-4	Not Listed

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

• Nitrous Oxide	10024-97-2	Not Listed
• Hexafluoroethane	76-16-4	Not Listed

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

• Nitrous Oxide	10024-97-2	Not Listed
• Hexafluoroethane	76-16-4	Not Listed

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

• Nitrous Oxide	10024-97-2	Not Listed
• Hexafluoroethane	76-16-4	Not Listed

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

• Nitrous Oxide	10024-97-2	Not Listed
• Hexafluoroethane	76-16-4	Not Listed

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

• Nitrous Oxide	10024-97-2	Not Listed
• Hexafluoroethane	76-16-4	Not Listed

United States - California

Environment

U.S. - California - Proposition 65 - Carcinogens List

• Nitrous Oxide	10024-97-2	Not Listed
• Hexafluoroethane	76-16-4	Not Listed

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

• Nitrous Oxide	10024-97-2	developmental toxicity, initial date 8/1/08
• Hexafluoroethane	76-16-4	Not Listed

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

• Nitrous Oxide	10024-97-2	Not Listed
• Hexafluoroethane	76-16-4	Not Listed

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

• Nitrous Oxide	10024-97-2	Not Listed
• Hexafluoroethane	76-16-4	Not Listed

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

• Nitrous Oxide	10024-97-2	Not Listed
• Hexafluoroethane	76-16-4	Not Listed

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

• Nitrous Oxide	10024-97-2	Not Listed
• Hexafluoroethane	76-16-4	Not Listed

United States - Pennsylvania

Labor

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

• Nitrous Oxide	10024-97-2	Not Listed
• Hexafluoroethane	76-16-4	Not Listed

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

• Nitrous Oxide	10024-97-2	Not Listed
• Hexafluoroethane	76-16-4	Not Listed

15.2 Chemical Safety Assessment

No Chemical Safety Assessment has been carried out.

Section 16 - Other Information

Relevant Phrases (code & full text)

R67 - Vapours may cause drowsiness and dizziness.

Last Revision Date 09/December/2014

Preparation Date 25/July/2012

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Key to abbreviations

NDA = No Data Available