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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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**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**

<b>Form:</b>	<i>Liquid</i>
<b>Colour:</b>	<i>Whittish</i>
<b>Odour:</b>	<i>Aromatic</i>

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<b>Odour threshold:</b>	<i>Not determined.</i>
<b>pH-value:</b>	<i>No further information available.</i>
<b>Melting point/freezing point:</b>	<i>No further information available.</i>
<b>Initial boiling point and boiling range:</b>	<i>153 °C (Cyclohexanone)</i>
<b>Flash point:</b>	<i>35 °C (SCC)</i>
<b>Flammability (solid, gas):</b>	<i>Not applicable.</i>
<b>Decomposition temperature:</b>	<i>No further information available.</i>
<b>Auto-ignition temperature:</b>	<i>Product is not selfigniting.</i>
<b>Explosive properties:</b>	<i>Product is not explosive. However, formation of explosive air/vapour mixtures are possible.</i>
<b>Explosion limits:</b>	
<b>Lower explosive limit:</b>	<i>1,1 Vol % (Cyclohexanone)</i>
<b>Upper explosive limit:</b>	<i>9,4 Vol % (Cyclohexanone)</i>
<b>Vapour pressure:</b>	<i>No further information available.</i>
<b>Density:</b>	<i>No further information available.</i>
<b>Relative density</b>	<i>Not determined.</i>
<b>Vapour density</b>	<i>Not determined.</i>
<b>Evaporation rate</b>	<i>Not determined.</i>
<b>Solubility in / Miscibility with water:</b>	<i>No further information available.</i>
<b>Partition coefficient: n-octanol/water:</b>	<i>No further information available.</i>
<b>Viscosity:</b>	
<b>Dynamic:</b>	<i>Not determined.</i>
<b>Kinematic:</b>	<i>Not determined.</i>
<b>9.2 Other information:</b>	<i>No further relevant information available.</i>

## **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****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.**