DOW CORNING

# DOW CORNING(R) XR-1541-002 E-BEAM RESIST IN MIBK

| Version | Revision Date: | MSDS Number: | Date of last issue: 27.10.2014 |
|---|---|---|---|
| 1.1 | 28.04.2015 | 676229-00002 | Date of first issue: 27.10.2014 |

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1 Product identifier

Trade name : DOW CORNING(R) XR-1541-002 E-BEAM RESIST IN MIBK

Product code : 000000000004058447

### 1.2 Relevant identified uses of the substance or mixture and uses advised against

Use of the Substance/Mixture : Semiconductors

### 1.3 Details of the supplier of the safety data sheet

Company : Dow Corning Europe S.A.
rue Jules Bordet - Parc Industriel - Zone C
B-7180 Seneffe

Telephone : English Tel: +49 611237507
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E-mail address of person responsible for the SDS : sdseu@dowcorning.com

### 1.4 Emergency telephone number

Dow Corning (Barry U.K. 24h) Tél: +44 1446732350
Dow Corning (Wiesbaden 24h) Tél: +49 61122158
Dow Corning (Seneffe 24h) Tel: +32 64 888240

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

**Classification (REGULATION (EC) No 1272/2008)**

| | |
|---|---|
| Flammable liquids, Category 2 | H225: Highly flammable liquid and vapour. |
| Acute toxicity, Category 4 | H332: Harmful if inhaled. |
| Eye irritation, Category 2 | H319: Causes serious eye irritation. |
| Specific target organ toxicity - single exposure, Category 3 | H335: May cause respiratory irritation. |

**Classification (67/548/EEC, 1999/45/EC)**

| | |
|---|---|
| Highly flammable | R11: Highly flammable. |

| | |
|---|---|
| Harmful | R20: Harmful by inhalation. |
| Irritant | R36/37: Irritating to eyes and respiratory system. |
| | R66: Repeated exposure may cause skin dryness or cracking. |

### 2.2 Label elements

**Labelling (REGULATION (EC) No 1272/2008)**

Hazard pictograms :

| | | | |
|---|---|---|---|
| Signal word | : | Danger | |
| Hazard statements | : | H225 | Highly flammable liquid and vapour. |
| | | H319 | Causes serious eye irritation. |
| | | H332 | Harmful if inhaled. |
| | | H335 | May cause respiratory irritation. |
| Supplemental Hazard Statements | : | EUH066 | Repeated exposure may cause skin dryness or cracking. |
| Precautionary statements | : | **Prevention:** | |
| | | P210 | Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. |
| | | P233 | Keep container tightly closed. |
| | | P234 | Keep only in original container. |
| | | P280 | Wear protective gloves/ protective clothing/ eye protection/ face protection. |
| | | **Response:** | |
| | | P370 + P378 | In case of fire: Use alcohol-resistant foam, carbon dioxide or water mist to extinguish. |
| | | **Storage:** | |
| | | P403 | Store in a well-ventilated place. |

Hazardous components which must be listed on the label:
Isobutyl methyl ketone

### 2.3 Other hazards

Static-accumulating flammable liquid.
Vapours may form explosive mixture with air.
May generate flammable hydrogen gas. Avoid contact with water, alcohols, acidic, basic, or oxidizing materials.

## SECTION 3: Composition/information on ingredients

### 3.2 Mixtures

Chemical nature : Silicone resin solution

**Hazardous components**

| Chemical Name | CAS-No.<br>EC-No.<br>Registration number | Classification (67/548/EEC) | Classification (REGULATION (EC) No 1272/2008) | Concentration (%) |
|---|---|---|---|---|
| Isobutyl methyl ketone | 108-10-1<br>203-550-1 | F; R11<br>Xn; R20<br>Xi; R36/37<br>R66 | Flam. Liq. 2; H225<br>Acute Tox. 4; H332<br>Eye Irrit. 2; H319<br>STOT SE 3; H335 | >= 90 - <= 100 |
| Toluene | 108-88-3<br>203-625-9<br>01-2119471310-51 | F; R11<br>Xn; R65-R48/20<br>Repr.Cat.3; R63<br>Xi; R38<br>R67 | Flam. Liq. 2; H225<br>Skin Irrit. 2; H315<br>Repr. 2; H361d<br>STOT SE 3; H336<br>STOT RE 2; H373<br>Asp. Tox. 1; H304<br>Aquatic Chronic 3; H412 | >= 0.1 - < 0.25 |

For explanation of abbreviations see section 16.

