Safety data sheet

Printing date 05.09.2017 Version number 1 Revision: 05.09.2017

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

1.1 Product identifier

Trade name: 6FM
Article number: 6FM
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 C H280 Contains gas under pressure; may explode if heated.

Carc. 2 H351 Suspected of causing cancer.
STOT SE 2 H371 May cause damage to the kidneys. Route of exposure: Inhalation.
STOT RE 2 H373 May cause damage to the kidneys through prolonged or repeated exposure. Route of exposure: Inhalation.

Acute Tox. 4 H332 Harmful if inhaled.
STOT SE 3 H335 May cause respiratory irritation.

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
Precautionary statements:
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P405 Store locked up.
P410+P403 Protect from sunlight. Store in a well-ventilated place.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Safety data sheet

SECTION 3: Composition/information on ingredients

Information on ingredients:

116-15-4 Hexafluoropropene *≥99%*
Xn R20; Xi R37
Press. Gas C, H280
STOT SE 2, H371
Acute Tox. 4, H332; STOT SE 3, H335

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 apapratus (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.
After eye contact: *Rinse opened eye for several minutes under running water.*
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.

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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:
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.
Wear fully protective suit.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures:
Ensure adequate ventilation before entering the area.
Stay on the windward side.

Keep out unauthorized persons.
Wear appropriate protective devices (See Section 8 Exposure Controls/Personal Protection).
Avoid contact with eyes and skin.
Do not swallow the product.
6.2 Environmental precautions:
Suppress gases/fumes/haze with water spray.
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.
Emergency response plannning guideline
ERPG-1 : 10ppm
ERPG-2 : 50ppm
ERPG-3 : 500ppm

SECTION 7: Handling and storage

7.1 Precautions for safe handling:
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 ℃.
Do not use heaters.
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 ℃ 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 respiratory protective device available.
Keep ignition sources away - Do not smoke.
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:
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
Ingredients with limit values that require monitoring at the workplace: *Not required.*
DNELs:
Inhalative
DNEL - general population
0.15 mg/m3 (long-term exposure) (systemic effects)
34 mg/m3 (short-terrn exposure) (systemic effects)
DNEL - worker
0.62 mg/m3 (long-term exposure) (systemic effects)
46 mg/m3 (short-term exposure) (systemic effects)

PNECs:
0.033 mg/l (freshwater) (aqua)
0.279 mg/kg dw (freshwater) (sediment)
0.334 mg/l (intermittent release) (aqua)
0.003 mg/l (marine water) (aqua)
0.028 mg/kg dw (marine water) (sediment)
0.264 mg/kg dw (soil)
Additional information: The lists valid during the making were used as basis.

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:
Wear respirator for organic gases, where leakage may occur.
Use respiratory protective device with organic gas cartridge.
Protection of hands:


Protective gloves

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.
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

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SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties
General Information
Appearance

Form:	Liquefied gas
Colour:	Colourless
Odour:	Odourless
pH-value:	Not applicable.
Melting point/freezing point:	-156°C
Initial boiling point and boiling range:	-29°C
Flash point:	Not applicable.
Explosion limits:	
Lower explosive limit:	No further information available.
Upper explosive limit:	No further information available.
Vapour pressure at 20°C:	0.64 MPa
Density at -40°C:	1.583 g/cm³
Solubility in / Miscibility with water at 28°C:	82 mg/l

Partition coefficient: n-octanol/water at 20°C: *1.95 log POW (pH 7)*
9.2 Other information: *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:
Carbonyl fluoride
Hydrofluoric acid, carbonyl fluoride

