# M-Bond 43 B

## Vishay Measurements Group GmbH

Version No: **6.0**
Safety data sheet according to REACH Regulation (EC) No 1907/2006, as amended by UK REACH Regulations SI 2019/758

Initial Date: **11/27/2025**
Revision Date: **07/08/2026**
Print Date: **07/21/2026**
S.REACH.GB.EN

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

### 1.1. Product Identifier

| | |
|---|---|
| **Product name** | M-Bond 43 B |
| **Chemical Name** | Not Applicable |
| **Synonyms** | Not Available |
| **Proper shipping name** | ADHESIVES containing flammable liquid (vapour pressure at 50 °C more than 110 kPa) |
| **Chemical formula** | Not Applicable |
| **Other means of identification** | Not Available |

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

| | |
|---|---|
| **Relevant identified uses** | Adhesive |
| **Uses advised against** | No specific uses advised against are identified. |

### 1.3. Details of the manufacturer or importer of the safety data sheet

| | |
|---|---|
| **Manufacturer/Supplier** | **Vishay Measurements Group GmbH** |
| **Address** | Tatschenweg 1 Heilbronn 74078 Germany |
| **Telephone** | +49 (0) 7131 39099-0 |
| **Fax** | +49 (0) 7131 39099-229 |
| **Website** | www.VPGSensors.com |
| **Email** | mm.de@vpgsensors.com |

### 1.4. Emergency telephone number

| | |
|---|---|
| **Association / Organisation** | **Velocity EHS** |
| **Emergency telephone number(s)** | 1-888-255-3924 |
| **Other emergency telephone number(s)** | Not Available |

## SECTION 2 Hazards identification

### 2.1. Classification of the substance or mixture

| | |
|---|---|
| **Classified according to GB-CLP Regulation, UK SI 2019/720 and UK SI 2020/1567 [1]** | H225 - Flammable Liquids Category 2, H304 - Aspiration Hazard Category 1, H315 - Skin Corrosion/Irritation Category 2, H317 - Sensitisation (Skin) Category 1, H319 - Serious Eye Damage/Eye Irritation Category 2, H336 - Specific Target Organ Toxicity - Single Exposure (Narcotic Effects) Category 3 |
| **Legend:** | 1. Classified by Chemwatch; 2. Classification drawn from GB-CLP Regulation, UK SI 2019/720 and UK SI 2020/1567 |

### 2.2. Label elements

| | |
|---|---|
| **Hazard pictogram(s)** |  |
| **Signal word** | **Danger** |

**Hazard statement(s)**

| | |
|---|---|
| **H225** | Highly flammable liquid and vapour. |
| **H304** | May be fatal if swallowed and enters airways. |
| **H315** | Causes skin irritation. |
| **H317** | May cause an allergic skin reaction. |
| **H319** | Causes serious eye irritation. |
| **H336** | May cause drowsiness or dizziness. |

**Supplementary statement(s)**

| | |
|---|---|
| **EUH205** | Contains epoxy constituents. May produce an allergic reaction. |

**Precautionary statement(s) Prevention**

| | |
|---|---|
| **P210** | Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. |
| **P271** | Use only a well-ventilated area. |
| **P280** | Wear protective gloves/protective clothing/eye protection/face protection. |
| **P240** | Ground and bond container and receiving equipment. |
| **P241** | Use explosion-proof electrical/ventilating/lighting/intrinsically safe equipment. |
| **P242** | Use non-sparking tools. |
| **P243** | Take action to prevent static discharges. |
| **P261** | Avoid breathing dust/fume/gas/mist/vapours/spray. |
| **P264** | Wash all exposed external body areas thoroughly after handling. |
| **P272** | Contaminated work clothing should not be allowed out of the workplace. |

**Precautionary statement(s) Response**

| | |
|---|---|
| **P301+P310** | IF SWALLOWED: Immediately call a POISON CENTER/doctor/physician/first aider. |
| **P331** | Do NOT induce vomiting. |
| **P370+P378** | In case of fire: Use alcohol resistant foam or normal protein foam to extinguish. |
| **P302+P352** | IF ON SKIN: Wash with plenty of soap and water. |
| **P305+P351+P338** | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| **P312** | Call a POISON CENTER/doctor/physician/first aider/if you feel unwell. |
| **P333+P313** | If skin irritation or rash occurs: Get medical advice/attention. |
| **P337+P313** | If eye irritation persists: Get medical advice/attention. |
| **P362+P364** | Take off contaminated clothing and wash it before reuse. |
| **P303+P361+P353** | IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower]. |
| **P304+P340** | IF INHALED: Remove person to fresh air and keep comfortable for breathing. |

**Precautionary statement(s) Storage**

| | |
|---|---|
| **P403+P235** | Store in a well-ventilated place. Keep cool. |
| **P405** | Store locked up. |

**Precautionary statement(s) Disposal**

| | |
|---|---|
| **P501** | Dispose of contents/container to authorised hazardous or special waste collection point in accordance with any local regulation. |

Material contains methyl ethyl ketone, xylene, bisphenol A diglycidyl ether, dapsone.

### 2.3. Other hazards

Ingestion may produce health damage*.

Cumulative effects may result following exposure*.

Limited evidence of a carcinogenic effect*.

Possible respiratory sensitizer*.

May be harmful to the foetus/ embryo*.

May possibly affect fertility*.

*LIMITED EVIDENCE

| | |
|---|---|
| **methyl ethyl ketone** | Listed in the Europe Regulation (EC) No 1907/2006 - Annex XVII (Restrictions may apply) |
| **xylene** | Listed in the Europe Regulation (EC) No 1907/2006 - Annex XVII (Restrictions may apply) |

This substance/mixture does not meet the criteria for classification as Persistent, Bioaccumulative, and Toxic (PBT) in accordance with Annex XIII, Commission Delegated Regulation (EU) 2017/2100, and Commission Regulation (EU) 2018/605.

This substance/mixture does not meet the criteria for classification as very Persistent and very Bioaccumulative (vPvB) in accordance with Annex XIII, Commission Delegated Regulation (EU) 2017/2100, and Commission Regulation (EU) 2018/605.

This substance/mixture does not meet the criteria for classification as Persistent, Mobile and Toxic (PMT) in accordance with Commission Delegated Regulation (EU) 2023/707.

This substance/mixture does not meet the criteria for classification as very Persistent and very Mobile (vPvM) in accordance with Commission Delegated Regulation (EU) 2023/707.


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The substance/mixture does not contain components considered to have endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605, nor is it included in the list established under REACH Article 59(1), at concentrations equal to or greater than 0.1% (w/w).

No further product hazard information.

## SECTION 3 Composition / information on ingredients

### 3.1.Substances

See 'Composition on ingredients' in Section 3.2

### 3.2.Mixtures

| 1. CAS No<br>2.EC No<br>3.Index No<br>4.REACH No | %[weight] | Name | Classified according to GB-CLP Regulation, UK SI 2019/720 and UK SI 2020/1567 | SCL / M-Factor | Nanoform Particle Characteristics |
|---|---|---|---|---|---|
| 1. 78-93-3<br>2.201-159-0<br>3.606-002-00-3<br>4.Not Available | 35-40 | methyl ethyl ketone * | Flammable Liquids Category 2, Serious Eye Damage/Eye Irritation Category 2, Specific Target Organ Toxicity - Single Exposure (Narcotic Effects) Category 3, Endocrine Disruption for Human Health Category 2; H225, H319, H336, EUH381, EUH066 [2] | SCL: Not Available<br>Acute M factor: Not Applicable<br>Chronic M factor: Not Applicable | Not Available |
| 1. 1330-20-7<br>2.215-535-7<br>3.Not Available<br>4.Not Available | 20-25 | xylene * | Flammable Liquids Category 3, Acute Toxicity (Dermal) Category 4, Skin Corrosion/Irritation Category 2, Acute Toxicity (Inhalation) Category 4; H226, H312, H315, H332 [2] | SCL: Not Available<br>Acute M factor: Not Applicable<br>Chronic M factor: Not Applicable | Not Available |
| 1. 25068-38-6<br>2.500-033-5<br>3.603-073-00-2\|603-074-00-8<br>4.Not Available | 15-20 | bisphenol A diglycidyl ether | Skin Corrosion/Irritation Category 2, Sensitisation (Skin) Category 1, Serious Eye Damage/Eye Irritation Category 2; H315, H317, H319 [2] | Eye Irrit. 2; H319: C ≥ 5 % \| Skin Irrit. 2; H315: C ≥ 5 %<br>Acute M factor: Not Applicable<br>Chronic M factor: Not Applicable | Not Available |
| 1. 123-42-2<br>2.204-626-7<br>3.603-016-00-1<br>4.Not Available | 10-15 | diacetone alcohol | Serious Eye Damage/Eye Irritation Category 2; H319 [2] | Eye Irrit. 2; H319: C ≥ 10 %<br>Acute M factor: Not Applicable<br>Chronic M factor: Not Applicable | Not Available |
| 1. 80-08-0<br>2.201-248-4<br>3.612-084-00-1<br>4.Not Available | 5-10 | dapsone | Acute Toxicity (Oral) Category 4; H302 [2] | SCL: Not Available<br>Acute M factor: Not Applicable<br>Chronic M factor: Not Applicable | Not Available |
| 1. 71011-26-2<br>2.275-126-4<br>3.Not Available<br>4.Not Available | 0.0001-1.9999 | tallow dimethylbenzylammonium chloride/ hectorite | Specific Target Organ Toxicity - Repeated Exposure Category 2; H373 [1] | SCL: Not Available<br>Acute M factor: Not Applicable<br>Chronic M factor: Not Applicable | Not Available |
| **Legend:** | 1. Classified by Chemwatch; 2. Classification drawn from GB-CLP Regulation, UK SI 2019/720 and UK SI 2020/1567; 3. Classification drawn from C&L; * EU IOELVs available; [e] Substance identified as having endocrine disrupting properties | | | | |

## SECTION 4 First aid measures

### 4.1. Description of first aid measures

| | |
|---|---|
| **Eye Contact** | If this product comes in contact with the eyes:<br>▸ Wash out immediately with fresh running water.<br>▸ Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.<br>▸ Seek medical attention without delay; if pain persists or recurs seek medical attention.<br>▸ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel. |
| **Skin Contact** | If skin contact occurs:<br>▸ Immediately remove all contaminated clothing, including footwear.<br>▸ Flush skin and hair with running water (and soap if available).<br>▸ Seek medical attention in event of irritation. |
| **Inhalation** | ▸ If fumes or combustion products are inhaled remove from contaminated area.<br>▸ Lay patient down. Keep warm and rested.<br>▸ Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.<br>▸ Transport to hospital, or doctor, without delay. |
| **Ingestion** | ▸ If spontaneous vomiting appears imminent or occurs, hold patient's head down, lower than their hips to help avoid possible aspiration of vomitus. |


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- If swallowed do **NOT** induce vomiting.
- If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.
- Observe the patient carefully.
- Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.
- Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.
- Seek medical advice.
- Avoid giving milk or oils.
- Avoid giving alcohol.

