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*** SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1 Product identifier****Trade name: OPTOOL UD120****Article number: FS-UD120 STD****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:

OSAKA UMEDA TWIN TOWERS SOUTH, 1-13-1 Umeda, Kita-ku, Osaka-shi, Osaka, 530-0001, Japan

Phone: +81-6-6147-9702 Fax: +81-6-6147-9807

Further information obtainable from: <http://www.daikin.com/>**1.4 Emergency telephone number:**

Japan: +81-6-6349-7521

China: +86-532-8388-9090, +86-21-34151689

South Korea: +82-2-568-1722

Americas: CHEMTREC +1-800-424-9300 (Outside US/Canada: +1-703-527-3887)

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**

Aquatic Chronic 4 H413 May cause long lasting harmful effects to aquatic life.

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

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

Signal word: Not applicable**Precautionary statements:**

P273 Avoid release to the environment.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

*** SECTION 3: Composition/information on ingredients****Information on ingredients:**

CAS: 163702-06-5 Ethyl nonafluoroisobutyl ether 45-55%
Aquatic Chronic 4, H413

CAS: 163702-05-4 Ethyl nonafluorobutyl ether 25-35%
Aquatic Chronic 4, H413

Fluorocompound 15-25%

Additional information: For the wording of the listed hazard phrases refer to section 16.**SECTION 4: First aid measures****4.1 Description of first aid measures****General information:** Seek medical treatment.**After inhalation:** Supply fresh air; consult doctor in case of complaints.**After skin contact:**

Immediately wash with water and soap and rinse thoroughly.

Consult a doctor in case of complaints.

After eye contact:

Immediately rinse with a lot of water for several minutes. Remove contact lenses if possible. Continue rinsing.

Consult an ophthalmologist in case of complaints.

After swallowing:

Rinse mouth with water. Do not induce vomiting.

Consult a doctor in case of complaints.

4.2 Most important symptoms and effects, both acute and chronic: No further relevant information available.

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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:

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

5.3 Advice for firefighters:

Protective equipment:

Wear fully protective suit.

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:

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: Prevent seepage into sewage system, workpits and cellars.

6.3 Methods and material for containment and cleaning up:

For a small amount of leakage: Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders) or collect in an empty container that can be sealed tightly.

For a large amount of leakage: Enclose with banks to avoid outflow. Lead the leakage to a safe place and collect.

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:

Ensure good ventilation/exhaustion at the workplace.

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.

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.

Prevent any seepage into the ground.

Keep containers tightly sealed.

Information about storage in one common storage facility:

Not required.

No further information available.

See section 10 for information on incompatible materials.

Further information about storage conditions:

Store in cool, dry conditions in well sealed receptacle.

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

8.1 Control parameters No further information available.

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Ingredients with limit values that require monitoring at the workplace:

The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

8.2 Exposure controls

Appropriate engineering controls No further data; see item 7.

Individual protection measures, such as 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:

Respiratory protection providing APF 10,000 required for employees engaged in unenclosed spray applications to which workers may be exposed.

Use respiratory protective device with filters for organic and acid gas (or airline respirators in some cases) if formation of toxic gases is possible while the product is heated.

Use respiratory protective device with organic gas cartridge.

Hand protection



Protective gloves

Material of gloves: Rubber

Eye/face protection



Safety glasses

Body protection: Protective work clothing

* **SECTION 9: Physical and chemical properties**

9.1 Information on basic physical and chemical properties

General Information

Physical state

Fluid

Colour:

Clear colorless - light yellow

Odour:

Odourless

Odour threshold:

Not determined.

Melting point/freezing point:

Undetermined.

Boiling point or initial boiling point and boiling range

76 °C

Flammability

Not applicable.

Lower and upper explosion limit

Lower explosive limit:

No further information available.

Upper explosive limit:

Not determined.

Flash point:

Not applicable.

Decomposition temperature:

Not determined.

pH

Not determined.

Viscosity:

Kinematic viscosity

Not determined.

Dynamic:

Not determined.

Solubility

water:

No further information available.

Partition coefficient n-octanol/water (log value)

No further information available.

Not determined.

Vapour pressure:

No further information available.

Density and/or relative density

Density at 20 °C:

1.43 g/cm³

Relative density

Not determined.