SECTION 11: Toxicological information

11.1 Information on toxicological effects
Acute toxicity
Harmful if inhaled.
LD/LC50 values relevant for classification:

116-15-4 Hexafluoropropene

Inhalative LC50/4 h 3060 ppm (Rat)
Primary irritant effect
Skin corrosion/irritation *No further information available.*
Serious eye damage/irritation *No further information available.*
Respiratory or skin sensitisation *Based on available data, the classification criteria are not met.*
Additional toxicological information:
Acute effects (acute toxicity, irritation and corrosivity)
NOAEL (inhalation): 859 mg/m3 (140ppm) (rat)
CMR effects
Carcinogenicity
Suspected of causing cancer.
Reproductive toxicity *Based on available data, the classification criteria are not met.*
STOT-single exposure
May cause damage to the kidneys. Route of exposure: Inhalation.
STOT-repeated exposure
May cause damage to the kidneys through prolonged or repeated exposure. Route of exposure: Inhalation.
Aspiration hazard *Based on available data, the classification criteria are not met.*
Chronic study

116-15-4 Hexafluoropropene

Inhalative 90 days NOAEL 61.4 mg/m3 (10 ppm) (Mouse) (92 days)

SECTION 12: Ecological information

12.1 Toxicity
Aquatic toxicity:

116-15-4 Hexafluoropropene

EC50 264.1 mg/kg (Earthworm) (14 days (QSAR; esetimated))
EC50/48 h 71.9 mg/l (Daphnia) (QSAE; estimated)
EC50/96 h 33.4 mg/l (Alga) (QSAR; estimated)
LC50/96 h 128.5 mg/l (Fish) (QSAR; estimated)
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.*

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Other information
Dissipation half-life of parent compound in air: 6 days
Henry's law constant: 1080000 Pa m3/mol
Koc(20 °C) = 47,5 l/kg (predicted)
Distribution modelling:
- Air: 100%
- Water: 0.0003%
- Soil: 0.004%
- Sediment: 0.0%
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.*

Uncleaned packaging
Recommendation: *Disposal must be made according to official regulations.*

SECTION 14: Transport information

14.1 UN-Number:	
ADR, IMDG, IATA	*UN1858*
14.2 UN proper shipping name:	
ADR:	*1858 HEXAFLUOROPROPYLENE (REFRIGERANT GAS R 1216)*
IMDG, IATA	*HEXAFLUOROPROPYLENE (REFRIGERANT GAS R 1216)*
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.*
Danger code (Kemler):	*20*

Safety data sheet

EMS Number:	F-C,S-V
14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code:	Not applicable.
Transport/Additional information:	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":	UN1858, HEXAFLUOROPROPYLENE (REFRIGERANT GAS R 1216), 2.2

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
Labelling according to Regulation (EC) No 1272/2008
The substance is classified and labelled according to the CLP regulation.
Hazard pictograms

GHS04 GHS07 GHS08

Signal word Warning

Hazard-determining components of labelling:
Hexafluoropropene
Hazard statements
H280 Contains gas under pressure; may explode if heated.
H332 Harmful if inhaled.
H351 Suspected of causing cancer.
H371 May cause damage to the kidneys. Route of exposure: Inhalation.
H335 May cause respiratory irritation.
H373 May cause damage to the kidneys through prolonged or repeated exposure. Route of exposure: Inhalation.
Precautionary statements
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P405 Store locked up.
P410+P403 Protect from sunlight. Store in a well-ventilated place.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.
15.2 Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

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)
IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)
ICAO: International Civil Aviation Organisation
ICAO-TI: Technical Instructions by the "International Civil Aviation Organisation" (ICAO)
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

Safety data sheet

Trade name: 6FM

IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
GHS: Globally Harmonised System of Classification and Labelling of Chemicals
DNEL: Derived No-Effect Level (REACH)
PNEC: Predicted No-Effect Concentration (REACH)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
Press. Gas C: Gases under pressure – Compressed gas
Acute Tox. 4: Acute toxicity – Category 4
Carc. 2: Carcinogenicity – Category 2
STOT SE 2: Specific target organ toxicity (single exposure) – Category 2
STOT RE 2: Specific target organ toxicity (repeated exposure) – Category 2
**** Data compared to the previous version altered.***