

**SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1 Product identifier****Trade name: OPTOOL DAC-HP****Article number: DACHP****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:

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

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+82-2-568-1722, +1-256-306-5000, +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



Flam. Liq. 3      H226 Flammable liquid and vapour.



Acute Tox. 4      H332 Harmful if inhaled.

STOT SE 3      H336 May cause drowsiness or dizziness.

Aquatic Chronic 3 H412 Harmful to aquatic life with long lasting effects.

**Hazard description:** Xn Harmful**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:** Warning**Precautionary statements:**

P210      Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P241      Use explosion-proof electrical/ventilating/lighting/equipment.

P261      Avoid breathing dust/fume/gas/mist/vapours/spray.

P303+P361+P353 **IF ON SKIN (or hair):** Take off immediately all contaminated clothing. Rinse skin with water/shower.

P405      Store locked up.

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

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

Fluorocompound

15-25%

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15290-77-4 1,1,2,2,3,3,4-Heptafluorocyclopentane R52/53 Aquatic Chronic 3, H412	45-55%
107-98-2 1-Methoxy-2-propanol R10-67 Flam. Liq. 3, H226; STOT SE 3, H336	25-35%

**Additional information:** For the wording of the listed risk 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:**

Remove contaminated clothes immediately.

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.

**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:**

Foam

Fire-extinguishing powder

CO<sub>2</sub>

**For safety reasons unsuitable extinguishing agents:** Water with full jet

**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.

Extremely flammable; can ignite easily with heat, sparks, fire.

**5.3 Advice for firefighters:** Remove receptacles from area of fire if possible.

**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:

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:**

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

Prevent seepage into sewage system, workpits and cellars.

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Do not flush with water or aqueous cleansing agents

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 small amount of leakage: Use clean anti-static tools when absorbing the product.

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

Remove ignition sources immediately.

Ground all equipment when the product leaks.

There is a danger of explosion. Prepare fire extinguisher in case of emergency.

**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.

Handle with care. Avoid jolting, friction and impact.

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.

Protect against electrostatic charges.

Use flame proof electric/lighting devices and ventilation equipment.

Ground/bond container and receiving equipment.

**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.

Provide solvent resistant, sealed floor.

Keep receptacle tightly sealed.

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

Store away from oxidising agents.

See section 10 for information on incompatible materials.

**Further information about storage conditions:**

Protect from heat and direct sunlight.

Store receptacle 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:**

**107-98-2 1-Methoxy-2-propanol**

IOELV (EU) Short-term value: 568 mg/m<sup>3</sup>, 150 ppm

Long-term value: 375 mg/m<sup>3</sup>, 100 ppm

Skin

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

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Use respiratory protective device with organic gas cartridge.

**Protection of hands:**


Protective gloves

**Material of gloves:** Rubber

**Eye 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

##### Appearance

<b>Form:</b>	Liquid
<b>Colour:</b>	Light yellow
<b>Odour:</b>	Ether-like
<b>Odour threshold:</b>	Not determined.
<b>pH-value:</b>	No further information available.
<b>Melting point/Melting range:</b>	No further information available.
<b>Boiling point/Boiling range:</b>	No further information available.
<b>Flash point:</b>	25 °C (TCC)
<b>Flammability (solid, gaseous):</b>	Not applicable.
<b>Ignition temperature:</b>	270 °C
<b>Decomposition temperature:</b>	No further information available.
<b>Self-igniting:</b>	Product is not selfigniting.
<b>Danger of explosion:</b>	Product is not explosive. However, formation of explosive air/vapour mixtures are possible.
<b>Lower explosive limit:</b>	2,3 Vol %
<b>Upper explosive limit:</b>	20,0 Vol %
<b>Vapour pressure at 20 °C:</b>	12 hPa No further information available.
<b>Density:</b>	No further information available.
<b>Relative density</b>	Not determined.
<b>Vapour density</b>	Not determined.
<b>Evaporation rate</b>	Not determined.
<b>Solubility in / Miscibility with water:</b>	No further information available.
<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.

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**SECTION 10: Stability and reactivity****10.1 Reactivity****10.2 Chemical stability****Thermal decomposition / conditions to be avoided:** To avoid thermal decomposition do not overheat.**10.3 Possibility of hazardous reactions:**

Danger of polymerisation.

