## 1. Identification

**Product identifier**

mr-UVCur06

**Recommended use of the chemical and restrictions on use**

**Use of the substance/mixture**

photochemically curing mixture (UV Nanoimprint Lithography)
PC 30: Photo-chemicals
SU 16: Manufacture of computer, electronic and optical products, electrical equipment.

**Uses advised against**

Do not use for private purposes (household).

**Details of the supplier of the safety data sheet**

Company name: micro resist technology GmbH
Street: Koepenicker Str. 325
Place: D-12555 Berlin
Telephone: +49 30 641670-100 Telefax: +49 30 641670-200
e-mail: safety@microresist.de
Internet: www.microresist.de

**Emergency phone number:** Chemtrec (International): +1 703 527 3887

## 2. Hazard(s) identification

**Classification of the chemical**

**29 CFR Part 1910.1200**

Hazard categories:
Skin corrosion/irritation: Skin Irrit. 2
Serious eye damage/eye irritation: Eye Dam. 1
Respiratory or skin sensitization: Skin Sens. 1
Hazard Statements:
Causes skin irritation
May cause an allergic skin reaction
Causes serious eye damage

**Label elements**

**29 CFR Part 1910.1200**

**Signal word:** Danger

**Pictograms:**

**Hazard statements**

Causes skin irritation
May cause an allergic skin reaction
Causes serious eye damage

**Precautionary statements**

Wear protective gloves/protective clothing/eye protection/face protection.
If on skin: Wash with plenty of water.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Immediately call a poison center/doctor.
If skin irritation or rash occurs: Get medical advice/attention.

Take off contaminated clothing and wash it before reuse.

**Hazards not otherwise classified**

No information available.

## 3. Composition/information on ingredients

**Mixtures**

**Hazardous components**

| CAS No | Components | Quantity |
|---|---|---|
| 1245638-61-2 | 2-propenoic acid, reaction products with pentaerythritol | < 20 % |
| 45127-97-7 | 2-(2-ethoxyethoxy)ethyl methacrylate | < 10 % |
| 68412-43-1 | 2-Propenoic acid, reaction products with pentaerythritol and TDI | < 10 % |
| 162881-26-7 | phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide | < 1 % |

## 4. First-aid measures

**Description of first aid measures**

**After inhalation**

When in doubt or if symptoms are observed, get medical advice. Provide fresh air. In case of breathing difficulties administer oxygen. If victim is at risk of losing consciousness, position and transport on their side. In case of respiratory tract irritation, consult a physician.

**After contact with skin**

After contact with skin, wash immediately with polyethylene glycol, followed by plenty of water. Take off immediately all contaminated clothing and wash it before reuse. Medical treatment necessary. After contact with skin, wash immediately with plenty of water and soap. Change contaminated clothing. In case of skin irritation, seek medical treatment.

**After contact with eyes**

After contact with the eyes, rinse with water with the eyelids open for a sufficient length of time, then consult an ophthalmologist immediately. Consult an ophthalmologist.

**After ingestion**

Observe risk of aspiration if vomiting occurs. Rinse mouth immediately and drink plenty of water.

Medical treatment necessary.

**Most important symptoms and effects, both acute and delayed**

Causes skin irritation.
Serious eye damage/eye irritation
May cause an allergic skin reaction.

**Indication of any immediate medical attention and special treatment needed**

Treat symptomatically.

## 5. Fire-fighting measures

**Extinguishing media**

**Suitable extinguishing media**

Co-ordinate fire-fighting measures to the fire surroundings. Carbon dioxide (CO2). Dry extinguishing powder. Foam.

**Unsuitable extinguishing media**

High power water jet.

**Specific hazards arising from the chemical**

Non-flammable.

**Special protective equipment and precautions for fire-fighters**

Wear a self-contained breathing apparatus and chemical protective clothing.

**Additional information**

Suppress gases/vapours/mists with water spray jet. Collect contaminated fire extinguishing water separately. Do not allow entering drains or surface water. In case of fire and/or explosion do not breathe fumes.

## 6. Accidental release measures

**Personal precautions, protective equipment and emergency procedures**

Provide adequate ventilation. Do not breathe gas/fumes/vapour/spray. Avoid contact with skin, eyes and clothes. Use personal protection equipment. Remove all sources of ignition.

**Environmental precautions**

Do not allow to enter into surface water or drains.

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

Absorb with liquid-binding material (e.g. sand, diatomaceous earth, acid- or universal binding agents). Collect in closed containers for disposal. Clean contaminated articles and floor according to the environmental legislation.