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

See Section 11

### 4.3. Indication of any immediate medical attention and special treatment needed

Any material aspirated during vomiting may produce lung injury. Therefore emesis should not be induced mechanically or pharmacologically. Mechanical means should be used if it is considered necessary to evacuate the stomach contents; these include gastric lavage after endotracheal intubation. If spontaneous vomiting has occurred after ingestion, the patient should be monitored for difficult breathing, as adverse effects of aspiration into the lungs may be delayed up to 48 hours.
Treat symptomatically.
for simple ketones:

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BASIC TREATMENT

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- Establish a patent airway with suction where necessary.
- Watch for signs of respiratory insufficiency and assist ventilation as necessary.
- Administer oxygen by non-rebreather mask at 10 to 15 l/min.
- Monitor and treat, where necessary, for pulmonary oedema .
- Monitor and treat, where necessary, for shock.
- **DO NOT** use emetics. Where ingestion is suspected rinse mouth and give up to 200 ml water (5mL/kg recommended) for dilution where patient is able to swallow, has a strong gag reflex and does not drool.
- Give activated charcoal.

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ADVANCED TREATMENT

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- Consider orotracheal or nasotracheal intubation for airway control in unconscious patient or where respiratory arrest has occurred.
- Consider intubation at first sign of upper airway obstruction resulting from oedema.
- Positive-pressure ventilation using a bag-valve mask might be of use.
- Monitor and treat, where necessary, for arrhythmias.
- Start an IV D5W TKO. If signs of hypovolaemia are present use lactated Ringers solution. Fluid overload might create complications.
- Drug therapy should be considered for pulmonary oedema.
- Hypotension with signs of hypovolaemia requires the cautious administration of fluids. Fluid overload might create complications.
- Treat seizures with diazepam.
- Proparacaine hydrochloride should be used to assist eye irrigation.

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EMERGENCY DEPARTMENT

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- Laboratory analysis of complete blood count, serum electrolytes, BUN, creatinine, glucose, urinalysis, baseline for serum aminotransferases (ALT and AST), calcium, phosphorus and magnesium, may assist in establishing a treatment regime. Other useful analyses include anion and osmolar gaps, arterial blood gases (ABGs), chest radiographs and electrocardiograph.
- Positive end-expiratory pressure (PEEP)-assisted ventilation may be required for acute parenchymal injury or adult respiratory distress syndrome.
- Consult a toxicologist as necessary.

BRONSTEIN, A.C. and CURRANCE, P.L.
EMERGENCY CARE FOR HAZARDOUS MATERIALS EXPOSURE: 2nd Ed. 1994
The material may induce methaemoglobinaemia following exposure.

- Initial attention should be directed at oxygen delivery and assisted ventilation if necessary. Hyperbaric oxygen has not demonstrated substantial benefits.
- Hypotension should respond to Trendelenburg's position and intravenous fluids; otherwise dopamine may be needed.
- Symptomatic patients with methaemoglobin levels over 30% should receive methylene blue. (Cyanosis, alone, is not an indication for treatment). The usual dose is 1-2 mg/kg of a 1% solution (10 mg/ml) IV over 50 minutes; repeat, using the same dose, if symptoms of hypoxia fail to subside within 1 hour.
- Thorough cleansing of the entire contaminated area of the body, including the scalp and nails, is of utmost importance.

BIOLOGICAL EXPOSURE INDEX - BEI
These represent the determinants observed in specimens collected from a healthy worker exposed at the Exposure Standard (ES or TLV):

| Determinant | Index | Sampling Time | Comment |
|---|---|---|---|
| 1. Methaemoglobin in blood | 1.5% of haemoglobin | During or end of shift | B, NS, SQ |

B: Background levels occur in specimens collected from subjects **NOT** exposed
NS: Non-specific determinant; also observed after exposure to other materials
SQ: Semi-quantitative determinant - Interpretation may be ambiguous; should be used as a screening test or confirmatory test.
For acute or short term repeated exposures to xylene:

- Gastro-intestinal absorption is significant with ingestions. For ingestions exceeding 1-2 ml (xylene)/kg, intubation and lavage with cuffed endotracheal tube is recommended. The use of charcoal and cathartics is equivocal.
- Pulmonary absorption is rapid with about 60-65% retained at rest.
- Primary threat to life from ingestion and/or inhalation, is respiratory failure.
- Patients should be quickly evaluated for signs of respiratory distress (e.g. cyanosis, tachypnoea, intercostal retraction, obtundation) and given oxygen. Patients with inadequate tidal volumes or poor arterial blood gases (pO2 < 50 mm Hg or pCO2 > 50 mm Hg) should be intubated.
- Arrhythmias complicate some hydrocarbon ingestion and/or inhalation and electrocardiographic evidence of myocardial injury has been reported; intravenous lines and cardiac monitors should be established in obviously symptomatic patients. The lungs excrete inhaled solvents, so that hyperventilation improves clearance.
- A chest x-ray should be taken immediately after stabilisation of breathing and circulation to document aspiration and detect the presence of pneumothorax.
- Epinephrine (adrenalin) is not recommended for treatment of bronchospasm because of potential myocardial sensitisation to catecholamines. Inhaled cardioselective bronchodilators (e.g. Alupent, Salbutamol) are the preferred agents, with aminophylline a second choice.

BIOLOGICAL EXPOSURE INDEX - BEI
These represent the determinants observed in specimens collected from a healthy worker exposed at the Exposure Standard (ES or TLV):

| Determinant | Index | Sampling Time | Comments |
|---|---|---|---|
| Methylhippu-ric acids in urine | 1.5 gm/gm creatinine | End of shift | |
| | 2 mg/min | Last 4 hrs of shift | |

## SECTION 5 Firefighting measures

### 5.1. Extinguishing media

- Alcohol stable foam.
- Dry chemical powder.
- BCF (where regulations permit).


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- Carbon dioxide.
- Water spray or fog - Large fires only.

### 5.2. Special hazards arising from the substrate or mixture

| | |
|---|---|
| **Fire Incompatibility** | ‣ Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result |

### 5.3. Advice for firefighters

| | |
|---|---|
| **Fire Fighting** | ‣ Alert Fire Brigade and tell them location and nature of hazard.<br>‣ May be violently or explosively reactive.<br>‣ Wear breathing apparatus plus protective gloves in the event of a fire.<br>‣ Prevent, by any means available, spillage from entering drains or water course.<br>‣ Consider evacuation (or protect in place).<br>‣ Fight fire from a safe distance, with adequate cover.<br>‣ If safe, switch off electrical equipment until vapour fire hazard removed.<br>‣ Use water delivered as a fine spray to control the fire and cool adjacent area.<br>‣ Avoid spraying water onto liquid pools.<br>‣ **Do not** approach containers suspected to be hot.<br>‣ Cool fire exposed containers with water spray from a protected location.<br>‣ If safe to do so, remove containers from path of fire. |
| **Fire/Explosion Hazard** | ‣ Liquid and vapour are highly flammable.<br>‣ Severe fire hazard when exposed to heat, flame and/or oxidisers.<br>‣ Vapour may travel a considerable distance to source of ignition.<br>‣ Heating may cause expansion or decomposition leading to violent rupture of containers.<br>‣ On combustion, may emit toxic fumes of carbon monoxide (CO).<br>Combustion products include:<br>,<br>‣ carbon dioxide ($CO_2$)<br>,<br>aldehydes<br>,<br>nitrogen oxides ($NO_x$)<br>,<br>‣ other pyrolysis products typical of burning organic material.<br>**Contains low boiling substance:** Closed containers may rupture due to pressure buildup under fire conditions. |

## SECTION 6 Accidental release measures

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

See section 8

### 6.2. Environmental precautions

See section 12

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

| | |
|---|---|
| **Minor Spills** | ‣ Remove all ignition sources.<br>‣ Clean up all spills immediately.<br>‣ Avoid breathing vapours and contact with skin and eyes.<br>‣ Control personal contact with the substance, by using protective equipment.<br>‣ Contain and absorb small quantities with vermiculite or other absorbent material.<br>‣ Wipe up.<br>‣ Collect residues in a flammable waste container. |
| **Major Spills** | ‣ Clear area of personnel and move upwind.<br>‣ Alert Fire Brigade and tell them location and nature of hazard.<br>‣ May be violently or explosively reactive.<br>‣ Wear breathing apparatus plus protective gloves.<br>‣ Prevent, by any means available, spillage from entering drains or water course.<br>‣ Consider evacuation (or protect in place).<br>‣ No smoking, naked lights or ignition sources.<br>‣ Increase ventilation.<br>‣ Stop leak if safe to do so.<br>‣ Water spray or fog may be used to disperse /absorb vapour.<br>‣ Contain spill with sand, earth or vermiculite.<br>‣ Use only spark-free shovels and explosion proof equipment.<br>‣ Collect recoverable product into labelled containers for recycling.<br>‣ Absorb remaining product with sand, earth or vermiculite.<br>‣ Collect solid residues and seal in labelled drums for disposal.<br>‣ Wash area and prevent runoff into drains.<br>‣ If contamination of drains or waterways occurs, advise emergency services. |

### 6.4. Reference to other sections

Personal Protective Equipment advice is contained in Section 8 of the SDS.