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:**

Strong acids, strong alkali, amines and alkali metals

Oxidizing agents

**10.6 Hazardous decomposition products:**

As for decomposition products, particulate matters and extremely toxic/corrosive fumes may be generated (HF, carbonyl fluoride, monomers, perfluoroisobutylene).

Decomposition products differ depending on the temperature and conditions.

**SECTION 11: Toxicological information****11.1 Information on toxicological effects****Acute toxicity****LD/LC50 values relevant for classification:** No further information available.**Primary irritant effect****on the skin:** No further information available.**on the eye:** No further information available.**after inhalation:** No further information available.**Sensitisation:** No sensitising effects known.**Additional toxicological information:**

The product shows the following dangers according to the calculation method of the General EU Classification Guidelines for Preparations as issued in the latest version:

Harmful

Irritant

**General effects:**

Fumes generated during burning may cause "polymer fume fever" (flu-like symptoms such as fever, chill, cough).

This may last for a whole day and night.

Fumes are not absorbed in skin. No sensitizing effect known.

**Effects of hydrogen fluoride:**

Low concentration of hydrogen fluoride may cause feeling of dyspnea, cough, irritation in eyes, nose, throat, fever, chill for 1-2 days.

After that, dyspnea, cyanosis and pulmonary edema may be seen.

High concentration of hydrogen fluoride damages liver and kidney.

**Effects of carbonyl fluoride:**

Skin: Irritation or eruption

Eye: Ulcer in cornea, conjunctiva

Respiratory system : Irritation

Lung: Temporary symptoms such as cough, pain, dyspnea

Persons who have experienced lung diseases are vulnerable to toxicity caused by excessive exposure to pyrolysis products

**CMR effects****Germ cell mutagenicity:** No further information available.**Carcinogenicity:** No further information available.**Reproductive toxicity:** No further information available.**Aspiration hazard:** No further information available.**Specific target organ toxicity - single exposure:** No further information available.**Specific target organ toxicity - repeated exposure:** No further information available.

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**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**Remark: Harmful to fish***Additional ecological information:***General notes: Harmful to aquatic organisms***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**

UN1993

**14.2 UN proper shipping name:****ADR:**

1993 FLAMMABLE LIQUID, N.O.S. (not viscous)

**IMDG, IATA**

FLAMMABLE LIQUID, N.O.S.

**14.3 Transport hazard class(es):****ADR, IMDG, IATA****Class:**

3 Flammable liquids.

**Label:**

3

**14.4 Packing group:****ADR, IMDG, IATA**

III

**14.5 Environmental hazards:****Marine pollutant:**

No

**14.6 Special precautions for user:**

Warning: Flammable liquids.

**Danger code (Kemler):**

30

**EMS Number:**

F-E,S-E

**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):**

5L

**Excepted quantities (EQ)**

Code: E1

Maximum net quantity per inner packaging: 30 ml

Maximum net quantity per outer packaging: 1000 ml

**Transport category:**

3

**Tunnel restriction code:**

D/E



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**Trade name: OPTOOL DAC-HP****IMDG****Limited quantities (LQ)**

5L

**Excepted quantities (EQ)**

Code: E1

Maximum net quantity per inner packaging: 30 ml

Maximum net quantity per outer packaging: 1000 ml

**UN "Model Regulation":**

UN1993, FLAMMABLE LIQUID, N.O.S. (not viscous), 3, III

**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**

GHS02 GHS07

**Signal word** Warning**Hazard-determining components of labelling:**

1-Methoxy-2-propanol

**Hazard statements**

H226 Flammable liquid and vapour.

H332 Harmful if inhaled.

H336 May cause drowsiness or dizziness.

H412 Harmful to aquatic life with long lasting effects.

**Precautionary statements**

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P241 Use explosion-proof electrical/ventilating/lighting/equipment.

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

P405 Store locked up.

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

**National regulations** No further information available.**Other regulations, limitations and prohibitive regulations:** No further information available.**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

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

Flam. Liq. 3: Flammable liquids, Hazard Category 3

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*Acute Tox. 4: Acute toxicity, Hazard Category 4*

*STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3*

*Aquatic Chronic 3: Hazardous to the aquatic environment - Chronic Hazard, Category 3*