## SECTION 4: First aid measures

### 4.1 Description of first aid measures

General advice : In the case of accident or if you feel unwell, seek medical advice immediately.
When symptoms persist or in all cases of doubt seek medical advice.

Protection of first-aiders : First Aid responders should pay attention to self-protection, and use the recommended personal protective equipment when the potential for exposure exists.

If inhaled : If inhaled, remove to fresh air.
If not breathing, give artificial respiration.
If breathing is difficult, give oxygen.
Get medical attention.

In case of skin contact : In case of contact, immediately flush skin with soap and plenty of water.
Remove contaminated clothing and shoes.
Get medical attention.
Wash clothing before reuse.
Thoroughly clean shoes before reuse.

| | | |
|---|---|---|
| In case of eye contact | : | In case of contact, immediately flush eyes with plenty of water for at least 15 minutes.<br>If easy to do, remove contact lens, if worn.<br>Get medical attention. |
| If swallowed | : | If swallowed, DO NOT induce vomiting.<br>Get medical attention.<br>Rinse mouth thoroughly with water. |

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

| | | |
|---|---|---|
| Risks | : | Causes serious eye irritation.<br>Harmful if inhaled.<br>May cause respiratory irritation.<br>Repeated exposure may cause skin dryness or cracking. |

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

| | | |
|---|---|---|
| Treatment | : | Treat symptomatically and supportively. |

## SECTION 5: Firefighting measures

**5.1 Extinguishing media**

| | | |
|---|---|---|
| Suitable extinguishing media | : | Water spray<br>Alcohol-resistant foam<br>Carbon dioxide (CO2) |
| Unsuitable extinguishing media | : | Dry chemical<br>High volume water jet |

**5.2 Special hazards arising from the substance or mixture**

| | | |
|---|---|---|
| Specific hazards during fire-fighting | : | Do not use a solid water stream as it may scatter and spread fire.<br>Flash back possible over considerable distance.<br>Vapours may form explosive mixtures with air.<br>Exposure to combustion products may be a hazard to health.<br>Applying foam will release significant amounts of hydrogen gas that can be trapped under the foam blanket. |
| Hazardous combustion products | : | Carbon oxides<br>Silicon oxides |

**5.3 Advice for firefighters**

| | | |
|---|---|---|
| Special protective equipment for firefighters | : | In the event of fire, wear self-contained breathing apparatus.<br>Use personal protective equipment. |
| Specific extinguishing methods | : | Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.<br>Use water spray to cool unopened containers. |

Do not allow extinguishing medium to contact container contents. Most fire extinguishing media will cause hydrogen evolution, and once the fire is put out, may accumulate in poorly ventilated or confined areas and result in flash fire or explosion if ignited.
Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Remove undamaged containers from fire area if it is safe to do so.
Evacuate area.

## SECTION 6: Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Remove all sources of ignition.
Ventilate the area.
Use personal protective equipment.
Follow safe handling advice and personal protective equipment recommendations.

### 6.2 Environmental precautions

Environmental precautions : Discharge into the environment must be avoided.
Prevent further leakage or spillage if safe to do so.
Prevent spreading over a wide area (e.g. by containment or oil barriers).
Retain and dispose of contaminated wash water.
Local authorities should be advised if significant spillages cannot be contained.

### 6.3 Methods and material for containment and cleaning up

Methods for cleaning up : Non-sparking tools should be used.
Soak up with inert absorbent material.
For large spills, provide dyking or other appropriate containment to keep material from spreading. If dyked material can be pumped, store recovered material in appropriate container.
Clean up remaining materials from spill with suitable absorbent.
Materials in contact with water, moisture, acids or bases have the potential to generate hydrogen gas. Recovered material should be stored in a vented container.
Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable.
Sections 13 and 15 of this SDS provide information regarding certain local or national requirements.

**6.4 Reference to other sections**

See sections: 7, 8, 11, 12 and 13.

## SECTION 7: Handling and storage

**7.1 Precautions for safe handling**

| | | |
|---|---|---|
| Technical measures | : | Ensure all equipment is electrically grounded before beginning transfer operations.<br>This material can accumulate static charge due to its inherent physical properties and can therefore cause an electrical ignition source to vapors. In order to prevent a fire hazard, as bonding and grounding may be insufficient to remove static electricity, it is necessary to provide an inert gas purge before beginning transfer operations.<br>Restrict flow velocity in order to reduce the accumulation of static electricity. |
| Local/Total ventilation | : | Use with local exhaust ventilation.<br>Use only in an area equipped with explosion proof exhaust ventilation. |
| Advice on safe handling | : | Do not get on skin or clothing.<br>Do not breathe vapours or spray mist.<br>Do not swallow.<br>Do not get in eyes.<br>Handle in accordance with good industrial hygiene and safety practice.<br>Non-sparking tools should be used.<br>Keep container tightly closed.<br>Keep away from water.<br>Protect from moisture.<br>Keep away from heat and sources of ignition.<br>Take precautionary measures against static discharges.<br>Take care to prevent spills, waste and minimize release to the environment. |
| Hygiene measures | : | Ensure that eye flushing systems and safety showers are located close to the working place. When using do not eat, drink or smoke. Wash contaminated clothing before re-use. |

