

Safety Data Sheet



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

1.1 Product identifier

Product Name	● Perfluoro-1,3-Butadiene
Synonyms	● 1,1,2,3,4,4-Hexafluoro-; 1,1,2,3,4,4-Hexafluoro-Butadiene; 1,3-Butadiene; 1,3-Butadiene, Hexafluoro-; Hexafluoro-1,3-Butadiene; Hexafluorobutadiene-1,3
CAS Number	● 685-63-2
Product Code	● 60024
EC Number	● 211-681-0
Molecular Formula	● :C 4:F 6:

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

Relevant identified use(s)	● Dry etching agent for production of semiconductor; chemical vapor deposition agent in semiconductor production.
-----------------------------------	---

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	● Flammable Gases 1 - H220 Liquefied Gas - H280 Skin Irritation 2 - H315 Eye Irritation 2 - H319 Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation - H335 Specific Target Organ Toxicity Single Exposure 3: Narcotic Effects - H336
DSD/DPD	● Extremely Flammable (F+) Irritant (Xi) R12, R36/37/38, R67

2.2 Label Elements

CLP

DANGER



- Hazard statements**
- H220 - Extremely flammable gas
 - H280 - Contains gas under pressure; may explode if heated
 - H315 - Causes skin irritation
 - H319 - Causes serious eye irritation
 - H335 - May cause respiratory irritation
 - H336 - May cause drowsiness or dizziness

Precautionary statements

- Prevention**
- P210 - Keep away from heat, sparks, open flames and/or hot surfaces. - No smoking.
 - P261 - Avoid breathing gas/mist/vapours/spray.
 - P264 - Wash thoroughly after handling.
 - P271 - Use only outdoors or in a well-ventilated area.
 - P280 - Wear protective gloves and eye/face protection , .
- Response**
- P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
 - P381 - Eliminate all ignition sources 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.
 - P302+P352 - IF ON SKIN: Wash with plenty of soap and water.
 - P321 - Specific treatment, see supplemental first aid information.
 - P362 - Take off contaminated clothing and wash before reuse.
 - P332+P313 - If skin irritation occurs: Get medical advice/attention.
 - P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 - P337+P313 - If eye irritation persists: 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**
- R12 - Extremely flammable.
 - R36/37/38 - Irritating to eyes, respiratory system and skin.
 - R67 - Vapours may cause drowsiness and dizziness.
- Safety phrases**
- S9 - Keep container in a well ventilated place
 - S16 - Keep away from sources of ignition - No Smoking.
 - S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

2.3 Other Hazards

CLP

- This material is a simple asphyxiant. May displace or reduce oxygen available for breathing especially in confined spaces. Contact with gas or liquefied gas will cause burns, severe injury and/or frostbite. 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. Contact with gas or liquefied gas will cause burns, severe injury and/or frostbite. 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**

- Flammable Gases 1 - H220
Liquefied Gas - H280
Skin Irritation 2 - H315
Eye Irritation 2A - H319
Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation - H335
Specific Target Organ Toxicity Single Exposure 3: Narcotic Effects - H336
Simple Asphyxiant
Hazards Not Otherwise Classified - Health Hazard - Frostbite

2.2 Label elements**OSHA HCS 2012****DANGER**

- Hazard statements**
- Extremely flammable gas - H220
Contains gas under pressure; may explode if heated - H280
Causes skin irritation - H315
Causes serious eye irritation - H319
May cause respiratory irritation - H335
May cause drowsiness or dizziness - H336
May displace oxygen and cause rapid suffocation.

Precautionary statements

- Prevention**
- Keep away from heat, sparks, open flames and/or hot surfaces. - No smoking. - P210
Avoid breathing gas/mist/vapours/spray. - P261
Wash thoroughly after handling. - P264
Use only outdoors or in a well-ventilated area. - P271
Wear protective gloves/protective clothing/eye protection/face protection. - P280
- Response**
- Leaking gas fire: Do not extinguish, unless leak can be stopped safely. - P377
Eliminate all ignition sources if safe to do so. - P381
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
IF ON SKIN: Wash with plenty of soap and water. - P302+P352
Specific treatment, see supplemental first aid information. - P321
Take off contaminated clothing and wash before reuse. - P362
If skin irritation occurs: Get medical advice/attention. - P332+P313
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. - P305+P351+P338
If eye irritation persists: Get medical advice/attention. - P337+P313
- 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**

- This material is a simple asphyxiant. May displace or reduce oxygen available for breathing especially in confined spaces. 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
- Flammable Gases - B1
- Other Toxic Effects - D2B

2.2 Label elements

WHMIS



- Flammable Gases - B1
- Compressed Gas - A
- Other Toxic Effects - D2B

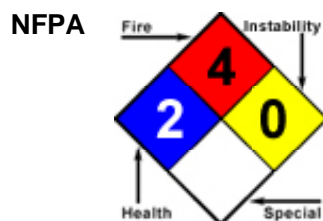
2.3 Other hazards

WHMIS

- This material is a simple asphyxiant. May displace or reduce oxygen available for breathing especially in confined spaces. Contact with gas or liquefied gas will cause burns, severe injury and/or frostbite. In Canada, the product mentioned above is considered hazardous under the Workplace Hazardous Materials Information System (WHMIS).