## SECTION 7 Handling and storage

| | |
|---|---|
| **Fire and explosion protection** | See section 5 |
| **Hazard categories in accordance with Regulation (EC) No 2012/18/EU (Seveso III)** | P5a: Flammable Liquids, P5b: Flammable Liquids, P5c: Flammable Liquids |
| **Qualifying quantity (tonnes) of dangerous substances as referred to in Article 3(10) for the application of** | P5a Lower- / Upper-tier requirements: 10 / 50<br>P5b Lower- / Upper-tier requirements: 50 / 200<br>P5c Lower- / Upper-tier requirements: 5 000 / 50 000 |


**Continued...**

### 7.3. Specific end use(s)

See section 1.2

## SECTION 8 Exposure controls / personal protection

### 8.1. Control parameters

| Ingredient | DNELs<br>Exposure Pattern Worker | PNECs<br>Compartment |
|---|---|---|
| methyl ethyl ketone | Dermal 1161 mg/kg bw/day (Systemic, Chronic)<br>Inhalation 600 mg/m³ (Systemic, Chronic)<br>Inhalation 900 mg/m³ (Systemic, Acute)<br>Dermal 412 mg/kg bw/day (Systemic, Chronic) *<br>Inhalation 106 mg/m³ (Systemic, Chronic) *<br>Oral 31 mg/kg bw/day (Systemic, Chronic) *<br>Inhalation 450 mg/m³ (Systemic, Acute) * | Not Available |
| xylene | Dermal 212 mg/kg bw/day (Systemic, Chronic)<br>Inhalation 221 mg/m³ (Systemic, Chronic)<br>Inhalation 221 mg/m³ (Local, Chronic)<br>Inhalation 442 mg/m³ (Systemic, Acute)<br>Inhalation 442 mg/m³ (Local, Acute)<br>Dermal 125 mg/kg bw/day (Systemic, Chronic) *<br>Inhalation 65.3 mg/m³ (Systemic, Chronic) *<br>Oral 5 mg/kg bw/day (Systemic, Chronic) *<br>Inhalation 65.3 mg/m³ (Local, Chronic) *<br>Inhalation 260 mg/m³ (Systemic, Acute) *<br>Inhalation 260 mg/m³ (Local, Acute) * | 0.044 mg/L (Water (Fresh))<br>0.01 mg/L (Water - Intermittent release)<br>0.004 mg/L (Water (Marine))<br>2.52 mg/kg sediment dw (Sediment (Fresh Water))<br>0.252 mg/kg sediment dw (Sediment (Marine))<br>0.852 mg/kg soil dw (Soil)<br>1.6 mg/L (STP) |
| bisphenol A diglycidyl ether | Dermal 0.75 mg/kg bw/day (Systemic, Chronic)<br>Inhalation 4.93 mg/m³ (Systemic, Chronic)<br>Dermal 0.0893 mg/kg bw/day (Systemic, Chronic) *<br>Inhalation 0.87 mg/m³ (Systemic, Chronic) *<br>Oral 0.5 mg/kg bw/day (Systemic, Chronic) * | 0.006 mg/L (Water (Fresh))<br>0.018 mg/L (Water - Intermittent release)<br>0.001 mg/L (Water (Marine))<br>0.341 mg/kg sediment dw (Sediment (Fresh Water))<br>0.034 mg/kg sediment dw (Sediment (Marine))<br>0.065 mg/kg soil dw (Soil)<br>10 mg/L (STP)<br>11 mg/kg food (Oral) |
| diacetone alcohol | Dermal 467 mg/kg bw/day (Systemic, Chronic)<br>Inhalation 32.6 mg/m³ (Systemic, Chronic)<br>Inhalation 240 mg/m³ (Local, Acute)<br>Dermal 33 mg/kg bw/day (Systemic, Chronic) *<br>Inhalation 5.8 mg/m³ (Systemic, Chronic) *<br>Oral 1.67 mg/kg bw/day (Systemic, Chronic) * | 2 mg/L (Water (Fresh))<br>1 mg/L (Water - Intermittent release)<br>0.2 mg/L (Water (Marine))<br>7.4 mg/kg sediment dw (Sediment (Fresh Water))<br>0.74 mg/kg sediment dw (Sediment (Marine))<br>0.3 mg/kg soil dw (Soil)<br>100 mg/L (STP) |
| dapsone | Dermal 0.35 mg/kg bw/day (Systemic, Chronic)<br>Inhalation 2.5 mg/m³ (Systemic, Chronic)<br>Inhalation 0.35 mg/m³ (Local, Chronic)<br>Inhalation 2.5 mg/m³ (Systemic, Acute)<br>Inhalation 0.35 mg/m³ (Local, Acute) | 0.004 mg/L (Water (Fresh))<br>0.01 mg/L (Water - Intermittent release)<br>0 mg/L (Water (Marine))<br>0.041 mg/kg sediment dw (Sediment (Fresh Water))<br>0.004 mg/kg sediment dw (Sediment (Marine))<br>0.006 mg/kg soil dw (Soil)<br>10 mg/L (STP) |

* Values for General Population

**Occupational Exposure Limits (OEL)**

**INGREDIENT DATA**

| Source | Ingredient | Material name | TWA | STEL | Peak | Notes |
|---|---|---|---|---|---|---|
| UK Workplace Exposure Limits (WELs). | methyl ethyl ketone | Butan-2-one (methyl ethyl ketone) | 200 ppm / 600 mg/m3 | 899 mg/m3 / 300 ppm | Not Available | Sk, BMGV |
| UK Workplace Exposure Limits (WELs). | xylene | Xylene, o-,m-,p- or mixed isomers | 50 ppm / 220 mg/m3 | 441 mg/m3 / 100 ppm | Not Available | Sk, BMGV |
| UK Workplace Exposure Limits (WELs). | diacetone alcohol | 4-Hydroxy-4methylpentan-2-one | 50 ppm / 241 mg/m3 | 362 mg/m3 / 75 ppm | Not Available | Not Available |

### 8.2. Exposure controls

**8.2.1. Appropriate engineering controls**

Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.
The basic types of engineering controls are:
Process controls which involve changing the way a job activity or process is done to reduce the risk.
Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment. Ventilation can remove or dilute an air contaminant if designed properly. The design of a ventilation system must match the particular process and chemical or contaminant in use.
Employers may need to use multiple types of controls to prevent employee overexposure.
For flammable liquids and flammable gases, local exhaust ventilation or a process enclosure ventilation system may be required. Ventilation equipment should be explosion-resistant.
Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to effectively remove the contaminant.

| Type of Contaminant: | Air Speed: |
|---|---|
| solvent, vapours, degreasing etc., evaporating from tank (in still air). | 0.25-0.5 m/s (50-100 f/min.) |
| aerosols, fumes from pouring operations, intermittent container filling, low speed conveyer transfers, welding, spray drift, plating acid fumes, pickling (released at low velocity into zone of active generation) | 0.5-1 m/s |


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| | |
|---|---|
| | (100-200 f/min.) |
| direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion) | 1-2.5 m/s (200-500 f/min.) |

Within each range the appropriate value depends on:

| Lower end of the range | Upper end of the range |
|---|---|
| 1: Room air currents minimal or favourable to capture | 1: Disturbing room air currents |
| 2: Contaminants of low toxicity or of nuisance value only. | 2: Contaminants of high toxicity |
| 3: Intermittent, low production. | 3: High production, heavy use |
| 4: Large hood or large air mass in motion | 4: Small hood-local control only |

Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity generally decreases with the square of distance from the extraction point (in simple cases). Therefore the air speed at the extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 1-2 m/s (200-400 f/min.) for extraction of solvents generated in a tank 2 meters distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used.
· Adequate ventilation is typically taken to be that which limits the average concentration to no more than 25% of the LEL within the building, room or enclosure containing the dangerous substance.
· Ventilation for plant and machinery is normally considered adequate if it limits the average concentration of any dangerous substance that might potentially be present to no more than 25% of the LEL. However, an increase up to a maximum 50% LEL can be acceptable where additional safeguards are provided to prevent the formation of a hazardous explosive atmosphere. For example, gas detectors linked to emergency shutdown of the process might be used together with maintaining or increasing the exhaust ventilation on solvent evaporating ovens and gas turbine enclosures.
· Temporary exhaust ventilation systems may be provided for non-routine higher-risk activities, such as cleaning, repair or maintenance in tanks or other confined spaces or in an emergency after a release. The work procedures for such activities should be carefully considered.. The atmosphere should be continuously monitored to ensure that ventilation is adequate and the area remains safe. Where workers will enter the space, the ventilation should ensure that the concentration of the dangerous substance does not exceed 10% of the LEL (irrespective of the provision of suitable breathing apparatus)

**8.2.2. Individual protection measures, such as personal protective equipment**



**Eye and face protection**

- Safety glasses with side shields.
- Chemical goggles.[AS/NZS 1337.1, EN166 or national equivalent]
- Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59].

**Skin protection**

See Hand protection below

**Hands/feet protection**

**NOTE:**
- The material may produce skin sensitisation in predisposed individuals. Care must be taken, when removing gloves and other protective equipment, to avoid all possible skin contact.
- Contaminated leather items, such as shoes, belts and watch-bands should be removed and destroyed.

