

Printing date 24.12.2015

Version number 1

Revision: 24.12.2015

**\* SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1 Product identifier****Trade name:** FLUOROCARBON GAS PFC-C318 / DAIFLON GAS C318EH / PFC-C318**Article number:** C318**EC number:**204-075-2**1.2 Relevant identified uses of the substance or mixture and uses advised against:**

No further relevant information available.

**1.3 Details of the supplier of the safety data sheet****Manufacturer/Supplier:****DAIKIN INDUSTRIES, LTD. CHEMICALS DIVISION:***Umeda Center Bldg., 4-12, Nakazaki-Nishi 2-chome, Kita-Ku, Osaka, JAPAN**Phone: (+81) 6-6373-4345 Fax: (+81) 6-6373-4281***Further information obtainable from:** <http://www.daikin.com/>**1.4 Emergency telephone number:***Japan: +81-6-6349-7521**China: +86-512-5-232-0949, +86-21-34151689**South Korea: +82-2-568-1722**Americas: +1-256-306-5000**Europe: +49-211-179 225-0***SECTION 2: Hazard identification****2.1 Classification of the substance or mixture****Classification according to Regulation (EC) No 1272/2008**

Press. Gas L H280 Contains gas under pressure; may explode if heated.

**2.2 Label elements****Labelling according to Regulation (EC) No 1272/2008:**

The substance is classified and labelled according to the CLP regulation.

**Signal word:** Warning**Preccautionary statements:***P410+P403 Protect from sunlight. Store in a well-ventilated place.***SECTION 3: Composition/information on ingredients****Information on ingredients:**

115-25-3 Octafluorocyclobutane >99,99%

*Press. Gas L, H280***Identification number(s)****EC number:** 204-075-2**\* SECTION 4: First aid measures****4.1 Description of first aid measures****General information:** Seek immediate medical advice.**After inhalation:***Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult a doctor if symptoms persist.**In case of unconsciousness place patient stably in side position for transportation.**In case of emergency to rescue the victims; be sure to wear supplied-air respirator (SAR) or self-contained breathing apparatus (SCBA).**At high levels, cardiac arrhythmia may occur.***After skin contact:***Rinse with warm water.**In cases of frost bites, rinse with plenty of water. Do not remove clothing.**Immediately rinse with warm water and soap.*

Printing date 24.12.2015

Version number 1

Revision: 24.12.2015

**Trade name: FLUOROCARBON GAS PFC-C318 /DAIFLON GAS C318EH /PFC-C318**

*Consult a doctor in case of complaints.*

**After eye contact:**

*Rinse opened eye for several minutes under running water.*

*Consult an ophthalmologist in case of complaints.*

*After swallowing: Not applicable.*

**4.2 Most important symptoms and effects, both acute and chronic:**

*Frost bites*

*High concentrations cause asphyxiation. May cause an abnormal heart rhythm and prove suddenly fatal.*

**Information for doctor:**

*Catecholamines such as adrenaline, and other compounds having similar effects, should be reserved for emergencies and then used only with special caution.*

*The examining physician should advise workers taking medications containing catecholamines that they may be at increased risk and should avoid excessive exposure.*

**4.3 Indication of any immediate medical attention and special treatment needed:**

*No further relevant information available.*

**\* SECTION 5: Firefighting measures****5.1 Extinguishing media**

**Suitable extinguishing agents:** Use fire extinguishing methods suitable for surrounding conditions.

**5.2 Special hazards arising from the substance or mixture:**

*Hydrogen fluoride (HF)*

*Formation of toxic gases is possible during heating or in case of fire.*

*Receptacle may explode when heated.*

**5.3 Advice for firefighters:**

*Move receptacle to a safe place immediately if possible. If not, spray water on the receptacles and surrounding equipment to cool.*

*If receptacle catches fire: cool them with plenty of water.*

*If possible, close valves of receptacles to shut off the gas supply.*

**Protective equipment:**

*Wear self-contained breathing apparatus and protective suit.*

*Do not inhale explosion gases or combustion gases.*

**\* SECTION 6: Accidental release measures****6.1 Personal precautions, protective equipment and emergency procedures:**

*Wear appropriate protective devices (See Section 8 Exposure Controls/Personal Protection).*

*Avoid contact with eyes and skin.*

*Do not inhale the product.*

*Ensure adequate ventilation before entering the area.*

*Stay on the windward side.*

*Keep out unauthorized persons.*

**6.2 Environmental precautions:**

*Suppress gases/fumes/haze with water spray.*

*Do not allow to enter sewers/surface or ground water.*

*Must not be emitted into the environment.*

**6.3 Methods and material for containment and cleaning up:** Ensure adequate ventilation.**6.4 Reference to other sections:**