2.4 Other information

- The toxicological properties of this compound have not been fully investigated. Currently, there are no specific toxicological data for Perfluoro-1,3-Butadiene. All classifications are based on data for a related compound, Hexachlorobutadiene.



Section 3 - Composition/Information on Ingredients

3.1 Substances

Composition				
Chemical Name	Identifiers	%	LD50/LC50	Classifications According to Regulation/Directive
Perfluoro-1,3-Butadiene	CAS:685-63-2 EINECS:211-681-0	100%	NDA	EU DSD/DPD: Self Classified: F+, R12; Xi, R36/37/38; R67 EU CLP: Self Classified: Press. Gas - Liq., H280; Flam. Gas 1, H220; Skin Irrit. 2, H315; Eye Irrit. 2A, H319; STOT SE: Resp. Irrit., H335; STOT SE: Narc, H336 OSHA HCS 2012: Press. Gas - Liq.; Flam. Gas 1; Skin Irrit. 2; Eye Irrit. 2A; STOT SE: Resp. Irrit. & Narc; HNOC - Health - Frostbite; Simp. Asphyx

3.2 Mixtures

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

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

- If frostbite has occurred, seek medical attention immediately; do NOT rub the affected area(s) or flush them with water. In order to prevent further tissue damage, do NOT attempt to remove frozen clothing from frostbitten areas. If frostbite has not occurred, immediately and thoroughly wash contaminated skin with soap and water.

Eye

- If eye tissue is frozen, seek medical attention immediately; if tissue is not frozen, immediately and thoroughly flush the eyes with large amounts of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. If irritation, pain, swelling, lacrimation or photophobia persist, get medical attention as soon as possible.

Ingestion

- If frostbite has occurred, seek medical attention immediately; do NOT rub the affected area(s) or flush them with water. 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

- 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

- EXTREMELY FLAMMABLE
Will form explosive mixtures with air.
Vapors may travel to source of ignition and flash back.
Cylinders exposed to fire may vent and release flammable gas through pressure relief devices.
Containers may explode when heated.
Ruptured cylinders may rocket.

Hazardous Combustion Products

- Toxic carbon monoxide may be given off during combustion.

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).
DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED

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 1600 meters (1 mile) in all directions; also, consider initial evacuation for 1600 meters (1 mile) in all directions.

FIRE INVOLVING TANKS: ALWAYS stay away from tanks engulfed in fire.

FIRE INVOLVING TANKS: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.

FIRE INVOLVING TANKS: Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.

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: For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

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

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions. **LARGE SPILL:** Consider initial downwind evacuation for at least 800 meters (1/2 mile) Keep unauthorized personnel away. Stay upwind. Keep out of low areas.

6.2 Environmental precautions

- Prevent spreading of vapors through sewers, ventilation systems and 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. All equipment used when handling the product must be grounded. If possible, turn leaking containers so that gas escapes rather than liquid. Isolate area until gas has dispersed. Use water spray to reduce vapors; do not put water directly on leak, spill area or inside container.

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. Keep away from heat and ignition sources – No Smoking. Take precautionary measures against static charges. All equipment used when handling the product must be grounded. Use only non-sparking tools. Wear appropriate personal protective equipment, avoid direct contact. Avoid breathing 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. Use explosion-proof - electrical, ventilating and/or lighting equipment. 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

- Cylinders should be stored in dry, well-ventilated areas away from sources of heat, ignition and direct sunlight. Do not allow area where cylinders are stored to exceed 52C (125F). Cylinders must be protected from the environment, and preferably kept at room temperature approximately 21C (70F). Protect cylinders against physical damage. Cylinders should be firmly secured to prevent falling or being knocked-over. Store locked up.

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**
- Currently there are no applicable exposure limits established for this material.

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**

- In case of insufficient ventilation, wear suitable respiratory equipment. 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.