The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.
The exact break through time for substances has to be obtained from the manufacturer of the protective gloves and has to be observed when making a final choice.
Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended.
Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include:
· frequency and duration of contact,
· chemical resistance of glove material,
· glove thickness and
· dexterity
Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739, AS/NZS 2161.1 or national equivalent).
· When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended.
· When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended.
· Some glove polymer types are less affected by movement and this should be taken into account when considering gloves for long-term use.
· Contaminated gloves should be replaced.
As defined in ASTM F-739-96 in any application, gloves are rated as:
· Excellent when breakthrough time > 480 min
· Good when breakthrough time > 20 min
· Fair when breakthrough time < 20 min
· Poor when glove material degrades
For general applications, gloves with a thickness typically greater than 0.35 mm, are recommended.
It should be emphasised that glove thickness is not necessarily a good predictor of glove resistance to a specific chemical, as the permeation efficiency of the glove will be dependent on the exact composition of the glove material. Therefore, glove selection should also be based on consideration of the task requirements and knowledge of breakthrough times.
Glove thickness may also vary depending on the glove manufacturer, the glove type and the glove model. Therefore, the manufacturers technical data should always be taken into account to ensure selection of the most appropriate glove for the task.
Note: Depending on the activity being conducted, gloves of varying thickness may be required for specific tasks. For example:
· Thinner gloves (down to 0.1 mm or less) may be required where a high degree of manual dexterity is needed. However, these gloves are only likely to give short duration protection and would normally be just for single use applications, then disposed of.
· Thicker gloves (up to 3 mm or more) may be required where there is a mechanical (as well as a chemical) risk i.e. where there is abrasion or puncture potential
Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended.


**Continued...**

| | |
|---|---|
| | When handling liquid-grade epoxy resins wear chemically protective gloves , boots and aprons.<br>The performance, based on breakthrough times ,of:<br>· Ethyl Vinyl Alcohol (EVAL laminate) is generally excellent<br>· Butyl Rubber ranges from excellent to good<br>· Nitrile Butyl Rubber (NBR) from excellent to fair.<br>· Neoprene from excellent to fair<br>· Polyvinyl (PVC) from excellent to poor<br>As defined in ASTM F-739-96<br>· Excellent breakthrough time > 480 min<br>· Good breakthrough time > 20 min<br>· Fair breakthrough time < 20 min<br>· Poor glove material degradation<br>Gloves should be tested against each resin system prior to making a selection of the most suitable type. Systems include both the resin and any hardener, individually and collectively)<br>· **DO NOT** use cotton or leather (which absorb and concentrate the resin), natural rubber (latex), medical or polyethylene gloves (which absorb the resin).<br>· **DO NOT** use barrier creams containing emulsified fats and oils as these may absorb the resin; silicone-based barrier creams should be reviewed prior to use.<br>Replacement time should be considered when selecting the most appropriate glove. It may be more effective to select a glove with lower chemical resistance but which is replaced frequently than to select a more resistant glove which is reused many times |
| **Body protection** | See Other protection below |
| **Other protection** | ‣ Overalls.<br>‣ PVC Apron.<br>‣ PVC protective suit may be required if exposure severe.<br>‣ Eyewash unit.<br>‣ Ensure there is ready access to a safety shower.<br>‣ Some plastic personal protective equipment (PPE) (e.g. gloves, aprons, overshoes) are not recommended as they may produce static electricity.<br>‣ For large scale or continuous use wear tight-weave non-static clothing (no metallic fasteners, cuffs or pockets).<br>‣ Non sparking safety or conductive footwear should be considered. Conductive footwear describes a boot or shoe with a sole made from a conductive compound chemically bound to the bottom components, for permanent control to electrically ground the foot an shall dissipate static electricity from the body to reduce the possibility of ignition of volatile compounds. Electrical resistance must range between 0 to 500,000 ohms. Conductive shoes should be stored in lockers close to the room in which they are worn. Personnel who have been issued conductive footwear should not wear them from their place of work to their homes and return. |

**Recommended material(s)**

**GLOVE SELECTION INDEX**

Glove selection is based on a modified presentation of the:
**"Forsberg Clothing Performance Index".**
The effect(s) of the following substance(s) are taken into account in the **computer-generated** selection:
M-Bond 43 B

| Material | CPI |
|---|---|
| PVA | B |
| BUTYL | C |
| BUTYL/NEOPRENE | C |
| HYPALON | C |
| NAT+NEOPR+NITRILE | C |
| NATURAL RUBBER | C |
| NATURAL+NEOPRENE | C |
| NEOPRENE | C |
| NEOPRENE/NATURAL | C |
| NITRILE | C |
| NITRILE+PVC | C |
| PE/EVAL/PE | C |
| PVC | C |
| PVDC/PE/PVDC | C |
| SARANEX-23 | C |
| TEFLON | C |
| VITON | C |
| VITON/NEOPRENE | C |

* CPI - Chemwatch Performance Index
A: Best Selection
B: Satisfactory; may degrade after 4 hours continuous immersion
C: Poor to Dangerous Choice for other than short term immersion
**NOTE**: As a series of factors will influence the actual performance of the glove, a final selection must be based on detailed observation. -
* Where the glove is to be used on a short term, casual or infrequent basis, factors such as "feel" or convenience (e.g. disposability), may dictate a choice of gloves which might otherwise be unsuitable following long-term or frequent use. A qualified practitioner should be consulted.

**Respiratory protection**

Type A-P Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

Where the concentration of gas/particulates in the breathing zone, approaches or exceeds the "Exposure Standard" (or ES), respiratory protection is required. Degree of protection varies with both face-piece and Class of filter; the nature of protection varies with Type of filter.

| Required Minimum Protection Factor | Half-Face Respirator | Full-Face Respirator | Powered Air Respirator |
|---|---|---|---|
| up to 5 x ES | A-AUS / Class 1 P2 | - | A-PAPR-AUS / Class 1 P2 |
| up to 25 x ES | Air-line* | A-2 P2 | A-PAPR-2 P2 |
| up to 50 x ES | - | A-3 P2 | - |
| 50+ x ES | - | Air-line** | - |

^ - Full-face
A(All classes) = Organic vapours, B AUS or B1 = Acid gasses, B2 = Acid gas or hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN), E = Sulfur dioxide(SO2), G = Agricultural chemicals, K = Ammonia(NH3), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds(below 65 degC)

If inhalation risk above the TLV exists, wear approved dust respirator.
Use respirators with protection factors appropriate for the exposure level.
- Up to 5 X TLV, use valveless mask type; up to 10 X TLV, use 1/2 mask dust respirator
- Up to 50 X TLV, use full face dust respirator or demand type C air supplied respirator
- Up to 500 X TLV, use powered air-purifying dust respirator or a Type C pressure demand supplied-air respirator
- Over 500 X TLV wear full-face self-contained breathing apparatus with positive pressure mode or a combination respirator with a Type C positive pressure supplied-air full-face respirator and an auxiliary self-contained breathing apparatus operated in pressure demand or other positive pressure mode
- Cartridge respirators should never be used for emergency ingress or in areas of unknown vapour concentrations or oxygen content.
- The wearer must be warned to leave the contaminated area immediately on detecting any odours through the respirator. The odour may indicate that the mask is not functioning properly, that the vapour concentration is too high, or that the mask is not properly fitted. Because of these limitations, only restricted use of cartridge respirators is considered appropriate.
- Cartridge performance is affected by humidity. Cartridges should be changed after 2 hr of continuous use unless it is determined that the humidity is less than 75%, in which case, cartridges can be used for 4 hr. Used cartridges should be discarded daily, regardless of the length of time used

**8.2.3. Environmental exposure controls**

See section 12


Continued...

## SECTION 9 Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

| | |
|---|---|
| **Appearance** | Amber Colored Liquid |

| | | | |
|---|---|---|---|
| **Physical state** | Liquid | **Relative density (Water = 1)** | 0.92 |
| **Odour** | Characteristic | **Partition coefficient n-octanol / water** | Not Available |
| **Odour threshold** | Acetone-like | **Auto-ignition temperature (℃)** | Not Available |
| **pH (as supplied)** | Not Available | **Decomposition temperature (℃)** | Not Available |
| **Melting point / freezing point (℃)** | -86 | **Viscosity (cSt)** | Not Available |
| **Initial boiling point and boiling range (℃)** | 80 | **Molecular weight (g/mol)** | Not Available |
| **Flash point (℃)** | -9 | **Taste** | Not Available |
| **Evaporation rate** | 2.7 BuAC = 1 | **Explosive properties** | Not Available |
| **Flammability** | HIGHLY FLAMMABLE. | **Oxidising properties** | Not Available |
| **Upper Explosive Limit (%)** | 11.4 | **Surface Tension (dyn/cm or mN/m)** | Not Available |
| **Lower Explosive Limit (%)** | 1 | **Volatile Component (%vol)** | Not Available |
| **Vapour pressure (kPa)** | 10.40 | **Gas group** | Not Available |
| **Solubility in water** | Partly miscible | **pH as a solution (1%)** | Not Available |
| **Vapour density (Air = 1)** | 3.5 | **VOC g/L** | Not Available |
| **Heat of Combustion (kJ/g)** | Not Applicable | **Ignition Distance (cm)** | Not Applicable |
| **Flame Height (cm)** | Not Applicable | **Flame Duration (s)** | Not Applicable |
| **Enclosed Space Ignition Time Equivalent (s/m3)** | Not Available | **Enclosed Space Ignition Deflagration Density (g/m3)** | Not Available |
| **Nanoform Solubility** | Not Available | **Nanoform Particle Characteristics** | Not Available |
| **Particle Size** | Not Available | | |

### 9.2. Other information

Not Available

## SECTION 10 Stability and reactivity

| | |
|---|---|
| **10.1.Reactivity** | See section 7.2 |
| **10.2. Chemical stability** | ‣ Unstable in the presence of incompatible materials.<br>‣ Product is considered stable.<br>‣ Hazardous polymerisation will not occur. |
| **10.3. Possibility of hazardous reactions** | See section 7.2 |
| **10.4. Conditions to avoid** | See section 7.2 |
| **10.5. Incompatible materials** | See section 7.2 |
| **10.6. Hazardous decomposition products** | See section 5.3 |