**Reference to other sections**

Safe handling: see section 7
Personal protection equipment: see section 8
Disposal: see section 13

## 7. Handling and storage

**Precautions for safe handling**

**Advice on safe handling**

If handled uncovered, arrangements with local exhaust ventilation have to be used. Do not breathe gas/fumes/vapour/spray. Use only in well-ventilated areas.
If local exhaust ventilation is not possible or not sufficient, the entire working area should be ventilated by technical means.
Do not breathe vapour/aerosol.

**Advice on protection against fire and explosion**

Take precautionary measures against static discharges.

**Conditions for safe storage, including any incompatibilities**

**Requirements for storage rooms and vessels**

Keep container tightly closed in a cool, well-ventilated place.
Further information concerning storage conditions: Observe technical data sheet.: Processing Guidelines

**Further information on storage conditions**

Protect against: heat. UV-radiation/sunlight.
Protect against: Emission of air/oxygen.
Materials to avoid: Air. Formation of: Peroxides.

## 8. Exposure controls/personal protection

**Control parameters**

**Additional advice on limit values**

No data available

**Exposure controls**


**Appropriate engineering controls**

If handled uncovered, arrangements with local exhaust ventilation have to be used.

**Protective and hygiene measures**

Remove contaminated, saturated clothing immediately. Draw up and observe skin protection programme. Wash hands and face before breaks and after work and take a shower if necessary. When using do not eat or drink.

**Eye/face protection**

Suitable eye protection: Tightly sealed safety glasses.
Do not wear contact lenses.

**Hand protection**

Tested protective gloves are to be worn: Single-use gloves.
German Industry Norms (DIN) / European Norms (EN): DIN EN 374

Wearing time with occasional contact (splashes):
Suitable material: NR (Natural rubber (Caoutchouc), Natural latex).
Thickness of glove material: 0.5 mm
penetration time (maximum wearing period): > 480 min
Recommended protective gloves brand: KCL 740 Dermatril, Manufacturer: KCL GmbH, D-36124 Eichenzell, Source of supply: www.kcl.de

The quality of the protective gloves resistant to chemicals must be chosen as a function of the specific working place concentration and quantity of hazardous substances.
For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.
Breakthrough times and swelling properties of the material must be taken into consideration. Before using check leak tightness / impermeability.

**Skin protection**

Wear suitable protective clothing.

**Respiratory protection**

If technical exhaust or ventilation measures are not possible or insufficient, respiratory protection must be worn. Respiratory protection necessary at: aerosol or mist generation. Filtering device (full mask or mouthpiece) with filter: A

**Environmental exposure controls**

Do not empty into drains.

## 9. Physical and chemical properties

**Information on basic physical and chemical properties**

| | |
|---|---|
| Physical state: | liquid |
| Color: | colourless |
| Odor: | characteristic |

| | | Test method |
|---|---|---|
| pH-Value: | No data available | |
| **Changes in the physical state** | | |
| Melting point/freezing point: | No data available | |
| Initial boiling point and boiling range: | > 126 °C | |

| | | |
|---|---|---|
| Sublimation point: | No data available | |
| Softening point: | No data available | |
| Pour point: | No data available | |
| Flash point: | No flash point according to standard method. | DIN EN ISO 13736 |

**Flammability**

| | |
|---|---|
| Solid: | not applicable |
| Gas: | not applicable |

**Explosive properties**

No data available

| | |
|---|---|
| Lower explosion limits: | No data available |
| Upper explosion limits: | No data available |
| Ignition temperature: | No data available |

**Auto-ignition temperature**

| | |
|---|---|
| Solid: | not applicable |
| Gas: | not applicable |
| Decomposition temperature: | not determined |

**Oxidizing properties**

Not oxidizing.

| | |
|---|---|
| Vapor pressure: | No data available |
| Vapor pressure: | No data available |
| Density (at 25 °C): | 1,02 g/cm³ |
| Water solubility: | No data available |

**Solubility in other solvents**

not determined

| | |
|---|---|
| Partition coefficient: | No data available |
| Viscosity / dynamic: (at 25 °C) | 13-15 mPa·s |
| Viscosity / kinematic: | No data available |
| Flow time: | No data available |
| Vapour density: | No data available |
| Evaporation rate: | No data available |
| Solvent separation test: | No data available |

**Other information**

| | |
|---|---|
| Solid content: | not determined |

## 10. Stability and reactivity

**Reactivity**

No data available

**Chemical stability**

Stability: Stable

The product is stable under storage at normal ambient temperatures.

**Possibility of hazardous reactions**

Hazardous reactions: Will not occur

No known hazardous reactions.

**Conditions to avoid**

Light. heat.

**Incompatible materials**

Reducing agent.
Peroxides.
Oxidizing agents, strong.
Acid, concentrated.
Alkalis (alkalis).

