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1 Identification of the substance/mixture and of the company/undertaking

- **Product identifier**
- **Trade name:** PFC-14
- **Article number:** 14
- **CAS Number:**
75-73-0
- **Relevant identified uses of the substance or mixture and uses advised against**
No further relevant information available.
- **Application of the substance / the preparation** Surface active agent
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**
DAIKIN INDUSTRIES, LTD.CHEMICAL DIVISION:
Umeda Center Bldg., 4-12, Nakazaki-Nishi2-chome, Kita-Ku, Osaka, JAPAN
Phone: (+81) 6-6373-4345 Fax: (+81) 6-6373-4281
- **Further information obtainable from:** <http://www.daikin.com/>
- **Emergency telephone number:** +81-6-6349-7521, +1-256-306-5000, +86-512-5232-0973, +49-211-179 225-0

2 Hazard identification

- **Classification of the substance or mixture**
- **Classification according to Regulation (EC) No 1272/2008**



GHS04 gas cylinder

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



GHS07

STOT SE 3 H336 May cause drowsiness or dizziness.

- **Signal word** Warning
- **Precautionary statements**
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
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.
P405 Store locked up.
P410 Protect from sunlight.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

3 Composition/information on ingredients

- **Chemical characterization:** Substances
- **CAS No. Description**
75-73-0 carbon tetrafluoride

4 First aid measures

- **Description of first aid measures**
- **General information:** Seek immediate medical advice.
- **After inhalation:** Supply fresh air; consult doctor in case of complaints.
- **After skin contact:**
Immediately wash with water and soap and rinse thoroughly.
In cases of frost bites, rinse with plenty of water. Do not remove clothing.
- **After eye contact:** Rinse opened eye for several minutes under running water.
- **After swallowing:** If symptoms persist consult doctor.
- **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.
- **Most important symptoms and effects, both acute and delayed**
Frost bites
Causes asphyxiation in high concentrations. May cause an abnormal heart rhythm and prove suddenly fatal.

Safety data sheet

Printing date 09.07.2013

Revision: 09.07.2013

Trade name: PFC-14

- **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

5 Firefighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:**
CO₂, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **Special hazards arising from the substance or mixture**
Formation of toxic gases is possible during heating or in case of fire.
In case of fire, the following can be released:
Hydrogen fluoride (HF)
- **Advice for firefighters**
- **Protective equipment:** Do not inhale explosion gases or combustion gases.

6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**
Keep people at a distance and stay on the windward side.
- **Environmental precautions:** Inform authorities in case of gas release.
- **Methods and material for containment and cleaning up:** No special measures required.
- **Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

- **Handling:**
- **Precautions for safe handling** No special measures required.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** No special requirements.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:**
Keep container tightly sealed.
Protect from heat and direct sunlight.
- **Maximum storage temperature:** 40 °C
- **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

- **Additional information about design of technical facilities:** No further data; see item 7.
- **Control parameters**
- **Ingredients with limit values that require monitoring at the workplace:** Not required.
- **Additional information:** The lists valid during the making were used as basis.
- **Exposure controls**
- **Personal protective equipment:**
- **General protective and hygienic measures:**
Wash hands before breaks and at the end of work.
Keep away from tobacco products.
- **Respiratory protection:**
Wear respirator for organic gases, where leakage may occur.
Use suitable respiratory protective device in case of insufficient ventilation.
- **Protection of hands:**



Protective gloves

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

Safety data sheet

Printing date 09.07.2013

Revision: 09.07.2013

Trade name: PFC-14

- **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.

- **Eye protection:** Safety glasses
- **Body protection:** Protective work clothing

9 Physical and chemical properties

- **Information on basic physical and chemical properties**

- **General Information**

- **Appearance:**

Form: Liquefied gas

Colour: Colourless

- **Odour:** Odourless

- **Change in condition**

Melting point/Melting range: -184 °C

Boiling point/Boiling range: -128 °C

- **Flash point:** Not applicable.

- **Danger of explosion:** Product does not present an explosion hazard.