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

| | | |
|---|---|---|
| Requirements for storage areas and containers | : | Keep in properly labelled containers. Store in a closed container. Store locked up. Keep tightly closed. Keep in a cool, well-ventilated place. Store in accordance with the particular national regulations. Keep away from heat and sources of ignition. Product may evolve minute quantities of flammable hydrogen gas which can accumulate. Adequately ventilate to maintain vapors well below flammability limits and exposure guidelines. Do not repackage. Clogged container vents may increase pressure build up. |

Advice on common storage : Do not store with the following product types:
Strong oxidizing agents
Organic peroxides
Flammable solids
Pyrophoric liquids
Pyrophoric solids
Self-heating substances and mixtures
Substances and mixtures, which in contact with water, emit flammable gases
Explosives
Gases

Packaging material : Unsuitable material: Do not store in or use containers except the original product package.

**7.3 Specific end use(s)**

Specific use(s) : These precautions are for room temperature handling. Use at elevated temperature or aerosol/spray applications may require added precautions.
For further information regarding the use of silicones / organic oils in consumer aerosol applications, please refer to the guidance document regarding the use of these type of materials in consumer aerosol applications that has been developed by the silicone industry (www.SEHSC.com) or contact the Dow Corning customer service group.

## SECTION 8: Exposure controls/personal protection

**8.1 Control parameters**

**Occupational Exposure Limits**

| Components | CAS-No. | Value type (Form of exposure) | Control parameters | Basis |
|---|---|---|---|---|
| Isobutyl methyl ketone | 108-10-1 | TWA | 20 ppm<br>83 mg/m3 | 2000/39/EC |
| Further information | Indicative | | | |
| | | STEL | 50 ppm<br>208 mg/m3 | 2000/39/EC |
| Further information | Indicative | | | |
| | | TWA | 50 ppm<br>208 mg/m3 | GB EH40 |
| Further information | Can be absorbed through skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity. | | | |
| | | STEL | 100 ppm<br>416 mg/m3 | GB EH40 |
| Further information | Can be absorbed through skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity. | | | |
| Toluene | 108-88-3 | TWA | 50 ppm<br>192 mg/m3 | 2006/15/EC |

| | | | | |
|---|---|---|---|---|
| Further information | Identifies the possibility of significant uptake through the skin, Indicative | | | |
| | | STEL | 100 ppm<br>384 mg/m3 | 2006/15/EC |
| Further information | Identifies the possibility of significant uptake through the skin, Indicative | | | |
| | | TWA | 50 ppm<br>191 mg/m3 | GB EH40 |
| Further information | Can be absorbed through skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity. | | | |
| | | STEL | 100 ppm<br>384 mg/m3 | GB EH40 |
| Further information | Can be absorbed through skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity. | | | |

**Biological occupational exposure limits**

| Substance name | CAS-No. | Control parameters | Sampling time | Basis |
|---|---|---|---|---|
| Isobutyl methyl ketone | 108-10-1 | 4-methylpentan-2-one: 20 micromol per litre<br>(Urine) | Post shift | GB EH40 BAT |

**Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:**

Isobutyl methyl ketone : End Use: Workers
Exposure routes: Inhalation
Potential health effects: Acute systemic effects
Value: 208 mg/m3
End Use: Workers
Exposure routes: Inhalation
Potential health effects: Acute local effects
Value: 208 mg/m3
End Use: Workers
Exposure routes: Skin contact
Potential health effects: Long-term systemic effects
Value: 11.8 mg/kg bw/day
End Use: Workers
Exposure routes: Inhalation
Potential health effects: Long-term systemic effects
Value: 83 mg/m3
End Use: Workers
Exposure routes: Inhalation
Potential health effects: Long-term local effects
Value: 83 mg/m3
End Use: Consumers
Exposure routes: Inhalation
Potential health effects: Acute systemic effects
Value: 155.2 mg/m3
End Use: Consumers
Exposure routes: Inhalation
Potential health effects: Acute local effects
Value: 155.2 mg/m3
End Use: Consumers
Exposure routes: Skin contact
Potential health effects: Long-term systemic effects
Value: 4.2 mg/kg bw/day