## SECTION 11 Toxicological information

### 11.1. Information on toxicological effects

| | |
|---|---|
| **a) Acute Toxicity** | Based on available data, the classification criteria are not met. |
| **b) Skin Irritation/Corrosion** | There is sufficient evidence to classify this material as skin corrosive or irritating. |
| **c) Serious Eye Damage/Irritation** | There is sufficient evidence to classify this material as eye damaging or irritating |
| **d) Respiratory or Skin sensitisation** | There is sufficient evidence to classify this material as sensitising to skin or the respiratory system |
| **e) Mutagenicity** | Based on available data, the classification criteria are not met. |
| **f) Carcinogenicity** | Based on available data, the classification criteria are not met. |
| **g) Reproductivity** | Based on available data, the classification criteria are not met. |
| **h) STOT - Single Exposure** | There is sufficient evidence to classify this material as toxic to specific organs through single exposure |
| **i) STOT - Repeated Exposure** | Based on available data, the classification criteria are not met. |
| **j) Aspiration Hazard** | There is sufficient evidence to classify this material as an aspiration hazard |

| | |
|---|---|
| **Inhaled** | Inhalation of vapours or aerosols (mists, fumes), generated by the material during the course of normal handling, may be harmful.<br>The material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage.<br>Inhalation of vapours may cause drowsiness and dizziness. This may be accompanied by sleepiness, reduced alertness, loss of reflexes, lack of co-ordination, and vertigo.<br>Diacetone alcohol is primarily a sedative, used to stop convulsions. When inhaled, it may cause sleep after a period of restlessness, excitability, and irritation. Symptoms of intoxication are rapidly decreasing breathing, marked fall in blood pressure, muscle relaxation and |


**Continued...**

| | |
|---|---|
| | absence of conjunctival reflexes.<br>Inhalation hazard is increased at higher temperatures.<br>Inhalation of high concentrations of gas/vapour causes lung irritation with coughing and nausea, central nervous depression with headache and dizziness, slowing of reflexes, fatigue and inco-ordination.<br>Acute exposure of humans to high concentrations of methyl ethyl ketone produces irritation to the eyes, nose and throat. Acute exposure by inhalation also causes nervous system depression, headache, and nausea. High vapour levels are easily detected due to odour, however odour fatigue may occur, with loss of warning of exposure.<br>Headache, fatigue, tiredness, irritability and digestive disturbances (nausea, loss of appetite and bloating) are the most common symptoms of xylene overexposure. Injury to the heart, liver, kidneys and nervous system has also been noted amongst workers.<br>Xylene is a central nervous system depressant<br>Ketone vapours irritate the nose, throat and mucous membrane. High concentrations depress the central nervous system, causing headache, vertigo, poor concentration, sleep and failure of the heart and breathing. |
| **Ingestion** | Swallowing of the liquid may cause aspiration into the lungs with the risk of chemical pneumonitis; serious consequences may result. (ICSC13733)<br>The material is not thought to produce adverse health effects following ingestion (as classified by EC Directives using animal models). Nevertheless, adverse systemic effects have been produced following exposure of animals by at least one other route and good hygiene practice requires that exposure be kept to a minimum.<br>Reactive diluents exhibit a range of ingestion hazards. Small amounts swallowed incidental to normal handling operations are not likely to cause injury. However, swallowing larger amounts may cause injury.<br>Animal testing showed that a single dose of bisphenol A diglycidyl ether (BADGE) given by mouth, caused an increase in immature sperm. At sufficiently high doses the material may be hepatotoxic (i.e. poisonous to the liver). At sufficiently high doses the material may be nephrotoxic (i.e. poisonous to the kidney).<br>The substance and/or its metabolites may bind to haemoglobin inhibiting normal uptake of oxygen. This condition, known as "methaemoglobinemia", is a form of oxygen starvation (anoxia).<br>Symptoms include cyanosis (a bluish discolouration skin and mucous membranes) and breathing difficulties. Symptoms may not be evident until several hours after exposure.<br>At about 15% concentration of blood methaemoglobin there is observable cyanosis of the lips, nose and earlobes. Symptoms may be absent although euphoria, flushed face and headache are commonly experienced. At 25-40%, cyanosis is marked but little disability occurs other than that produced on physical exertion. At 40-60%, symptoms include weakness, dizziness, lightheadedness, increasingly severe headache, ataxia, rapid shallow respiration, drowsiness, nausea, vomiting, confusion, lethargy and stupor. Above 60% symptoms include dyspnea, respiratory depression, tachycardia or bradycardia, and convulsions. Levels exceeding 70% may be fatal.<br>Diacetone alcohol produces marked respiratory depression and unconsciousness. It may cause destruction of the red cells, liver and kidney damage and anaemia. |
| **Skin Contact** | The material may accentuate any pre-existing dermatitis condition<br>Skin contact with the material may damage the health of the individual; systemic effects may result following absorption.<br>Bisphenol A diglycidyl ether (BADGE) may produce contact dermatitis characterized by redness and swelling, with weeping followed by crusting and scaling. A liquid resin with a molecular weight of 350 produced severe skin irritation when applied daily for 4 hours over 20 days.<br>In humans exposed to methyl ethyl ketone, skin inflammation has been reported. Animal testing has shown methyl ethyl ketone to have high acute toxicity from skin exposure.<br>Open cuts, abraded or irritated skin should not be exposed to this material<br>Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.<br>The material may cause moderate inflammation of the skin either following direct contact or after a delay of some time. Repeated exposure can cause contact dermatitis which is characterised by redness, swelling and blistering. |
| **Eye** | The vapour when concentrated has pronounced eye irritation effects and this gives some warning of high vapour concentrations. If eye irritation occurs seek to reduce exposure with available control measures, or evacuate area.<br>The liquid produces a high level of eye discomfort and is capable of causing pain and severe conjunctivitis. Corneal injury may develop, with possible permanent impairment of vision, if not promptly and adequately treated.<br>There is evidence that material may produce eye irritation in some persons and produce eye damage 24 hours or more after instillation. Severe inflammation may be expected with pain. |
| **Chronic** | Long-term exposure to respiratory irritants may result in airways disease, involving difficulty breathing and related whole-body problems.<br>Skin contact with the material is more likely to cause a sensitisation reaction in some persons compared to the general population.<br>Toxic: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed.<br>This material can cause serious damage if one is exposed to it for long periods. It can be assumed that it contains a substance which can produce severe defects.<br>Ample evidence exists from experimentation that reduced human fertility is directly caused by exposure to the material.<br>Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure.<br>Glycidyl ethers can cause genetic damage and cancer.<br>Bisphenol A diglycidyl ethers (BADGEs) produce a sensitization dermatitis (skin inflammation) characterized by eczema with blisters and papules, with considerable itching of the back of the hand. This may persist for 10-14 days after withdrawal from exposure and recur immediately on re-exposure. The dermatitis may last longer following each exposure, but is unlikely to become more intense. Lower molecular weight species produce sensitization more readily. Animal testing has shown an increase in the development of some tumours.<br>Repeated exposure to hydroxylamine and derivatives may result in respiratory sensitisation with asthma-like symptoms.<br>For some reactive diluents, prolonged or repeated skin contact may result in absorption of potentially harmful amounts or allergic skin reactions.<br>Exposure to some reactive diluents (notably, neopentylglycol diglycidyl ether, CAS RN: 17557-23-2) has caused cancer in some animal testing.<br>Crystalline silicas activate the inflammatory response of white blood cells after they injure the lung epithelium. Chronic exposure to crystalline silicas reduces lung capacity and predisposes to chest infections.<br>Animal testing shows that methyl ethyl ketone may have slight effects on the nervous system, liver, kidney and respiratory system; there may also be developmental effects and an increase in birth defects. However, there is limited information available on the long-term effects of methyl ethyl ketone in humans, and no information is available on whether it causes developmental or reproductive toxicity or cancer. It is generally considered to have low toxicity, but it is often used in combination with other solvents, and the toxic effects of the mixture may be greater than with either solvent alone. Combinations of n-hexane or methyl n-butyl ketone with methyl ethyl ketone may increase the rate of peripheral neuropathy, a progressive disorder of the nerves of the extremities. Combinations with chloroform also show increase in toxicity.<br>There has been some concern that this material can cause cancer or mutations but there is not enough data to make an assessment.<br>Women exposed to xylene in the first 3 months of pregnancy showed a slightly increased risk of miscarriage and birth defects. Evaluation of workers chronically exposed to xylene has demonstrated lack of genetic toxicity.<br>Prolonged or repeated skin contact may cause drying with cracking, irritation and possible dermatitis following.<br>Chronic solvent inhalation exposures may result in nervous system impairment and liver and blood changes. [PATTYS] |

| | | |
|---|---|---|
| **M-Bond 43 B** | **TOXICITY** | **IRRITATION** |
| | Not Available | Not Available |


