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**\* SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1 Product identifier****Trade name: ZEFFLE GK-581****Article number: GK581****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.**Muta. 1B H340 May cause genetic defects.**Carc. 1B H350 May cause cancer.**Repr. 1B H360 May damage fertility or the unborn child.**STOT SE 2 H371 May cause damage to the central nervous system.**STOT RE 2 H373 May cause damage to organs through prolonged or repeated exposure.**Aquatic Chronic 2 H411 Toxic to aquatic life with long lasting effects.***Hazard description:** T Toxic**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:** Danger**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.**P260 Do not breathe 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.*

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**Trade name: ZEFFLE GK-581****Additional information:**

Restricted to professional users.

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

Tetrafluoroethylene copolymer	60-70%
8052-41-3 Mineral spirits (contain the following solvents) T Carc. Cat. 2, Muta. Cat. 2 R45-46; Xn R48/20-65 Flam. Liq. 3, H226 Muta. 1B, H340; Carc. 1B, H350; STOT RE 1, H372; Asp. Tox. 1, H304	30-40%
1330-20-7 Xylene Xn R20/21; Xi R38 R10 Flam. Liq. 3, H226 Acute Tox. 4, H312; Acute Tox. 4, H332; Skin Irrit. 2, H315	< 5%
25551-13-7 Trimethylbenzene	1-10%
100-41-4 Ethylbenzene Xn R20-48/20-65; F R11 Flam. Liq. 2, H225 STOT RE 2, H373; Asp. Tox. 1, H304 Acute Tox. 4, H332	< 5%
95-63-6 1,2,4-Trimethylbenzene Xn R20; Xi R36/37/38; N R51/53 R10 Flam. Liq. 3, H226 Aquatic Chronic 2, H411 Acute Tox. 4, H332; Skin Irrit. 2, H315; Eye Irrit. 2, H319; STOT SE 3, H335	< 5%

**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.**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:**CO<sub>2</sub>, sand, extinguishing powder. Do not use water.

Foam

Fire-extinguishing powder

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**Trade name: ZEFFLE GK-581***CO2***For safety reasons unsuitable extinguishing agents:***Water**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 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:***Wear protective clothing.**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.***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:***Avoid splashes or spray in enclosed areas.**Use only in well ventilated areas.**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.**Prevent any seepage into the ground.*

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*Use only receptacles specifically permitted for this substance/product.  
Keep containers tightly sealed.*

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

*Not required.*

*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:**

**95-63-6 1,2,4-Trimethylbenzene**

*IOELV (EU) Long-term value: 100 mg/m<sup>3</sup>, 20 ppm*

*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:**

*Filter A/P2*

*Use suitable respiratory protective device only when aerosol or mist is formed.*

*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:**

*Synthetic rubber 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:** *Light yellow*

**Odour:** *Aromatic*

**Odour threshold:** *Not determined.*

**pH-value:** *No further information available.*

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<b>Melting point/Melting range:</b>	No further information available.
<b>Boiling point/Boiling range:</b>	No further information available.
<b>Flash point:</b>	40 °C (SCC)
<b>Flammability (solid, gaseous):</b>	Not applicable.
<b>Ignition temperature:</b>	
<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>Explosion limits:</b>	
<b>Lower explosive limit:</b>	No further information available.
<b>Upper explosive limit:</b>	No further information available.
<b>Vapour pressure:</b>	No further information available.
<b>Density at 25 °C:</b>	0,994 g/cm <sup>3</sup>
<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>	Insoluble.
<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:**

Even at the temperatures reached during the normal hot processing of fluoropolymers, fume that presents a potential health hazard may be generated.

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** no data**LD/LC50 values relevant for classification:****95-63-6 1,2,4-Trimethylbenzene**

Oral LD50 5000 mg/kg (Rat)

**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.

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**Trade name: ZEFFLE GK-581****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****Germ cell mutagenicity**

May cause genetic defects.

**Carcinogenicity**

May cause cancer.

**Reproductive toxicity**

May damage fertility or the unborn child.

**STOT-single exposure**

May cause damage to the central nervous system.

**STOT-repeated exposure**

May cause damage to organs through prolonged or repeated exposure.

**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

**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:**

Must not be disposed together with household garbage. Do not allow product to reach sewage system.

After prior treatment product has to be disposed of in an incinerator for hazardous waste adhering to the regulations pertaining to the disposal of particularly hazardous waste.

Disposal must be made according to official regulations.

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**Trade name: ZEFFLE GK-581****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:****PAINT, ENVIRONMENTALLY HAZARDOUS****IMDG:****PAINT (1,2,4-Trimethylbenzene, 1,3,5-TRIMETHYLBENZENE), MARINE POLLUTANT****IATA:****PAINT****14.3 Transport hazard class(es):****ADR****Class:****3 (F1) Flammable liquids.****Label:****3****IMDG****Class:****3 Flammable liquids.****Label:****3****IATA****Class:****3 Flammable liquids.****Label:****3****14.4 Packing group:****ADR, IMDG, IATA****III****14.5 Environmental hazards:****Product contains environmentally hazardous substances: 1,2,4-Trimethylbenzene****Yes****Symbol (fish and tree)****Symbol (fish and tree)****Warning: Flammable liquids.****Marine pollutant:****30****Special marking (ADR):****F-E, S-E****Danger code (Kemler):****A****EMS Number:****Stowage Category****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****5L****Limited quantities (LQ):****Code: E1****Excepted quantities (EQ)****Maximum net quantity per inner packaging: 30 ml****Transport category:****Maximum net quantity per outer packaging: 1000 ml****3**

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**Trade name: ZEFFLE GK-581****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":** UN 1263 PAINT, 3, III, ENVIRONMENTALLY HAZARDOUS**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



GHS08



GHS09

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

Mineral spirits(contain the following solvents)

**Hazard statements**

H226 Flammable liquid and vapour.

H340 May cause genetic defects.

H350 May cause cancer.

H360 May damage fertility or the unborn child.

H371 May cause damage to the central nervous system.

H373 May cause damage to organs through prolonged or repeated exposure.

H411 Toxic 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.

P260 Do not breathe 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.

**Directive 2012/18/EU****Seveso category**

E2 Hazardous to the Aquatic Environment

P5c FLAMMABLE LIQUIDS

Qualifying quantity (tonnes) for the application of lower-tier requirements 200 t

Qualifying quantity (tonnes) for the application of upper-tier requirements 500 t

**National regulations****Information about limitation of use:**

Workers are not allowed to be exposed to the hazardous carcinogenic materials contained in this preparation. Exceptions can be made by the authorities in certain cases.

**15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.**SECTION 16: Other information**

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*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)*

*IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)*

*ICAO: International Civil Aviation Organisation*

*ICAO-TI: Technical Instructions by the "International Civil Aviation Organisation" (ICAO)*

*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. 3: Flammable liquids – Category 3*

*Acute Tox. 4: Acute toxicity – Category 4*

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

*Eye Irrit. 2: Serious eye damage/eye irritation – Category 2*

*Muta. 1B: Germ cell mutagenicity – Category 1B*

*Carc. 1B: Carcinogenicity – Category 1B*

*Repr. 1B: Reproductive toxicity – Category 1B*

*STOT SE 2: Specific target organ toxicity (single exposure) – Category 2*

*STOT SE 3: Specific target organ toxicity (single exposure) – Category 3*

*STOT RE 1: Specific target organ toxicity (repeated exposure) – Category 1*

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

*Asp. Tox. 1: Aspiration hazard – Category 1*

*Aquatic Chronic 2: Hazardous to the aquatic environment - long-term aquatic hazard – Category 2*

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