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/fighting 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 Xn R20
R10
Flam. Liq. 3, H226
Acute Tox. 4, H332

30-40%
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
CO2

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.
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/m³, 25 ppm
PEL (USA) Long-term value: 200 mg/m³, 50 ppm
REL (USA) Long-term value: 100 mg/m³, 25 ppm
Skin TLV (USA) Long-term value: 50 mg/m³, 20 ppm
Skin

1330-20-7 Xylene
OEL (Japan) Long-term value: 217 mg/m³, 50 ppm
PEL (USA) Long-term value: 435 mg/m³, 100 ppm
REL (USA) Short-term value: 655 mg/m³, 150 ppm
Long-term value: 435 mg/m³, 100 ppm
43.3.5 TLV (USA) Short-term value: 651 mg/m³, 150 ppm
   Long-term value: 434 mg/m³, 100 ppm
   BEI

Ingredients with biological limit values:

108-94-1 Cyclohexanone
   BEI (USA) 80 mg/L
   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
Odour threshold: Not determined.

pH-value: No further information available.
Melting point/freezing point: No further information available.
Initial boiling point and boiling range: 153 °C (Cyclohexanone)

Flash point: 35 °C (SCC)
Flammability (solid, gas): Not applicable.
Decomposition temperature: No further information available.
Auto-ignition temperature: Product is not selfigniting.
Explosive properties: Product is not explosive. However, formation of explosive air/vapour mixtures are possible.

Explosion limits:
   Lower explosive limit: 1,1 Vol % (Cyclohexanone)
   Upper explosive limit: 9,4 Vol % (Cyclohexanone)

Vapour pressure: No further information available.

Density: No further information available.
Relative density: Not determined.
Vapour density: Not determined.
Evaporation rate: Not determined.

Solubility in / Miscibility with water: No further information available.

Partition coefficient: n-octanol/water: No further information available.
Viscosity:
   Dynamic: Not determined.
   Kinematic: Not determined.

### 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: 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)
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.

STOT-single exposure
Based on available data, the classification criteria are not met.
Aspiration hazard
No further information available.

STOT-repeated exposure
Based on available data, the classification criteria are not met.

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.

Ecotoxicity: 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
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
Danger code (Kemler): 30
EMS Number: F-E,S-E

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

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.
Trade name: NEOFLON FEP ND-2R

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.