**Continued...**

| | | |
|---|---|---|
| **methyl ethyl ketone** | **TOXICITY** | **IRRITATION** |
| | Dermal (rabbit) LD50: 6480 mg/kg[2] | Eye (Human): 350ppm |
| | Inhalation (Mouse) LC50: 32 mg/L4h[2] | Eye (Rodent - rabbit): 80mg |
| | Oral (Rat) LD50: 2054 mg/kg[1] | Eye: adverse effect observed (irritating)[1] |
| | | Skin (Rodent - rabbit): 14mg/24H - Mild |
| | | Skin (Rodent - rabbit): 402mg/24H - Mild |
| | | Skin (Rodent - rabbit): 500mg/24H - Moderate |
| | | Skin: no adverse effect observed (not irritating)[1] |
| **xylene** | **TOXICITY** | **IRRITATION** |
| | Dermal (rabbit) LD50: >1700 mg/kg[2] | Eye (Human): 200ppm |
| | Inhalation (Rat) LC50: 5000 ppm4h[2] | Eye (Rodent - rabbit): 5mg/24H - Severe |
| | Oral (Mouse) LD50; 2119 mg/kg[2] | Eye (Rodent - rabbit): 87mg - Mild |
| | | Eye: adverse effect observed (irritating)[1] |
| | | Skin (Rodent - rabbit): 100% - Moderate |
| | | Skin (Rodent - rabbit): 500mg/24H - Moderate |
| | | Skin (Rodent - rat): 60uL/8H - Mild |
| | | Skin: adverse effect observed (irritating)[1] |
| **bisphenol A diglycidyl ether** | **TOXICITY** | **IRRITATION** |
| | dermal (rat) LD50: >2000 mg/kg[1] | Eye (Rodent - rabbit): 100mg - Mild |
| | Oral (Rat) LD50: >2000 mg/kg[1] | Eye (Rodent - rabbit): 100mg - Mild |
| | | Eye (Rodent - rabbit): 100mg - Mild |
| | | Eye (Rodent - rabbit): 20mg/24H - Moderate |
| | | Eye (Rodent - rabbit): 2mg/24H - Severe |
| | | Eye (Rodent - rabbit): 5mg/24H - Severe |
| | | Eye: adverse effect observed (irritating)[1] |
| | | Skin (Rodent - guinea pig): 2750mg/55D |
| | | Skin (Rodent - rabbit): 2mg/24H - Severe |
| | | Skin (Rodent - rabbit): 500mg - Mild |
| | | Skin (Rodent - rabbit): 500uL/24H - Moderate |
| | | Skin: adverse effect observed (irritating)[1] |
| **diacetone alcohol** | **TOXICITY** | **IRRITATION** |
| | Dermal (rabbit) LD50: 13500 mg/kg[2] | Eye (Human): 100ppm/15M |
| | Oral (Rat) LD50: 2520 mg/kg[2] | Eye (Rodent - rabbit): 100uL/24H - Severe |
| | | Eye (Rodent - rabbit): 20mg - Severe |
| | | Eye: adverse effect observed (irritating)[1] |
| | | Skin (Rodent - rabbit): 10mg/24H |
| | | Skin (Rodent - rabbit): 500mg - Mild |
| | | Skin: adverse effect observed (irritating)[1] |
| | | Skin: no adverse effect observed (not irritating)[1] |
| **dapsone** | **TOXICITY** | **IRRITATION** |
| | Dermal (rabbit) LD50: >2000 mg/kg[1] | Eye: no adverse effect observed (not irritating)[1] |
| | Oral (Rabbit) LD50; >250 mg/kg[1] | Skin: no adverse effect observed (not irritating)[1] |
| **tallow dimethylbenzylammonium chloride/ hectorite** | **TOXICITY** | **IRRITATION** |
| | Oral (Rat) LD50: >20000 mg/kg[2] | Not Available |

| | |
|---|---|
| **Legend:** | 1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2. Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances |

| | |
|---|---|
| **XYLENE** | Reproductive effector in rats |
| **BISPHENOL A DIGLYCIDYL ETHER** | Bisphenol A may have effects similar to female sex hormones and when administered to pregnant women, may damage the foetus. It may also damage male reproductive organs and sperm.<br>Glycidyl ethers can cause genetic damage and cancer.<br>For 1,2-butylene oxide (ethyloxirane):<br>In animal testing, ethyloxirane increased the incidence of tumours of the airways in animals exposed via inhalation. However, tumours were not observed in mice chronically exposed via skin. Two structurally related substances, oxirane (ethylene oxide) and methyloxirane (propylene oxide), which are also direct-acting alkylating agents, have been classified as causing cancer.<br>55badger |


**Continued...**

| | |
|---|---|
| **DIACETONE ALCOHOL** | Inhalation (human) TCLo: 400 ppm resp.effect<br>No significant acute toxicological data identified in literature search.<br>Diacetone alcohol (DAA) is irritating to the skin and eyes, but the oral lethal dose is more than 4000mg/kg. Animal testing showed some effects to the kidney and liver. It has not been shown to cause reproductive or developmental toxicity or genetic damage, but it may reduce fertility. |
| **TALLOW DIMETHYLBENZYLAMMONIUM CHLORIDE/ HECTORITE** | For organoclay<br>Acute toxicity: Organoclay compounds are not expected to be absorbed significantly by mouth or through the skin. They are not irritating to the skin and cause only minimal eye irritation in humans. Animal testing has suggested low toxicity via inhalation or by mouth.<br>Repeat-dose toxicity: Animal testing showed that repeated exposure to organoclay compounds may cause decreased levels of calcium and chloride in the blood, and increased weight of the adrenal gland.<br>Genetic toxicity: Available results from testing regarding genetic toxicity has been negative.<br>Carcinogenicity: There is no data available regarding the cancer-causing potential of these materials. However, bentonite, which is often present as an impurity, is considered to cause cancer in humans (Group 1 according to IARC).<br>Developmental and reproductive toxicity: The compound was not found to cause birth defects, and there was no reproductive toxicity found at any level. |
| **M-Bond 43 B & METHYL ETHYL KETONE** | Asthma-like symptoms may continue for months or even years after exposure to the material ends. This may be due to a non-allergic condition known as reactive airways dysfunction syndrome (RADS) which can occur after exposure to high levels of highly irritating compound. Main criteria for diagnosing RADS include the absence of previous airways disease in a non-atopic individual, with sudden onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. Other criteria for diagnosis of RADS include a reversible airflow pattern on lung function tests, moderate to severe bronchial hyperreactivity on methacholine challenge testing, and the lack of minimal lymphocytic inflammation, without eosinophilia. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. On the other hand, industrial bronchitis is a disorder that occurs as a result of exposure due to high concentrations of irritating substance (often particles) and is completely reversible after exposure ceases. The disorder is characterized by difficulty breathing, cough and mucus production.<br>Methyl ethyl ketone is considered to have a low order of toxicity; however, methyl ethyl ketone is often used in combination with other solvents and the mixture may have greater toxicity than either solvent alone. Combinations of n-hexane with methyl ethyl ketone, and also methyl n-butyl ketone with methyl ethyl ketone may result in an increased in peripheral neuropathy, a progressive disorder of the nerves of the extremities. Combinations with chloroform also show an increase in toxicity. |
| **M-Bond 43 B & BISPHENOL A DIGLYCIDYL ETHER & DAPSONE** | The following information refers to contact allergens as a group and may not be specific to this product.<br>Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke's oedema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type. Other allergic skin reactions, e.g. contact urticaria, involve antibody-mediated immune reactions. The significance of the contact allergen is not simply determined by its sensitisation potential: the distribution of the substance and the opportunities for contact with it are equally important. A weakly sensitising substance which is widely distributed can be a more important allergen than one with stronger sensitising potential with which few individuals come into contact. From a clinical point of view, substances are noteworthy if they produce an allergic test reaction in more than 1% of the persons tested. |
| **M-Bond 43 B & BISPHENOL A DIGLYCIDYL ETHER** | Animal testing over 13 weeks showed bisphenol A diglycidyl ether (BADGE) caused mild to moderate, chronic, inflammation of the skin.<br>Reproductive and Developmental Toxicity: Animal testing showed BADGE given over several months caused reduction in body weight but had no reproductive effects.<br>Cancer-causing potential: It has been concluded that bisphenol A diglycidyl ether cannot be classified with respect to its cancer-causing potential in humans.<br>Genetic toxicity: Laboratory tests on genetic toxicity of BADGE have so far been negative.<br>Immunotoxicity: Animal testing suggests regular injections of diluted BADGE may result in sensitization.<br>Consumer exposure: Comsumer exposure to BADGE is almost exclusively from migration of BADGE from can coatings into food. Testing has not found any evidence of hormonal disruption.<br>Oxiranes (including glycidyl ethers and alkyl oxides, and epoxides) share many common characteristics with respect to animal toxicology. One such oxirane is ethyloxirane; data presented here may be taken as representative. |
| **METHYL ETHYL KETONE & XYLENE & DIACETONE ALCOHOL** | The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin. |
| **XYLENE & DIACETONE ALCOHOL** | The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis. |
| **XYLENE & BISPHENOL A DIGLYCIDYL ETHER & DAPSONE** | The substance is classified by IARC as Group 3:<br>**NOT** classifiable as to its carcinogenicity to humans.<br>Evidence of carcinogenicity may be inadequate or limited in animal testing. |

| | | | |
|---|---|---|---|
| **Acute Toxicity** | ✗ | **Carcinogenicity** | ✗ |
| **Skin Irritation/Corrosion** | ✓ | **Reproductivity** | ✗ |
| **Serious Eye Damage/Irritation** | ✓ | **STOT - Single Exposure** | ✓ |
| **Respiratory or Skin sensitisation** | ✓ | **STOT - Repeated Exposure** | ✗ |
| **Mutagenicity** | ✗ | **Aspiration Hazard** | ✓ |

**Legend:** ✗ – Data either not available or does not fill the criteria for classification
✓ – Data available to make classification

### 11.2 Information on other hazards

#### 11.2.1. Endocrine disrupting properties

No evidence of endocrine disrupting properties were found in the current literature.

#### 11.2.2. Other information

See Section 11.1

## SECTION 12 Ecological information

### 12.1. Toxicity

**M-Bond 43 B**

| Endpoint | Test Duration (hr) | Species | Value | Source |
|---|---|---|---|---|
| Not Available | Not Available | Not Available | Not Available | Not Available |


**Continued...**

| | | | | | |
|---|---|---|---|---|---|
| **methyl ethyl ketone** | **Endpoint** | **Test Duration (hr)** | **Species** | **Value** | **Source** |
| | EC50 | 72h | Algae or other aquatic plants | 1220mg/l | 2 |
| | EC50 | 48h | Crustacea | 308mg/l | 2 |
| | EC50 | 96h | Algae or other aquatic plants | >500mg/L | 4 |
| | LC50 | 96h | Fish | >324mg/L | 4 |
| | NOEC(ECx) | 48h | Crustacea | 68mg/l | 2 |
| **xylene** | **Endpoint** | **Test Duration (hr)** | **Species** | **Value** | **Source** |
| | EC50 | 72h | Algae or other aquatic plants | 4.6mg/l | 2 |
| | EC50 | 48h | Crustacea | 1.8mg/l | 2 |
| | NOEC(ECx) | 73h | Algae or other aquatic plants | 0.44mg/l | 2 |
| | LC50 | 96h | Fish | 2.6mg/l | 2 |
| **bisphenol A diglycidyl ether** | **Endpoint** | **Test Duration (hr)** | **Species** | **Value** | **Source** |
| | EC50 | 72h | Algae or other aquatic plants | 9.4mg/l | 2 |
| | EC50 | 48h | Crustacea | 1.1mg/l | 2 |
| | NOEC(ECx) | 504h | Crustacea | 0.3mg/l | 2 |
| | LC50 | 96h | Fish | 1.2mg/l | 2 |
| **diacetone alcohol** | **Endpoint** | **Test Duration (hr)** | **Species** | **Value** | **Source** |
| | EC50 | 72h | Algae or other aquatic plants | >1000mg/l | 2 |
| | EC50 | 48h | Crustacea | >1000mg/l | 2 |
| | NOEC(ECx) | 504h | Crustacea | 100mg/l | 2 |
| | LC50 | 96h | Fish | >100mg/l | 2 |
| **dapsone** | **Endpoint** | **Test Duration (hr)** | **Species** | **Value** | **Source** |
| | EC50 | 72h | Algae or other aquatic plants | ~0.52mg/l | 2 |
| | LC50 | 96h | Fish | >100mg/l | 2 |
| | NOEC(ECx) | 504h | Crustacea | 0.22mg/l | 2 |
| **tallow dimethylbenzylammonium chloride/ hectorite** | **Endpoint** | **Test Duration (hr)** | **Species** | **Value** | **Source** |
| | Not Available | Not Available | Not Available | Not Available | Not Available |
| **Legend:** | Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. US EPA, Ecotox database - Aquatic Toxicity Data 4. ECETOC Aquatic Hazard Assessment Data 5. NITE (Japan) - Bioconcentration Data 6. METI (Japan) - Bioconcentration Data 7. Vendor Data | | | | |