**Hazardous decomposition products**

In case of fire may be liberated: Nitrogen oxides (NOx). Carbon monoxide Carbon dioxide (CO2). Peroxides.

## 11. Toxicological information

**Information on toxicological effects**

**Route(s) of Entry**

inhalation, ingestion, skin contact, eye contact

**Acute toxicity**

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

| CAS No | Components | | | |
|---|---|---|---|---|
| | Exposure route | Dose | Species | Source |
| 1245638-61-2 | 2-propenoic acid, reaction products with pentaerythritol | | | |
| | oral | ATE 500 mg/kg | | |

**Irritation and corrosivity**

Causes skin irritation
Causes serious eye damage
Method: Calculation method.

**Sensitizing effects**

May cause an allergic skin reaction (2-propenoic acid, reaction products with pentaerythritol), (phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide)
Method: Calculation method.

**Carcinogenic/mutagenic/toxic effects for reproduction**

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

**Specific target organ toxicity (STOT) - single exposure**

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

**Specific target organ toxicity (STOT) - repeated exposure**

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

Carcinogenicity (NTP): Ingredient (name): none
Carcinogenicity (IARC): Ingredient (name): none
Carcinogenicity (OSHA): Ingredient (name): none

**Aspiration hazard**

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

## 12. Ecological information

**Ecotoxicity**

There are no data available on the mixture itself.

**Persistence and degradability**

There are no data available on the mixture itself.

**Bioaccumulative potential**

There are no data available on the mixture itself.

**Mobility in soil**

No data available

**Other adverse effects**

No data available

**Further information**

Do not allow to enter into surface water or drains. Do not allow to enter into soil/subsoil.

## 13. Disposal considerations

**Waste treatment methods**

**Advice on disposal**

Do not allow to enter into surface water or drains. Do not allow to enter into soil/subsoil. Dispose of waste according to applicable legislation.

## 14. Transport information

**US DOT 49 CFR 172.101**

| | |
|---|---|
| **Proper shipping name:** | Not a hazardous material with respect to these transport regulations. |

**Marine transport (IMDG)**

| | |
|---|---|
| **UN number:** | No dangerous good in sense of this transport regulation. |
| **UN proper shipping name:** | No dangerous good in sense of this transport regulation. |
| **Transport hazard class(es):** | No dangerous good in sense of this transport regulation. |
| **Packing group:** | No dangerous good in sense of this transport regulation. |

**Air transport (ICAO)**

| | |
|---|---|
| **UN number:** | No dangerous good in sense of this transport regulation. |
| **UN proper shipping name:** | No dangerous good in sense of this transport regulation. |
| **Transport hazard class(es):** | No dangerous good in sense of this transport regulation. |
| **Packing group:** | No dangerous good in sense of this transport regulation. |

**Environmental hazards**

ENVIRONMENTALLY HAZARDOUS: no

**Special precautions for user**

No data available

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

not applicable

## 15. Regulatory information

**U.S. Regulations**

**National Inventory TSCA**

not listed:

2-(2-ethoxyethoxy)ethyl methacrylate 45127-97-7

2-propenoic acid, reaction products with pentaerythritol 1245638-61-2

**National regulatory information**

SARA Section 311/312 Hazards:

2-propenoic acid, reaction products with pentaerythritol (1245638-61-2): Immediate (acute) health hazard

2-(2-ethoxyethoxy)ethyl methacrylate (45127-97-7): Fire hazard, Immediate (acute) health hazard

2-Propenoic acid, reaction products with pentaerythritol and TDI (68412-43-1): Immediate (acute) health

hazard
phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide (162881-26-7): Immediate (acute) health hazard

**State Regulations**

**Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65, State of California)**

This product contains no chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

## 16. Other information

**Hazardous Materials Information Label (HMIS)**

| | |
|---|---|
| Health: | 3 |
| Flammability: | 1 |
| Physical Hazard: | 1 |
| Personal Protection: | B |

**NFPA Hazard Ratings**

| | |
|---|---|
| Health: | 3 |
| Flammability: | 1 |
| Reactivity: | 1 |
| Unique Hazard: | / |


**Changes**

Revision date: 11.10.2016

Revision No:

chapter: 1; 2; 3; 4; 5; 6; 7; 8; 9; 10; 11; 12; 13; 14; 15

**Abbreviations and acronyms**

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 Harmonized System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service
LC50: Lethal concentration, 50%
LD50: Lethal dose, 50%

**Other data**

The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.

*(The data for the hazardous ingredients were taken respectively from the last version of the sub-contractor's safety data sheet.)*