*See Section 8 for information on personal protection equipment.*

*See Section 13 for disposal information.*

**\* SECTION 7: Handling and storage****7.1 Precautions for safe handling:**

*Danger of ignition/explosion if mixed with flammable gas.*

*Do not inhale the gas.*

*Ensure good ventilation/exhaustion at the workplace.*

*Handle with care. Avoid jolting, friction and impact.*

*For heating receptacle, use hot compresses or lukewarm water below 40 °C.*

*Do not use heaters.*

Printing date 24.12.2015

Version number 1

Revision: 24.12.2015

**Trade name: FLUOROCARBON GAS PFC-C318 /DAIFLON GAS C318EH /PFC-C318**

*Stay on the windward side when working outdoors.*

*Be careful of leakage when attaching/detaching receptacles.*

*Inhaling large quantities may cause cardiac arrhythmia or asphyxiation or both.*

*Keep away from naked flame or metal heated over 300 - 400 °C to prevent thermal decomposition that may form toxic gases.*

*Do not handle until all safety precautions have been read and understood.*

**Information about fire - and explosion protection:**

*Keep ignition sources away - Do not smoke.*

*Keep respiratory protective device available.*

**7.2 Conditions for safe storage, including any incompatibilities:**

**Storage**

**Requirements to be met by storerooms and receptacles:**

*Store in a cool and dry location.*

*Keep containers tightly sealed.*

**Information about storage in one common storage facility:**

*No further information available.*

*See section 10 for information on incompatible materials.*

**Further information about storage conditions:**

*Protect from heat and direct sunlight.*

*Store containers in a well ventilated area.*

*Store locked up.*

**7.3 Specific end use(s):** No further relevant information available.

\* **SECTION 8: Exposure controls/personal protection**

**Additional information about design of technical facilities:** No further data; see item 7.

**8.1 Control parameters** No further information available.

**Ingredients with limit values that require monitoring at the workplace:** Not required.

**8.2 Exposure controls**

**Personal protective equipment**

**General protective and hygienic measures:**

*Wash hands before breaks and at the end of work.*

*Do not eat or drink while working.*

*Keep away from tobacco products.*

**Respiratory protection:** Use respiratory protective device with organic gas cartridge.

**Protection of hands:**



Protective gloves

*To avoid skin problems reduce the wearing of gloves to the required minimum.*

**Material of gloves:**

*The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.*

*Leather*

**Penetration time of glove material**

*The exact break trough time has to be found out by the manufacturer of the protective gloves and has to be observed.*

**Eye protection:**



Safety glasses

**Body protection:** Protective work clothing

Printing date 24.12.2015

Version number 1

Revision: 24.12.2015

**Trade name: FLUOROCARBON GAS PFC-C318 /DAIFLON GAS C318EH /PFC-C318****\* SECTION 9: Physical and chemical properties****9.1 Information on basic physical and chemical properties****General Information****Appearance**

<b>Form:</b>	Liquefied gas
<b>Colour:</b>	Colourless
<b>Odour:</b>	Characteristic
<b>Odour threshold:</b>	Not determined.
<b>pH-value:</b>	No further information available.
<b>Melting point/Melting range:</b>	-41.4 °C
<b>Boiling point/Boiling range:</b>	-5.85 °C No further information available.
<b>Flash point:</b>	Not applicable.
<b>Flammability (solid, gaseous):</b>	No data.
<b>Decomposition temperature:</b>	No further information available.
<b>Self-igniting:</b>	Not determined.
<b>Danger of explosion:</b>	Not determined.
<b>Explosion limits:</b>	
<b>Lower explosive limit:</b>	No further information available.
<b>Upper explosive limit:</b>	No further information available.
<b>Vapour pressure at 20 °C:</b>	0.266 MPa
<b>Density at 25 °C:</b>	1.48 g/cm³
<b>Relative density</b>	Not determined.
<b>Vapour density</b>	6.95 (Air=1)
<b>Evaporation rate</b>	Not applicable.
<b>Solubility in / Miscibility with water at 20 °C:</b>	0.005 g/100g
<b>Partition coefficient (n-octanol/water):</b>	No further information available.
<b>Viscosity:</b>	
<b>Dynamic:</b>	Not determined.
<b>Kinematic:</b>	Not determined.
<b>9.2 Other information:</b>	No further relevant information available.

**\* SECTION 10: Stability and reactivity****10.1 Reactivity** No further relevant information available.**10.2 Chemical stability****Thermal decomposition / conditions to be avoided:** To avoid thermal decomposition do not overheat.**10.3 Possibility of hazardous reactions:** No dangerous reactions known under normal conditions of use.**10.4 Conditions to avoid:** Keep away from heat, sparks, flame, high temperature.**10.5 Incompatible materials:** Alkali or alkaline earth metals - powdered Al, Zn, Mg, etc.**10.6 Hazardous decomposition products:**

Danger of forming toxic pyrolysis products.

Fluorophosgene in contact with naked flame or red hot objects.

Hydrofluoric acid, carbonyl fluoride

**\* SECTION 11: Toxicological information****11.1 Information on toxicological effects****Acute toxicity** Based on available data, the classification criteria are not met.