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Do NOT allow product to come in contact with surface waters or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash-waters.
Wastes resulting from use of the product must be disposed of on site or at approved waste sites.
Liquid epoxy resins and some reactive diluents are not readily biodegradable, although its epoxy functional groups are hydrolysed in contact with water, they have the potential to bio-accumulate and are moderately toxic to aquatic organisms. They are generally classified as dangerous for the environment according to the European Union classification criteria.
Uncured solid resins on the other hand are not readily bio-available, not toxic to aquatic and terrestrial organisms, not readily biodegradable, but hydrolysable.They present no significant hazard for the environment.
For Aromatic Substances Series:
Environmental Fate: Large, molecularly complex polycyclic aromatic hydrocarbons, or PAHs, are persistent in the environment longer than smaller PAHs.
Atmospheric Fate: PAHs are 'semi-volatile substances" which can move between the atmosphere and the Earth's surface in repeated, temperature-driven cycles of deposition and volatilization. Terrestrial Fate: BTEX compounds have the potential to move through soil and contaminate ground water, and their vapors are highly flammable and explosive.
Ecotoxicity - Within an aromatic series, acute toxicity increases with increasing alkyl substitution on the aromatic nucleus. The order of most toxic to least in a study using grass shrimp and brown shrimp was dimethylnaphthalenes > methylnaphthalenes >naphthalenes. Anthrcene is a phototoxic PAH. UV light greatly increases the toxicity of anthracene to bluegill sunfish. Biological resources in strong sunlight are at more risk than those that are not. PAHs in general are more frequently associated with chronic risks.
For Diacetone Alcohol: log Kow: -0.14 @ 25 C; BOD 5: 0.07,3%; COD: 2.11,95%; ThOD: 2.21.
Environmental Fate: If diacetone alcohol is released into air and soil, it is unlikely to be distributed in other compartments. Diacetone alcohol is readily biodegradable.
Atmospheric Fate: Direct photodegradation is not expected.
Aquatic Fate: If diacetone alcohol is released into water, it is unlikely to be distributed into other compartments.
Ecotoxicity: Diacetone alcohol has a low bioaccumulative potential and is not acutely toxic to fish species including bluegill sunfish or Daphnia magna water fleas. Toxicity of these chemicals to aquatic organisms is low. Diacetone is used in conjunction with other substances in some insecticides.
Significant environmental findings are limited. Oxiranes (including glycidyl ethers and alkyl oxides, and epoxides) exhibit common characteristics with respect to environmental fate and ecotoxicology. One such oxirane is ethyloxirane and data presented here may be taken as representative.
For 1,2-Butylene oxide (Ethyloxirane):
log Kow values of 0.68 and 0.86. BAF and BCF : 1 to 17 L./kg.
Aquatic Fate - Ethyloxirane is highly soluble in water and has a very low soil-adsorption coefficient, which suggests that, if released to water, adsorption of ethyloxirane to sediment and suspended solids is not expected. Volatilization of ethyloxirane from water surfaces would be expected. Ethyloxirane is hydrolysable, with a half-life of 6.5 days, and biodegradable up to 100% degradation and is not expected to persist in water. Models have predicted a biodegradation half-life in water of 15 days.
Terrestrial Fate: When released to soil, ethyloxirane is expected to have low adsorption and thus very high mobility. Volatilization from moist soil and dry soil surfaces is expected. Ethyloxirane is not expected to be persistent in soil.
Atmospheric Fate: It is expected that ethyloxirane exists solely as a vapor in ambient atmosphere. Ethyloxirane may also be removed from the atmosphere by wet deposition processes. The half-life in air is about 5.6 days from the reaction of ethyloxirane with photochemically produced hydroxyl radicals which indicates that this chemical meets the persistence criterion in air (half-life of = 2 days).
Ecotoxicity - The potential for bioaccumulation of ethyloxirane in organisms is likely to be low and has low to moderate toxicity to aquatic organisms. Ethyloxirane is acutely toxic to water fleas and toxicity values for bacteria are close to 5000 mg/L. For algae, toxicity values exceed 500 mg/L.

For Methyl Ethyl Ketone:
log Kow: 0.26-0.69;
log Koc: 0.69;
Koc: 34;


**Continued...**

Half-life (hr) air: 2.3;
Half-life (hr) H2O surface water: 72-288;
Henry's atm m3 /mol: 1.05E-05;
BOD 5: 1.5-2.24, 46%;
COD: 2.2-2.31, 100%;
ThOD: 2.44;
BCF: 1.
Environmental Fate: Terrestrial Fate - Measured Koc values of 29 and 34 were obtained for methyl ethyl ketone in silt loams. Methyl ethyl ketone is expected to have very high mobility in soil. Volatilization of methyl ethyl ketone from moist and dry soil surfaces is expected. The volatilization half-life of methyl ethyl ketone from silt and sandy loams was measured as 4.9 days. Methyl ethyl ketone is expected to biodegrade under both aerobic and anaerobic conditions.
Aquatic Fate: Methyl ethyl ketone is not expected to adsorb to suspended solids and sediment in water and is expected to volatilize from water surfaces. Estimated half-lives for a model river and model lake are 19 and 197, hours respectively. Bioconcentration is expected to be low in aquatic systems.
Atmospheric Fate: Methyl ethyl ketone will exist solely as a vapour in the ambient atmosphere. Vapour-phase methyl ethyl ketone is degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals; the half-life for this reaction in air is estimated to be about 14 days. Methyl ethyl ketone is also expected to undergo photodecomposition in the atmosphere by natural sunlight.
Ecotoxicity: Methyl ethyl ketone is not acutely toxic to fish, specifically, bluegill sunfish, guppy, goldfish, fathead minnow, mosquito fish, Daphnia magna water fleas and brine shrimp.
For Xylenes:
log Koc : 2.05-3.08; Koc : 25.4-204; Half-life (hr) air : 0.24-42; Half-life (hr) H2O surface water : 24-672; Half-life (hr) H2O ground : 336-8640; Half-life (hr) soil : 52-672; Henry's Pa m3 /mol : 637-879; Henry's atm m3 /mol - 7.68E-03; BOD 5 if unstated - 1.4,1%; COD - 2.56,13% ThOD - 3.125 : BCF : 23; log BCF : 1.17-2.41.
Environmental Fate: Most xylenes released to the environment will occur in the atmosphere and volatilisation is the dominant environmental fate process. Soil - Xylenes are expected to have moderate mobility in soil evaporating rapidly from soil surfaces. The extent of the degradation is expected to depend on its concentration, residence time in the soil, the nature of the soil, and whether resident microbial populations have been acclimated. Xylene can remain below the soil surface for several days and may travel through the soil profile and enter groundwater. Soil and water microbes may transform it into other, less harmful compounds, although this happens slowly. It is not clear how long xylene remains trapped deep underground in soil or groundwater, but it may be months or years.
Atmospheric Fate: Xylene evaporates quickly into the air from surface soil and water and can remain in the air for several days until it is broken down by sunlight into other less harmful chemicals. In the ambient atmosphere, xylenes are expected to exist solely in the vapour phase. Xylenes are degraded in the atmosphere with an estimated atmospheric lifetime of about 0.5 to 2 days. Xylene may contribute to photochemical smog formation. p-Xylene has a moderately high photochemical reactivity under smog conditions, higher than the other xylene isomers. The photooxidation of p-xylene results in the production of carbon monoxide, formaldehyde, glyoxal, methylglyoxal, 3-methylbenzylnitrate, m-tolualdehyde, 4-nitro-3-xylene, 5-nitro-3-xylene, 2,6-dimethyl-p-benzoquinone, 2,4-dimethylphenol, 6-nitro-2,4-dimethylphenol, 2,6-dimethylphenol, and 4-nitro-2,6-dimethylphenol.
Aquatic Fate: p-xylene may adsorb to suspended solids and sediment in water and is expected to volatilise from water surfaces. Estimated volatilisation half-lives for a model river and model lake are 3 hours and 4 days, respectively. Measurements taken from goldfish, eels and clams indicate that bioconcentration in aquatic organisms is low. Photo-oxidation in the presence of humic acids may play an important role in the abiotic degradation of p-xylene. p-Xylene is biodegradable and has been observed to degrade in pond water however; it is unclear if it degrades in surface waters. p-Xylene has been observed to degrade in anaerobic and aerobic groundwater; however, it is known to persist for many years in groundwater, at least at sites where the concentration might have been quite high. Ecotoxicity: Xylenes are slightly toxic to fathead minnow, rainbow trout and bluegill and not acutely toxic to water fleas. For Photobacterium phosphoreum EC50 (24 h): 0.0084 mg/L. and Gammarus lacustris LC50 (48 h): 0.6 mg/L.
For Ketones: Ketones, unless they are alpha, beta--unsaturated ketones, can be considered as narcosis or baseline toxicity compounds.
Aquatic Fate: Hydrolysis of ketones in water is thermodynamically favourable only for low molecular weight ketones. Reactions with water are reversible with no permanent change in the structure of the ketone substrate. Ketones are stable to water under ambient environmental conditions. When pH levels are greater than 10, condensation reactions can occur which produce higher molecular weight products. Under ambient conditions of temperature, pH, and low concentration, these condensation reactions are unfavourable. Based on its reactions in air, it seems likely that ketones undergo photolysis in water.
Terrestrial Fate: It is probable that ketones will be biodegraded by micro-organisms in soil and water.
Ecotoxicity: Ketones are unlikely to bioconcentrate or biomagnify.
**DO NOT** discharge into sewer or waterways.

