

Printing date 21.12.2016

Version number 1

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**SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1 Product identifier****Trade name: NEOFLON FEP ND-2R****Article number: ND2R****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**

Flam. Liq. 3 H226 Flammable liquid and vapour.

**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.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

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

P403+P235 Store in a well-ventilated place. Keep cool.

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

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

25067-11-2 Perfluoro(ethylene-propene) copolymer	20-30%
9002-83-9 Polychlorotrifluoroethylene	10-20%
108-94-1 Cyclohexanone	30-40%
Xn R20	
R10	
Flam. Liq. 3, H226	
Acute Tox. 4, H332	

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1330-20-7 Xylene	15-25%
Xn R20/21; Xi R38	
R10	
Flam. Liq. 3, H226	
Acute Tox. 4, H312; Acute Tox. 4, H332; Skin Irrit. 2, H315	
Others	1-10%

**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:**

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:** Prevent seepage into sewage system, workpits and cellars.

**6.3 Methods and material for containment and cleaning up:**

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.

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*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 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** *No further information available.*

**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.*

**108-94-1 Cyclohexanone**

*OEL (Japan) Long-term value: 100 mg/m<sup>3</sup>, 25 ppm*

*PEL (USA) Long-term value: 200 mg/m<sup>3</sup>, 50 ppm*

*REL (USA) Long-term value: 100 mg/m<sup>3</sup>, 25 ppm  
Skin*

*TLV (USA) Long-term value: 50 mg/m<sup>3</sup>, 20 ppm  
Skin*

**1330-20-7 Xylene**

*OEL (Japan) Long-term value: 217 mg/m<sup>3</sup>, 50 ppm*

*PEL (USA) Long-term value: 435 mg/m<sup>3</sup>, 100 ppm*

*REL (USA) Short-term value: 655 mg/m<sup>3</sup>, 150 ppm  
Long-term value: 435 mg/m<sup>3</sup>, 100 ppm*

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**Trade name: NEOFLON FEP ND-2R**

TLV (USA) Short-term value: 651 mg/m<sup>3</sup>, 150 ppm  
Long-term value: 434 mg/m<sup>3</sup>, 100 ppm  
BEI

**Ingredients with biological limit values:****108-94-1 Cyclohexanone**

BEI (USA) 80 mg/L  
Medium: urine  
Time: end of shift at end of workweek  
Parameter: 1,2-Cyclohexanediol with hydrolysis (nonspecific, semi-quantitative)

8 mg/L  
Medium: urine  
Time: end of shift  
Parameter: Cyclohexanol with hydrolysis (nonspecific, semi-quantitative)

**1330-20-7 Xylene**

OEL-B (Japan) 800 mg/l  
試料: urine  
試料採取時期: End of shift at end of work week  
物質: total (o-, m-, p-)methylhippuric acid

BEI (USA) 1,5 g/g creatinine  
Medium: urine  
Time: end of shift  
Parameter: Methylhippuric acids

**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:**

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.

**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**

**Form:** Liquid  
**Colour:** Whitish  
**Odour:** Aromatic

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<b>Odour threshold:</b>	Not determined.
<b>pH-value:</b>	No further information available.
<b>Melting point/freezing point:</b>	No further information available.
<b>Initial boiling point and boiling range:</b>	153 °C (Cyclohexanone)
<b>Flash point:</b>	35 °C (SCC)
<b>Flammability (solid, gas):</b>	Not applicable.
<b>Decomposition temperature:</b>	No further information available.
<b>Auto-ignition temperature:</b>	Product is not selfigniting.
<b>Explosive properties:</b>	Product is not explosive. However, formation of explosive air/vapour mixtures are possible.
<b>Explosion limits:</b>	
<b>Lower explosive limit:</b>	1,1 Vol % (Cyclohexanone)
<b>Upper explosive limit:</b>	9,4 Vol % (Cyclohexanone)
<b>Vapour pressure:</b>	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.

## 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:** 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** Based on available data, the classification criteria are not met.

**LD/LC50 values relevant for classification:**

#### 108-94-1 Cyclohexanone

Oral LD50 1535 mg/kg (Rat)

Dermal LD50 948 mg/kg (Rabbit)

Inhalative LC50/4 h 8000 ppm (Rat)

#### 1330-20-7 Xylene

Oral LD50 4300 mg/kg (Rat)

Dermal LD50 2000 mg/kg (Rabbit)

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Trade name: **NEOFLON FEP ND-2R****Primary irritant effect****Skin corrosion/irritation** No further information available.**Serious eye damage/irritation** No further information available.**after inhalation:** No further information available.**Respiratory or skin sensitisation** Based on available data, the classification criteria are not met.**Additional toxicological information:**

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****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**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**

UN1263

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

1263 PAINT

**IMDG, IATA**

PAINT



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**Trade name: NEOFLON FEP ND-2R****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**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":** UN1263, PAINT, 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

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

H226 Flammable liquid and vapour.

**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.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

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

P403+P235 Store in a well-ventilated place. Keep cool.

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

**National 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

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

Flam. Liq. 2: Flammable liquids – Category 2

Flam. Liq. 3: Flammable liquids – Category 3

Acute Tox. 4: Acute toxicity – Category 4

Skin Irrit. 2: Skin corrosion/irritation – Category 2

STOT RE 2: Specific target organ toxicity (repeated exposure) – Category 2

Asp. Tox. 1: Aspiration hazard – Category 1

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