Printing date 24.12.2015

Version number 1

Revision: 24.12.2015

**Trade name: FLUOROCARBON GAS PFC-C318 /DAIFLON GAS C318EH /PFC-C318****LD/LC50 values relevant for classification:****115-25-3 Octafluorocyclobutane****Inhalative LC50/4h >800,000 ppm (Rat)****Primary irritant effect****Skin corrosion/irritation****No further information available.****No further information available.****Serious eye damage/irritation****No further information available.****No further information available.****after inhalation:** **No further information available.****Respiratory or skin sensitisation** **Based on available data, the classification criteria are not met.****CMR effects****Germ cell mutagenicity** **Based on available data, the classification criteria are not met.****Carcinogenicity** **Based on available data, the classification criteria are not met.****Reproductive toxicity** **Based on available data, the classification criteria are not met.****STOT-single exposure** **Based on available data, the classification criteria are not met.****STOT-repeated exposure** **Based on available data, the classification criteria are not met.****Aspiration hazard** **Based on available data, the classification criteria are not met.****Chronic study** **No further information available.****\* SECTION 12: Ecological information****12.1 Toxicity****Aquatic toxicity:** **No further relevant information available.****12.2 Persistence and degradability:** **No further relevant information available.****12.3 Bioaccumulative potential:** **No further relevant information available.****12.4 Mobility in soil:** **No further relevant information available.****Ecotoxicological effects:** **no data****Additional ecological information:****General notes:** **Ozone depletion potential(ODP) : 0****12.5 Results of PBT and vPvB assessment****PBT:** **No further relevant information available.****vPvB:** **No further relevant information available.****12.6 Other adverse effects:** **No further relevant information available.****\* SECTION 13: Disposal considerations****13.1 Waste treatment methods****Recommendation:****Disposal must be made according to official regulations.****Incineration in an adequate incinerator is recommended.****Uncleaned packaging****Recommendation:** **Disposal must be made according to official regulations.****\* SECTION 14: Transport information****14.1 UN-Number:****ADR, IMDG, IATA****UN1976****14.2 UN proper shipping name:****ADR:****1976 OCTAFLUOROCYCLOBUTANE (REFRIGERANT GAS RC 318)****IMDG, IATA****OCTAFLUOROCYCLOBUTANE (REFRIGERANT GAS RC 318)**

Printing date 24.12.2015

Version number 1

Revision: 24.12.2015

**Trade name: FLUOROCARBON GAS PFC-C318 /DAIFLON GAS C318EH /PFC-C318****14.3 Transport hazard class(es):****ADR**

**Class:** 2 2A Gases.  
**Label:** 2.2  
**IMDG**



**Class:** 2.2  
**Label:** 2.2  
**IATA**



**Class:** 2 Gases.  
**Label:** 2.2

**14.4 Packing group:**

**ADR, IMDG, IATA** Not applicable

**14.5 Environmental hazards:**

**Marine pollutant:** No

**14.6 Special precautions for user:** Warning: Gases.

**14.7 Transport in bulk according to Annex II of**

**MARPOL73/78 and the IBC Code:**

**Transport/Additional information:**

Not applicable.

Avoid direct sunlight. Make sure of no damage, corrosion, leaks on the receptacles.

Take necessary measures for preventing cargo shift.

**ADR**

**Limited quantities (LQ):** 120 ml

**Transport category:** 3

**Tunnel restriction code:** C/E

**UN "Model Regulation":** UN1976, OCTAFLUOROCYCLOBUTANE (REFRIGERANT GAS RC 318), 2.2

**\* SECTION 15: Regulatory information****15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

No further relevant information available.

**Labelling according to Regulation (EC) No 1272/2008**

The substance is classified and labelled according to the CLP regulation.

**Hazard pictograms**

GHS04

**Signal word** Warning**Hazard statements**

H280 Contains gas under pressure; may explode if heated.

Printing date 24.12.2015

Version number 1

Revision: 24.12.2015

**Trade name: FLUOROCARBON GAS PFC-C318 /DAIFLON GAS C318EH /PFC-C318****Preccautionary statements**

P410+P403 Protect from sunlight. Store in a well-ventilated place.

**National regulations** No further information available.

**Other regulations, limitations and prohibitive regulations:** 1

**SECTION 16: Other information**

*The product is for the industrial use only. We do not guarantee the safety in case the product is used for the other purposes. When using the product for health-care application or food/feed application, consult us in advance.*

*This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.*

**Department issuing SDS: EHS Department**

**Contact:** <http://www.daikin.com/>

**Abbreviations and acronyms:**

**RID:** Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

**ICAO:** International Civil Aviation Organisation

**ADR:** Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

**IMDG:** International Maritime Code for Dangerous Goods

**IATA:** International Air Transport Association

**GHS:** Globally Harmonised System of Classification and Labelling of Chemicals

**EINECS:** European Inventory of Existing Commercial Chemical Substances

**LC50:** Lethal concentration, 50 percent

**LD50:** Lethal dose, 50 percent

**PBT:** Persistent, Bioaccumulative and Toxic

**vPvB:** very Persistent and very Bioaccumulative

**Press. Gas L:** Gases under pressure: Liquefied gas

**\* Data compared to the previous version altered.**