- **Vapour pressure at -80 °C:** 1,202 MPa

- **Density:** Not determined.

- **Solubility in / Miscibility with**

water: Not miscible or difficult to mix.

- **Other information** No further relevant information available.

10 Stability and reactivity

- **Reactivity**

- **Chemical stability**

- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.

- **Possibility of hazardous reactions** No dangerous reactions known.

- **Conditions to avoid** No further relevant information available.

- **Incompatible materials:** alkali or alkaline earth metals--powdered Al, Zn, Mg, etc.

- **Hazardous decomposition products:**

Danger of forming toxic pyrolysis products.

Fluorophosgene on contact with naked flame or red hot objects.

11 Toxicological information

- **Information on toxicological effects**

- **Acute toxicity:** no data

- **Additional toxicological information:**

When used and handled according to specifications, the product does not have any harmful effects to our experience and the information provided to us.

12 Ecological information

- **Toxicity**

- **Aquatic toxicity:** No further relevant information available.

- **Persistence and degradability** No further relevant information available.

- **Behaviour in environmental systems:**

- **Bioaccumulative potential** No further relevant information available.

- **Mobility in soil** No further relevant information available.

- **Additional ecological information:**

- **General notes:**

Ozone depletion potential(ODP) : 0

Global warming potential(GWP) : 6,500

- **Results of PBT and vPvB assessment**

- **PBT:** Not applicable.

Safety data sheet

Printing date 09.07.2013

Revision: 09.07.2013

Trade name: PFC-14

- **vPvB:** Not applicable.
- **Other adverse effects** No further relevant information available.

13 Disposal considerations

- **Waste treatment methods**
- **Recommendation**
Must be specially treated adhering to official regulations.
Incineration in an adequate incinerator is recommended.
- **Uncleaned packaging:**
- **Recommendation:** Disposal must be made according to official regulations.

14 Transport information

- **UN-Number**
- **ADR, IMDG, IATA** 1982
- **UN proper shipping name**
- **IMDG, IATA** TETRAFLUOROMETHANE (REFRIGERANT GAS R 14)
- **Transport hazard class(es)**

- **ADR**



- **Class** 2 1A Gases.
- **Label** 2.2

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- **IMDG, IATA**



- **Class** 2 Gases.
- **Label** 2.2
- **Packing group**
- **ADR, IMDG, IATA** Not applicable
- **Environmental hazards:**
- **Marine pollutant:** No
- **Special precautions for user** Warning: Gases.
- **Danger code (Kemler):** 20
- **EMS Number:** F-C,S-V
- **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code** Not applicable.
- **Transport/Additional information:**

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- **ADR**
 - **Limited quantities (LQ)** LQ1
 - **Transport category** 3
 - **Tunnel restriction code** C/E
 - **UN "Model Regulation":** UN1982, TETRAFLUOROMETHANE (REFRIGERANT GAS R 14), 2.2

15 Regulatory information

- **National regulations:**
TSCA INVENTORY: All components of this product are in compliance with the inventory listing requirements of the U.S. Toxic Substance Control Act (TSCA) Chemical Substance Inventory.
CHINA INVENTORY: All components of this product are in compliance with the inventory listing requirements of the Inventory of Existing Chemical Substances (IECSC)
KOREA INVENTORY: All components of this product are in compliance with the inventory listing requirements of the Korea. Existing Chemicals Inventory (KECI)

Safety data sheet

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CANADA INVENTORY: All components of this product are in compliance with the inventory listing requirements of the Canada. Domestic Substances List (DSL).

AUSTRALIA INVENTORY: All components of this product are in compliance with the inventory listing requirements of the Australia. Inventory of Chemical Substances (AICS).

PHILIPPINE INVENTORY: All components of this product are in compliance with the inventory listing requirements of the Philippines. Inventory of Chemicals and Chemical Substances (PICCS).

16 Other information

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 MSDS:** Toxicology and Product Regulatory

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

· **Abbreviations and acronyms:**

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 Harmonized System of Classification and Labelling of Chemicals

CAS: Chemical Abstracts Service (division of the American Chemical Society)