Section 9 - Physical and Chemical Properties**9.1 Information on Physical and Chemical Properties**

Material Description			
Physical Form	Gas	Appearance/Description	Data lacking
Color	Clear, colorless.	Odor	Solvent-like
Odor Threshold	Data lacking		
General Properties			
Boiling Point	6 C(42.8 F) @ 1 atm	Melting Point	-132 C(-205.6 F)
Decomposition Temperature	Data lacking	pH	Data lacking
Specific Gravity/Relative Density	Data lacking	Water Solubility	Soluble
Viscosity	Data lacking	Explosive Properties	No explosion hazard.
Oxidizing Properties:	Not an oxidizer.		
Volatility			
Vapor Pressure	69.6 psig @ 60 C(140 F)	Vapor Density	6.8 Air=1
Evaporation Rate	Data lacking		
Flammability			
Flash Point	Data lacking	UEL	73 %
LEL	7 %	Autoignition	Data lacking

Flammability (solid, gas)	Flammable gas.		
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

- Perfluoro-1,3-Butadiene is incompatible with strong oxidizers, alkali and alkaline earth metals, powdered metals including aluminum, zinc, and beryllium.

10.6 Hazardous decomposition products

- Products of thermal decomposition include halogenated compounds, hydrogen fluoride, phosgene and oxides of carbon.

Section 11 - Toxicological Information

11.1 Information on toxicological effects

GHS Properties	Classification
Acute toxicity	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking
Aspiration Hazard	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking
Carcinogenicity	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking
Germ Cell Mutagenicity	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking
Skin corrosion/Irritation	EU/CLP • Skin Irritation 2 OSHA HCS 2012 • Skin Irritation 2
Skin sensitization	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking
STOT-RE	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking
	EU/CLP • Specific Target Organ Toxicity Single Exposure 3: Narcotic Effects; Specific

STOT-SE	Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation OSHA HCS 2012 • Specific Target Organ Toxicity Single Exposure 3: Narcotic Effects; Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation
Toxicity for Reproduction	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking
Respiratory sensitization	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking
Serious eye damage/Irritation	EU/CLP • Eye Irritation 2 OSHA HCS 2012 • Eye Irritation 2A

Potential Health Effects

Inhalation

- Acute (Immediate)**
- May cause respiratory irritation. May affect the central nervous system. Symptoms may include dizziness, drowsiness, lethargy, coma and death. 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)**
- Causes skin irritation. Contact with gas or liquefied gas will cause burns, severe injury and/or frostbite.
- Chronic (Delayed)**
- No data available

Eye

- Acute (Immediate)**
- Causes serious eye irritation. Contact with gas or liquefied gas will cause burns, severe injury and/or frostbite.
- Chronic (Delayed)**
- No data available

Ingestion

- Acute (Immediate)**
- Ingestion can cause burns similar to frostbite.
- Chronic (Delayed)**
- No data available

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	UN3160	Liquefied gas, toxic, flammable N.O.S. (Perfluoro-1,3-Butadiene)	2.1,2.3	NDA	NDA
TDG	UN3160	LIQUEFIED GAS, TOXIC, FLAMMABLE N.O.S. (Perfluoro-1,3-Butadiene)	2.1,2.3	NDA	NDA
IMO/IMDG	UN3160	Liquefied gas, toxic, flammable N.O.S. (Perfluoro-1,3-Butadiene)	2.1,2.3	NDA	NDA
IATA/ICAO	NDA	Forbidden	NDA	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.

14.8 Other information

- DOT ● Special Provisions 3, Inhalation Hazard Zone C

Section 15 - Regulatory Information

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

SARA Hazard Classifications ● Acute, Fire, Pressure (Sudden Release of)

State Right To Know				
Component	CAS	MA	NJ	PA
Perfluoro-1,3-Butadiene	685-63-2	No	No	No

Inventory						
Component	CAS	Canada DSL	Canada NDSL	China	EU EINECS	EU ELNICS
Perfluoro-1,3-Butadiene	685-63-2	No	Yes	Yes	Yes	No

Inventory (Con't.)		
Component	CAS	TSCA
Perfluoro-1,3-Butadiene	685-63-2	Yes

Canada

Labor

Canada - WHMIS - Classifications of Substances

• Perfluoro-1,3-Butadiene	685-63-2	Not Listed
---------------------------	----------	------------

Canada - WHMIS - Ingredient Disclosure List

• Perfluoro-1,3-Butadiene	685-63-2	Not Listed
---------------------------	----------	------------

Environment

Canada - CEPA - Priority Substances List

• Perfluoro-1,3-Butadiene	685-63-2	Not Listed
---------------------------	----------	------------

China

Environment

China - Ozone Depleting Substances - First Schedule

• Perfluoro-1,3-Butadiene	685-63-2	Not Listed
---------------------------	----------	------------

China - Ozone Depleting Substances - Second Schedule

• Perfluoro-1,3-Butadiene	685-63-2	Not Listed
---------------------------	----------	------------

China - Ozone Depleting Substances - Third Schedule

• Perfluoro-1,3-Butadiene	685-63-2	Not Listed
---------------------------	----------	------------