| | | |
|---|---|---|
| | | End Use: Consumers<br>Exposure routes: Inhalation<br>Potential health effects: Long-term systemic effects<br>Value: 14.7 mg/m3<br>End Use: Consumers<br>Exposure routes: Ingestion<br>Potential health effects: Long-term systemic effects<br>Value: 4.2 mg/kg bw/day<br>End Use: Consumers<br>Exposure routes: Inhalation<br>Potential health effects: Long-term local effects<br>Value: 14.7 mg/m3 |
| Toluene | : | End Use: Workers<br>Exposure routes: Inhalation<br>Potential health effects: Acute systemic effects<br>Value: 384 mg/m3<br>End Use: Workers<br>Exposure routes: Inhalation<br>Potential health effects: Acute local effects<br>Value: 384 mg/m3<br>End Use: Workers<br>Exposure routes: Skin contact<br>Potential health effects: Long-term systemic effects<br>Value: 384 mg/kg bw/day<br>End Use: Workers<br>Exposure routes: Inhalation<br>Potential health effects: Long-term systemic effects<br>Value: 192 mg/m3<br>End Use: Workers<br>Exposure routes: Inhalation<br>Potential health effects: Long-term local effects<br>Value: 192 mg/m3<br>End Use: Consumers<br>Exposure routes: Inhalation<br>Potential health effects: Acute systemic effects<br>Value: 226 mg/m3<br>End Use: Consumers<br>Exposure routes: Inhalation<br>Potential health effects: Acute local effects<br>Value: 226 mg/m3<br>End Use: Consumers<br>Exposure routes: Skin contact<br>Potential health effects: Long-term systemic effects<br>Value: 226 mg/kg bw/day<br>End Use: Consumers<br>Exposure routes: Inhalation<br>Potential health effects: Long-term systemic effects<br>Value: 56.5 mg/m3<br>End Use: Consumers<br>Exposure routes: Ingestion<br>Potential health effects: Long-term systemic effects<br>Value: 8.13 mg/kg bw/day<br>End Use: Consumers |

Exposure routes: Inhalation
Potential health effects: Long-term local effects
Value: 56.5 mg/m3

**Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:**

Isobutyl methyl ketone : Fresh water
Value: 0.6 mg/l
Marine water
Value: 0.06 mg/l
Intermittent use/release
Value: 1.5 mg/l
Sewage treatment plant
Value: 27.5 mg/l
Fresh water sediment
Value: 8.27 mg/kg
Marine sediment
Value: 0.83 mg/kg
Soil
Value: 1.3 mg/kg

Toluene : Fresh water
Value: 0.68 mg/l
Marine water
Value: 0.68 mg/l
Intermittent use/release
Value: 0.68 mg/l
Sewage treatment plant
Value: 13.61 mg/l
Fresh water sediment
Value: 16.39 mg/kg
Marine sediment
Value: 16.39 mg/kg
Soil
Value: 2.89 mg/kg

**8.2 Exposure controls**

**Engineering measures**

Minimize workplace exposure concentrations.
Use only in an area equipped with explosion proof exhaust ventilation.
Use with local exhaust ventilation.

**Personal protective equipment**

Eye protection : Wear the following personal protective equipment:
Safety goggles

Hand protection
Material : Antistatic gloves
Impervious gloves
Flame retardant gloves

Remarks : Choose gloves to protect hands against chemicals depending on the concentration and quantity of the hazardous substance and specific to place of work. Breakthrough time is not determined for the product. Change gloves often! For special

applications, we recommend clarifying the resistance to chemicals of the aforementioned protective gloves with the glove manufacturer. Wash hands before breaks and at the end of workday.

Skin and body protection : Select appropriate protective clothing based on chemical resistance data and an assessment of the local exposure potential.
Wear the following personal protective equipment:
Flame retardant antistatic protective clothing.
Skin contact must be avoided by using impervious protective clothing (gloves, aprons, boots, etc).

Respiratory protection : Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines.