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Vapour density	Not determined.
Particle characteristics	Not applicable.
9.2 Other information:	
Form:	Fluid
Auto-ignition temperature:	Product is not self-igniting.
Explosive properties:	Product does not present an explosion hazard.
Evaporation rate	Not determined.
Information with regard to physical hazard classes	
Explosives	Not applicable
Flammable gases	Not applicable
Aerosols	Not applicable
Oxidising gases	Not applicable
Gases under pressure	Not applicable
Flammable liquids	Not applicable
Flammable solids	Not applicable
Self-reactive substances and mixtures	Not applicable
Pyrophoric liquids	Not applicable
Pyrophoric solids	Not applicable
Self-heating substances and mixtures	Not applicable
Substances and mixtures, which emit flammable gases in contact with water	Not applicable
Oxidising liquids	Not applicable
Oxidising solids	Not applicable
Organic peroxides	Not applicable
Corrosive to metals	Not applicable
Desensitised explosives	Not applicable

*** 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:** No further relevant information available.**10.6 Hazardous decomposition products:** Danger of toxic fluorine based pyrolysis products.*** SECTION 11: Toxicological information****11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008****Acute toxicity** Based on available data, the classification criteria are not met.**LD/LC50 values relevant for classification:****CAS: 163702-06-5 Ethyl nonafluoroisobutyl ether**

Oral LD50 > 2000 mg/kg (Rat)

Inhalative LC50/4h 989 mg/l (Rat)

CAS: 163702-05-4 Ethyl nonafluorobutyl ether

Oral LD50 > 2000 mg/kg (Rat)

Skin corrosion/irritation:

No further information available.

CAS: 163702-06-5 Ethyl nonafluoroisobutyl ether

Irritation of skin Primary skin irritation study (Rat)

No irritation.

Serious eye damage/irritation:

No further information available.

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Trade name: OPTOOL UD120**CAS: 163702-06-5 Ethyl nonafluoroisobutyl ether**

Irritation of eyes Primary eye irritation study (Rat)

No irritation.

after inhalation: No further information available.**Respiratory or skin sensitisation:****CAS: 163702-06-5 Ethyl nonafluoroisobutyl ether**

Sensitisation Skin Sensitization SI (Guinea pig)

Negative.

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:****CAS: 163702-05-4 Ethyl nonafluorobutyl ether**

Inhalative NOAEL 9000 ppm (Rat)

Aspiration hazard: Based on available data, the classification criteria are not met.**Other information (about experimental toxicology):** No further information available.**Subacute to chronic toxicity:** No further information available.**11.2 Information on other hazards:****Endocrine disrupting properties:**

None of the ingredients is listed.

*** SECTION 12: Ecological information****12.1 Toxicity****Aquatic toxicity:****CAS: 163702-06-5 Ethyl nonafluoroisobutyl ether**

LC50/96h > 100 mg/l (Fish)

EC50/48h > 100 mg/l (Daphnia)

EC50/96h > 100 mg/l (Alga)

CAS: 163702-05-4 Ethyl nonafluorobutyl ether

LC50/96h > 2.75 mg/l (Fish)

EC50/48h > 2.55 mg/l (Daphnia)

EC50/96h 2.32 mg/l (Alga)

12.2 Persistence and degradability: No further relevant information available.**Other information:** The product is slightly biodegradable.**12.3 Bioaccumulative potential:** No further relevant information available.**12.4 Mobility in soil:** No further relevant information available.**12.5 Results of PBT and vPvB assessment****PBT:** No further relevant information available.**vPvB:** No further information available.**12.6 Endocrine disrupting properties** For information on endocrine disrupting properties see section 11.**12.7 Other adverse effects:****Ecotoxicological effects:** no data**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.

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SECTION 14: Transport information**14.1 UN number or ID number****ADR, ADN, IMDG, IATA** Not applicable**14.2 UN proper shipping name:****ADR, ADN, IMDG, IATA** Not applicable**14.3 Transport hazard class(es):****ADR, ADN, IMDG, IATA****Class:** Not applicable**14.4 Packing group:****ADR, IMDG, IATA** Not applicable**14.5 Environmental hazards:****Marine pollutant:** No**14.6 Special precautions for user:** Not applicable.**14.7 Maritime transport in bulk according to IMO instruments****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.

UN "Model Regulation": Not applicable*** 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 product is classified and labelled according to the CLP regulation.

Hazard pictograms Not applicable**Signal word** Not applicable**Hazard statements**

H413 May cause long lasting harmful effects to aquatic life.

Precautionary statements

P273 Avoid release to the environment.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

National regulations No further information available.**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)

ICAO: International Civil Aviation Organisation

ADR: Accord relatif au transport international 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

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

Aquatic Chronic 4: Hazardous to the aquatic environment - long-term aquatic hazard – Category 4

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