Other

China - Annex I & II - Controlled Chemicals Lists

• Perfluoro-1,3-Butadiene	685-63-2	Not Listed
---------------------------	----------	------------

China - Dangerous Goods List

• Perfluoro-1,3-Butadiene	685-63-2	Not Listed
---------------------------	----------	------------

China - Export Control List - Part I Chemicals

• Perfluoro-1,3-Butadiene	685-63-2	Not Listed
---------------------------	----------	------------

Europe

Other

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

• Perfluoro-1,3-Butadiene	685-63-2	Not Listed
---------------------------	----------	------------

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

• Perfluoro-1,3-Butadiene	685-63-2	Not Listed
---------------------------	----------	------------

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

• Perfluoro-1,3-Butadiene	685-63-2	Not Listed
---------------------------	----------	------------

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

• Perfluoro-1,3-Butadiene	685-63-2	Not Listed
---------------------------	----------	------------

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

• Perfluoro-1,3-Butadiene	685-63-2	Not Listed
---------------------------	----------	------------

Germany

Environment**Germany - TA Luft - Types and Classes**

• Perfluoro-1,3-Butadiene	685-63-2	Not Listed
---------------------------	----------	------------

Germany - Water Classification (VwVwS) - Annex 1

• Perfluoro-1,3-Butadiene	685-63-2	Not Listed
---------------------------	----------	------------

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

• Perfluoro-1,3-Butadiene	685-63-2	Not Listed
---------------------------	----------	------------

Germany - Water Classification (VwVwS) - Annex 3

• Perfluoro-1,3-Butadiene	685-63-2	Not Listed
---------------------------	----------	------------

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

• Perfluoro-1,3-Butadiene	685-63-2	Not Listed
---------------------------	----------	------------

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

• Perfluoro-1,3-Butadiene	685-63-2	Not Listed
---------------------------	----------	------------

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

• Perfluoro-1,3-Butadiene	685-63-2	Not Listed
---------------------------	----------	------------

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

• Perfluoro-1,3-Butadiene	685-63-2	Not Listed
---------------------------	----------	------------

United Kingdom - List of Dangerous Substances in Water

• Perfluoro-1,3-Butadiene	685-63-2	Not Listed
---------------------------	----------	------------

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

• Perfluoro-1,3-Butadiene	685-63-2	Not Listed
---------------------------	----------	------------

U.S. - OSHA - Specifically Regulated Chemicals

• Perfluoro-1,3-Butadiene	685-63-2	Not Listed
---------------------------	----------	------------

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

• Perfluoro-1,3-Butadiene	685-63-2	Not Listed
---------------------------	----------	------------

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

• Perfluoro-1,3-Butadiene	685-63-2	Not Listed
---------------------------	----------	------------

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

• Perfluoro-1,3-Butadiene	685-63-2	Not Listed
---------------------------	----------	------------

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

• Perfluoro-1,3-Butadiene	685-63-2	Not Listed
U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs		
• Perfluoro-1,3-Butadiene	685-63-2	Not Listed
U.S. - CERCLA/SARA - Section 313 - Emission Reporting		
• Perfluoro-1,3-Butadiene	685-63-2	Not Listed
U.S. - CERCLA/SARA - Section 313 - PBT Chemical Listing		
• Perfluoro-1,3-Butadiene	685-63-2	Not Listed

United States - California

Environment

U.S. - California - Proposition 65 - Carcinogens List		
• Perfluoro-1,3-Butadiene	685-63-2	Not Listed
U.S. - California - Proposition 65 - Developmental Toxicity		
• Perfluoro-1,3-Butadiene	685-63-2	Not Listed
U.S. - California - Proposition 65 - Maximum Allowable Dose Levels (MADL)		
• Perfluoro-1,3-Butadiene	685-63-2	Not Listed
U.S. - California - Proposition 65 - No Significant Risk Levels (NSRL)		
• Perfluoro-1,3-Butadiene	685-63-2	Not Listed
U.S. - California - Proposition 65 - Reproductive Toxicity - Female		
• Perfluoro-1,3-Butadiene	685-63-2	Not Listed
U.S. - California - Proposition 65 - Reproductive Toxicity - Male		
• Perfluoro-1,3-Butadiene	685-63-2	Not Listed

United States - Pennsylvania

Labor

U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List		
• Perfluoro-1,3-Butadiene	685-63-2	Not Listed
U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances		
• Perfluoro-1,3-Butadiene	685-63-2	Not Listed

15.2 Chemical Safety Assessment

- No Chemical Safety Assessment has been carried out.

Section 16 - Other Information

Last Revision Date	• 16/October/2014
Preparation Date	• 16/October/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