Filter type : Combined particulates and organic vapour type (A-P)

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

| | | |
|---|---|---|
| Appearance | : | liquid |
| Colour | : | colourless |
| Odour | : | solvent-like |
| Odour Threshold | : | No data available |
| pH | : | No data available |
| Melting point/freezing point | : | No data available |
| Initial boiling point and boiling range | : | 116 °C |
| Flash point | : | 17 °C<br>Method: closed cup |
| Evaporation rate | : | No data available |
| Flammability (solid, gas) | : | Not applicable |
| Upper explosion limit | : | No data available |
| Lower explosion limit | : | No data available |
| Vapour pressure | : | No data available |
| Relative vapour density | : | No data available |

| | | |
|---|---|---|
| Relative density | : | 0.809 |
| Solubility(ies) | | |
| Water solubility | : | No data available |
| Partition coefficient: n-octanol/water | : | No data available |
| Auto-ignition temperature | : | No data available |
| Decomposition temperature | : | No data available |
| Viscosity | | |
| Viscosity, kinematic | : | 0.6 cSt |
| Explosive properties | : | Not explosive |
| Oxidizing properties | : | The substance or mixture is not classified as oxidizing. |

**9.2 Other information**

| | | |
|---|---|---|
| Molecular weight | : | No data available |

## SECTION 10: Stability and reactivity

**10.1 Reactivity**

Contact with water liberates highly flammable gases.

**10.2 Chemical stability**

Stable under normal conditions.

**10.3 Possibility of hazardous reactions**

| | | |
|---|---|---|
| Hazardous reactions | : | Highly flammable liquid and vapour.<br>Vapours may form explosive mixture with air.<br>Can react with strong oxidizing agents.<br>Product may evolve flammable hydrogen gas on contact with water, alcohols, acidic or basic materials, many metals or metallic compounds and can form explosive mixtures in air. |

**10.4 Conditions to avoid**

| | | |
|---|---|---|
| Conditions to avoid | : | Exposure to moisture<br>Handling operations that can promote accumulation of static charges.<br>Heat, flames and sparks. |

**10.5 Incompatible materials**

Materials to avoid : Oxidizing agents

**10.6 Hazardous decomposition products**

No hazardous decomposition products are known.

## SECTION 11: Toxicological information

**11.1 Information on toxicological effects**

Information on likely routes of exposure : Inhalation
Skin contact
Ingestion
Eye contact

**Acute toxicity**

Harmful if inhaled.

**Product:**

Acute inhalation toxicity : Acute toxicity estimate: 11.22 mg/l
Exposure time: 4 h
Test atmosphere: vapour
Method: Calculation method

**Components:**

**Isobutyl methyl ketone:**

Acute oral toxicity : LD50 (Rat): 2,980 mg/kg
Method: OECD Test Guideline 401

Acute inhalation toxicity : LC50: 8.2 - 16.4 mg/l, 2000 - 4000 ppm
Exposure time: 4 h
Test atmosphere: vapour

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 402
Assessment: The substance or mixture has no acute dermal toxicity

**Toluene:**

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg

Acute inhalation toxicity : LC50 (Rat): 28.1 mg/l
Exposure time: 4 h
Test atmosphere: vapour
Method: OECD Test Guideline 403

Acute dermal toxicity : LD50 (Rabbit): > 5,000 mg/kg

**Skin corrosion/irritation**

Repeated exposure may cause skin dryness or cracking.

**Components:**

**Isobutyl methyl ketone:**
Assessment: Repeated exposure may cause skin dryness or cracking.

**Toluene:**
Species: Rabbit
Method: Directive 67/548/EEC, Annex V, B.4.
Result: Skin irritation

**Serious eye damage/eye irritation**

Causes serious eye irritation.

**Components:**

**Isobutyl methyl ketone:**
Result: Irritation to eyes, reversing within 21 days
Remarks: Based on harmonised classification in EU regulation 1272/2008, Annex VI

**Toluene:**
Species: Rabbit
Method: OECD Test Guideline 405
Result: No eye irritation

**Respiratory or skin sensitisation**

Skin sensitisation: Not classified based on available information.
Respiratory sensitisation: Not classified based on available information.

**Components:**

**Isobutyl methyl ketone:**
Test Type: Maximisation Test (GPMT)
Exposure routes: Skin contact
Species: Guinea pig
Method: OECD Test Guideline 406
Result: negative

**Toluene:**
Test Type: Maximisation Test (GPMT)
Exposure routes: Skin contact
Species: Guinea pig
Method: OECD Test Guideline 406
Result: negative

**Germ cell mutagenicity**

Not classified based on available information.

**Components:**

**Isobutyl methyl ketone:**
Genotoxicity in vitro : Test Type: Chromosome aberration test in vitro
Result: negative

: Test Type: Bacterial reverse mutation assay (AMES)
Result: negative

Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)
Species: Mouse
Application Route: Intraperitoneal injection
Result: negative

**Toluene:**

Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test
Result: negative

: Test Type: Bacterial reverse mutation assay (AMES)
Result: negative

Genotoxicity in vivo : Test Type: Mutagenicity (in vivo mammalian bone-marrow cytogenetic test, chromosomal analysis)
Species: Mouse
Application Route: Ingestion
Result: negative

**Carcinogenicity**

Not classified based on available information.

**Components:**

**Isobutyl methyl ketone:**
Species: Mouse
Application Route: inhalation (vapour)
Exposure time: 2 Years
Method: OECD Test Guideline 451
Result: positive
Remarks: The mechanism or mode of action may not be relevant in humans.
IARC (International Agency for Research on Cancer)

**Toluene:**
Species: Rat
Application Route: inhalation (vapour)
Exposure time: 24 Months
Result: negative

**Reproductive toxicity**

Not classified based on available information.

**Components:**

**Isobutyl methyl ketone:**

Effects on fertility : Test Type: Two-generation reproduction toxicity study
Species: Rat
Application Route: inhalation (vapour)
Method: OECD Test Guideline 416
Result: negative

Effects on foetal development : Test Type: Embryo-foetal development
Species: Mouse

Application Route: inhalation (vapour)
Result: negative

**Toluene:**

| | | |
|---|---|---|
| Effects on fertility | : | Test Type: One-generation reproduction toxicity study<br>Species: Rat<br>Application Route: inhalation (vapour)<br>Result: negative |
| Effects on foetal development | : | Test Type: Embryo-foetal development<br>Species: Rat<br>Application Route: inhalation (vapour)<br>Result: positive |
| Reproductive toxicity - Assessment | : | Some evidence of adverse effects on development, based on animal experiments. |

**STOT - single exposure**

May cause respiratory irritation.

**Components:**

**Isobutyl methyl ketone:**
Assessment: May cause respiratory irritation.

**Toluene:**
Assessment: May cause drowsiness or dizziness.

**STOT - repeated exposure**

Not classified based on available information.

**Components:**

**Toluene:**
Target Organs: Central nervous system
Assessment: May cause damage to organs through prolonged or repeated exposure.

**Repeated dose toxicity**

**Components:**

**Isobutyl methyl ketone:**
Species: Mouse
NOAEL: 4,106 mg/m3
Application Route: inhalation (vapour)
Exposure time: 13 w

**Toluene:**
Species: Rat
LOAEL: 1.875 mg/l
Application Route: inhalation (vapour)
Exposure time: 6 m

**Aspiration toxicity**

Not classified based on available information.

**Components:**

**Toluene:**

The substance or mixture is known to cause human aspiration toxicity hazards or has to be regarded as if it causes a human aspiration toxicity hazard.

**Experience with human exposure**

**Components:**

**Toluene:**

| | | |
|---|---|---|
| Inhalation | : | Target Organs: Central nervous system<br>Symptoms: Neurological disorders, Fatigue, Vertigo |

## SECTION 12: Ecological information

### 12.1 Toxicity

**Components:**

**Isobutyl methyl ketone:**

| | | |
|---|---|---|
| Toxicity to fish | : | LC50 (Danio rerio (zebra fish)): > 179 mg/l<br>Exposure time: 96 h<br>Method: OECD Test Guideline 203 |
| Toxicity to daphnia and other aquatic invertebrates | : | EC50 (Daphnia magna (Water flea)): > 200 mg/l<br>Exposure time: 48 h<br>Method: OECD Test Guideline 202 |
| Toxicity to algae | : | EC50 (Lemna gibba): > 146 mg/l<br>Exposure time: 7 d |
| Toxicity to bacteria | : | EC10 (Pseudomonas putida): 275 mg/l<br>Exposure time: 16 h<br>Method: DIN 38 412 Part 8 |
| Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) | : | NOEC: 30 mg/l<br>Exposure time: 21 d<br>Species: Daphnia magna (Water flea)<br>Method: OECD Test Guideline 211 |

**Toluene:**

| | | |
|---|---|---|
| Toxicity to fish | : | LC50 (Oncorhynchus kisutch (coho salmon)): 5.5 mg/l<br>Exposure time: 96 h |
| Toxicity to daphnia and other aquatic invertebrates | : | EC50 (Ceriodaphnia dubia (water flea)): 3.78 mg/l<br>Exposure time: 48 h |
| Toxicity to algae | : | NOEC (Skeletonema costatum (marine diatom)): 10 mg/l<br>Exposure time: 72 h |

| | | |
|---|---|---|
| Toxicity to bacteria | : | EC50 (Nitrosomonas sp.): 84 mg/l<br>Exposure time: 24 h |
| Toxicity to fish (Chronic toxicity) | : | NOEC: 1.39 mg/l<br>Exposure time: 40 d<br>Species: Oncorhynchus kisutch (coho salmon) |
| Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) | : | NOEC: 1 mg/l<br>Exposure time: 21 d<br>Species: Daphnia magna (Water flea)<br><br>NOEC: 0.74 mg/l<br>Exposure time: 7 d<br>Species: Ceriodaphnia dubia (water flea) |

**12.2 Persistence and degradability**

**Components:**

**Isobutyl methyl ketone:**

| | | |
|---|---|---|
| Biodegradability | : | Result: Readily biodegradable<br>Biodegradation: 83 %<br>Exposure time: 28 d<br>Method: OECD Test Guideline 301F |

**Toluene:**

| | | |
|---|---|---|
| Biodegradability | : | Result: Readily biodegradable<br>Biodegradation: 86 %<br>Exposure time: 20 d |

**12.3 Bioaccumulative potential**

**Components:**

**Isobutyl methyl ketone:**

| | | |
|---|---|---|
| Partition coefficient: n-octanol/water | : | log Pow: 1.9 |

**Toluene:**

| | | |
|---|---|---|
| Bioaccumulation | : | Species: Leuciscus idus (Golden orfe)<br>Bioconcentration factor (BCF): 90 |
| Partition coefficient: n-octanol/water | : | log Pow: 2.73 |

**12.4 Mobility in soil**

No data available

**12.5 Results of PBT and vPvB assessment**

Not relevant

**12.6 Other adverse effects**

No data available

## SECTION 13: Disposal considerations

**13.1 Waste treatment methods**

| | | |
|---|---|---|
| Product | : | Dispose of in accordance with local regulations.<br>According to the European Waste Catalogue, Waste Codes are not product specific, but application specific.<br>Waste codes should be assigned by the user, preferably in discussion with the waste disposal authorities. |
| Contaminated packaging | : | Dispose of as unused product.<br>Empty containers should be taken to an approved waste handling site for recycling or disposal.<br>Do not burn, or use a cutting torch on, the empty drum. |

## SECTION 14: Transport information

**14.1 UN number**

| | | |
|---|---|---|
| **ADN** | : | UN 1245 |
| **ADR** | : | UN 1245 |
| **RID** | : | UN 1245 |
| **IMDG** | : | UN 1245 |
| **IATA** | : | UN 1245 |

**14.2 UN proper shipping name**

| | | |
|---|---|---|
| **ADN** | : | METHYL ISOBUTYL KETONE, SOLUTION |
| **ADR** | : | METHYL ISOBUTYL KETONE, SOLUTION |
| **RID** | : | METHYL ISOBUTYL KETONE, SOLUTION |
| **IMDG** | : | METHYL ISOBUTYL KETONE, SOLUTION |
| **IATA** | : | Methyl isobutyl ketone, solution |

**14.3 Transport hazard class(es)**

| | | |
|---|---|---|
| **ADN** | : | 3 |
| **ADR** | : | 3 |
| **RID** | : | 3 |
| **IMDG** | : | 3 |
| **IATA** | : | 3 |

**14.4 Packing group**

**ADN**

| | | |
|---|---|---|
| Packing group | : | II |
| Classification Code | : | F1 |
| Hazard Identification Number | : | 33 |
| Labels | : | 3 |

**ADR**

| | | |
|---|---|---|
| Packing group | : | II |
| Classification Code | : | F1 |
| Hazard Identification Number | : | 33 |
| Labels | : | 3 |
| Tunnel restriction code | : | (D/E) |

**RID**

| | | |
|---|---|---|
| Packing group | : | II |
| Classification Code | : | F1 |
| Hazard Identification Number | : | 33 |
| Labels | : | 3 |

**IMDG**

| | | |
|---|---|---|
| Packing group | : | II |
| Labels | : | 3 |
| EmS Code | : | F-E, S-D |

**IATA**

| | | |
|---|---|---|
| Packing instruction (cargo aircraft) | : | 364 |
| Packing instruction (passenger aircraft) | : | 353 |
| Packing instruction (LQ) | : | Y341 |
| Packing group | : | II |
| Labels | : | Flammable Liquids |
| Remarks | : | VENTED PACKAGES ARE FORBIDDEN FOR AIR TRANSPORT. |

### 14.5 Environmental hazards

**ADN**

Environmentally hazardous : no

**ADR**

Environmentally hazardous : no

**RID**

Environmentally hazardous : no

**IMDG**

Marine pollutant : no

### 14.6 Special precautions for user

Not applicable

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

Remarks : Not applicable for product as supplied.

## SECTION 15: Regulatory information

### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Regulation (EC) No 649/2012 of the European Parliament and the Council concerning the export and import of dangerous chemicals : Not applicable

REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59). : Not applicable

Regulation (EC) No 1005/2009 on substances that deplete the ozone layer : Not applicable

Regulation (EC) No 850/2004 on persistent organic pollutants : Not applicable

Seveso II - Directive 2003/105/EC amending Council Directive 96/82/EC on the control of major-accident hazards involving dangerous substances

| | | Quantity 1 | Quantity 2 |
|---|---|---|---|
| 7b | Highly flammable | 5,000 t | 50,000 t |

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.

| | | | |
|---|---|---|---|
| P5c | FLAMMABLE LIQUIDS | 5,000 t | 50,000 t |

Other regulations : Take note of Dir 94/33/EC on the protection of young people at work.
Take note of Dir 92/85/EEC on the safety and health at work of pregnant workers.

**The components of this product are reported in the following inventories:**

KECI : All ingredients listed, exempt or notified.

REACH : All ingredients (pre-)registered or exempt.

TSCA : All chemical substances in this material are included on or exempted from listing on the TSCA Inventory of Chemical Substances.

IECSC : All ingredients listed or exempt.

ENCS/ISHL : All components are listed on ENCS/ISHL or exempted from inventory listing.

| | | |
|---|---|---|
| DSL | : | This product contains one or more substances which are not on the Canadian Domestic Substances List (DSL). Import of this product into Canada has volume limitations. For volume limits please consult Dow Corning Regulatory Compliance. |
| AICS | : | One or more ingredients are not listed or exempt. |
| NZIoC | : | All ingredients listed or exempt. |

**Inventories**

AICS (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TSCA (USA)

**15.2 Chemical Safety Assessment**

A Chemical Safety Assessment has not been carried out.

## SECTION 16: Other information

**Full text of R-Phrases**

| | | |
|---|---|---|
| R11 | : | Highly flammable. |
| R20 | : | Harmful by inhalation. |
| R36/37 | : | Irritating to eyes and respiratory system. |
| R38 | : | Irritating to skin. |
| R48/20 | : | Harmful: danger of serious damage to health by prolonged exposure through inhalation. |
| R63 | : | Possible risk of harm to the unborn child. |
| R65 | : | Harmful: may cause lung damage if swallowed. |
| R66 | : | Repeated exposure may cause skin dryness or cracking. |
| R67 | : | Vapours may cause drowsiness and dizziness. |

**Full text of H-Statements**

| | | |
|---|---|---|
| H225 | : | Highly flammable liquid and vapour. |
| H304 | : | May be fatal if swallowed and enters airways. |
| H315 | : | Causes skin irritation. |
| H319 | : | Causes serious eye irritation. |
| H332 | : | Harmful if inhaled. |
| H335 | : | May cause respiratory irritation. |
| H336 | : | May cause drowsiness or dizziness. |
| H361d | : | Suspected of damaging the unborn child. |
| H373 | : | May cause damage to organs through prolonged or repeated exposure. |
| H412 | : | Harmful to aquatic life with long lasting effects. |

**Full text of other abbreviations**

| | | |
|---|---|---|
| Acute Tox. | : | Acute toxicity |
| Aquatic Chronic | : | Chronic aquatic toxicity |
| Asp. Tox. | : | Aspiration hazard |

| | | |
|---|---|---|
| Eye Irrit. | : | Eye irritation |
| Flam. Liq. | : | Flammable liquids |
| Repr. | : | Reproductive toxicity |
| Skin Irrit. | : | Skin irritation |
| STOT RE | : | Specific target organ toxicity - repeated exposure |
| STOT SE | : | Specific target organ toxicity - single exposure |
| 2000/39/EC | : | Europe. Commission Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values |
| 2006/15/EC | : | Europe. Indicative occupational exposure limit values |
| GB EH40 | : | UK. EH40 WEL - Workplace Exposure Limits |
| GB EH40 BAT | : | UK. Biological monitoring guidance values |
| 2000/39/EC / TWA | : | Limit Value - eight hours |
| 2000/39/EC / STEL | : | Short term exposure limit |
| 2006/15/EC / TWA | : | Limit Value - eight hours |
| 2006/15/EC / STEL | : | Short term exposure limit |
| GB EH40 / TWA | : | Long-term exposure limit (8-hour TWA reference period) |
| GB EH40 / STEL | : | Short-term exposure limit (15-minute reference period) |

**Further information**

| | | |
|---|---|---|
| Sources of key data used to compile the Safety Data Sheet | : | Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agency, http://echa.europa.eu/ |

Items where changes have been made to the previous version are highlighted in the body of this document by two vertical lines.

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GB / EN