### 12.2. Persistence and degradability

| Ingredient | Persistence: Water/Soil | Persistence: Air |
|---|---|---|
| methyl ethyl ketone | LOW (Half-life = 14 days) | LOW (Half-life = 26.75 days) |
| xylene | HIGH (Half-life = 360 days) | LOW (Half-life = 1.83 days) |
| bisphenol A diglycidyl ether | HIGH | HIGH |
| diacetone alcohol | HIGH | HIGH |
| dapsone | HIGH | HIGH |

### 12.3. Bioaccumulative potential

| Ingredient | Bioaccumulation |
|---|---|
| methyl ethyl ketone | LOW (LogKOW = 0.29) |
| xylene | MEDIUM (BCF = 740) |
| bisphenol A diglycidyl ether | MEDIUM (LogKOW = 3.84) |
| diacetone alcohol | LOW (LogKOW = -0.14) |
| dapsone | LOW (LogKOW = 0.97) |

### 12.4. Mobility in soil

| Ingredient | Mobility |
|---|---|
| methyl ethyl ketone | MEDIUM (Log KOC = 3.827) |
| bisphenol A diglycidyl ether | LOW (Log KOC = 1767) |
| diacetone alcohol | HIGH (Log KOC = 1) |
| dapsone | LOW (Log KOC = 1272) |

### 12.5. Results of PBT and vPvB assessment

| | P | B | T | PBT criteria fulfilled? | vP | vB | vPvB criteria fulfilled? |
|---|---|---|---|---|---|---|---|
| M-Bond 43 B | | | | No | | | No |
| methyl ethyl ketone | No data available | No data available | No data available | No | No data available | No data available | No |
| xylene | ✗ | ✗ | ✓ | No | ✗ | ✗ | No |
| bisphenol A diglycidyl ether | ✓ | ✗ | ✗ | No | ✗ | ✗ | No |
| diacetone alcohol | No data available | No data available | No data available | No | No data available | No data available | No |


Continued...

| | P | B | T | PBT criteria fulfilled? | vP | vB | vPvB criteria fulfilled? |
|---|---|---|---|---|---|---|---|
| dapsone | ✔ | ✘ | ✔ | No | ✔ | ✘ | No |
| tallow dimethylbenzylammonium chloride/ hectorite | No data available | No data available | No data available | No | No data available | No data available | No |

### 12.6. Endocrine disrupting properties

No evidence of endocrine disrupting properties were found in the current literature.

### 12.7. Other adverse effects

No evidence of ozone depleting properties were found in the current literature.

## SECTION 13 Disposal considerations

### 13.1. Waste treatment methods

| | |
|---|---|
| **Product / Packaging disposal** | ‣ Containers may still present a chemical hazard/ danger when empty.<br>‣ Return to supplier for reuse/ recycling if possible.<br>Otherwise:<br>‣ If container can not be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then puncture containers, to prevent re-use, and bury at an authorised landfill.<br>‣ Where possible retain label warnings and SDS and observe all notices pertaining to the product.<br>Waste Management<br>Production waste from epoxy resins and resin systems should be treated as hazardous waste in accordance with National regulations. Fire retarded resins containing halogenated compounds should also be treated as special waste. Accidental spillage of resins, curing agents and their formulations should be contained and absorbed by special mineral absorbents to prevent them from entering the environment.<br>Contaminated or surplus product should not be washed down the sink, but preferably be fully reacted to form cross-linked solids which is non-hazardous and can be more easily disposed.<br>Finished articles made from fully cured epoxy resins are hard, infusible solids presenting no hazard to the environment. However, finished articles from flame-retarded material containing halogenated resins should be considered hazardous waste, and disposed as required by National laws. Articles made from epoxy resins, like other thermosets, can be recycled by grinding and used as fillers in other products.<br>Another way of disposal and recovery is combustion with energy recovery.<br>Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.<br>A Hierarchy of Controls seems to be common - the user should investigate:<br>‣ Reduction<br>‣ Reuse<br>‣ Recycling<br>‣ Disposal (if all else fails)<br>This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. If it has been contaminated, it may be possible to reclaim the product by filtration, distillation or some other means. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate.<br>‣ **DO NOT** allow wash water from cleaning or process equipment to enter drains.<br>‣ It may be necessary to collect all wash water for treatment before disposal.<br>‣ In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first.<br>‣ Where in doubt contact the responsible authority.<br>‣ Recycle wherever possible.<br>‣ Consult manufacturer for recycling options or consult local or regional waste management authority for disposal if no suitable treatment or disposal facility can be identified.<br>‣ Dispose of by: burial in a land-fill specifically licensed to accept chemical and / or pharmaceutical wastes or Incineration in a licensed apparatus (after admixture with suitable combustible material).<br>‣ Decontaminate empty containers. Observe all label safeguards until containers are cleaned and destroyed. |
| **Waste treatment options** | Not Available |
| **Sewage disposal options** | Not Available |

## SECTION 14 Transport information

### Labels Required

| | |
|---|---|
| |  |
| **Marine Pollutant** | NO |
| **HAZCHEM** | •3YE |

### Land transport (ADR-RID)

| | |
|---|---|
| 14.1. **UN number or ID number** | 1133 |
| 14.2. **UN proper shipping name** | ADHESIVES containing flammable liquid (vapour pressure at 50 °C more than 110 kPa) |
| 14.3. **Transport hazard class(es)** | Class: 3<br>Subsidiary Hazard: Not Applicable |
| 14.4. **Packing group** | II |
| 14.5. **Environmental hazard** | Not Applicable |
| | Hazard identification (Kemler): 33 |


Continued...

| | | |
|---|---|---|
| 14.6. **Special precautions for user** | Classification code | F1 |
| | Hazard Label | 3 |
| | Special provisions | 640C |
| | Limited quantity | 5 L |
| | Transport Category | 2 |
| | Tunnel Restriction Code | D/E |

**Air transport (ICAO-IATA / DGR)**

| | | |
|---|---|---|
| 14.1. **UN number** | 1133 | |
| 14.2. **UN proper shipping name** | Adhesives containing flammable liquid | |
| 14.3. **Transport hazard class(es)** | ICAO/IATA Class | 3 |
| | ICAO / IATA Subsidiary Hazard | Not Applicable |
| | ERG Code | 3L |
| 14.4. **Packing group** | II | |
| 14.5. **Environmental hazard** | Not Applicable | |
| 14.6. **Special precautions for user** | Special provisions | A3 |
| | Cargo Only Packing Instructions | 364 |
| | Cargo Only Maximum Qty / Pack | 60 L |
| | Passenger and Cargo Packing Instructions | 353 |
| | Passenger and Cargo Maximum Qty / Pack | 5 L |
| | Passenger and Cargo Limited Quantity Packing Instructions | Y341 |
| | Passenger and Cargo Limited Maximum Qty / Pack | 1 L |

**Sea transport (IMDG-Code / GGVSee)**

| | | |
|---|---|---|
| 14.1. **UN number** | 1133 | |
| 14.2. **UN proper shipping name** | ADHESIVES containing flammable liquid | |
| 14.3. **Transport hazard class(es)** | IMDG Class | 3 |
| | IMDG Subsidiary Hazard | Not Applicable |
| 14.4. **Packing group** | II | |
| 14.5 **Environmental hazard** | Not Applicable | |
| 14.6. **Special precautions for user** | EMS Number | F-E, S-D |
| | Special provisions | Not Applicable |
| | Limited Quantities | 5 L |

**Inland waterways transport (ADN)**

| | | |
|---|---|---|
| 14.1. **UN number** | 1133 | |
| 14.2. **UN proper shipping name** | ADHESIVES containing flammable liquid (vapour pressure at 50 °C more than 110 kPa) | |
| 14.3. **Transport hazard class(es)** | 3 | Not Applicable |
| 14.4. **Packing group** | II | |
| 14.5. **Environmental hazard** | Not Applicable | |
| 14.6. **Special precautions for user** | Classification code | F1 |
| | Special provisions | 640C |
| | Limited quantity | 5 L |
| | Equipment required | PP, EX, A |
| | Fire cones number | 1 |

**14.7. Maritime transport in bulk according to IMO instruments**

**14.7.1. Transport in bulk according to Annex II of MARPOL and the IBC code**

Not Applicable

**14.7.2. Transport in bulk in accordance with MARPOL Annex V and the IMSBC Code**

| Product name | Group |
|---|---|
| methyl ethyl ketone | Not Applicable |
| xylene | Not Applicable |
| bisphenol A diglycidyl ether | Not Applicable |
| diacetone alcohol | Not Applicable |


**Continued...**

| Product name | Group |
|---|---|
| dapsone | Not Applicable |
| tallow dimethylbenzylammonium chloride/ hectorite | Not Applicable |

**14.7.3. Transport in bulk in accordance with the IGC Code**

| Product name | Ship Type |
|---|---|
| methyl ethyl ketone | Not Applicable |
| xylene | Not Applicable |
| bisphenol A diglycidyl ether | Not Applicable |
| diacetone alcohol | Not Applicable |
| dapsone | Not Applicable |
| tallow dimethylbenzylammonium chloride/ hectorite | Not Applicable |

## SECTION 15 Regulatory information

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

**methyl ethyl ketone is found on the following regulatory lists**

Great Britain GB mandatory classification and labelling list (GB MCL List)
UK Workplace Exposure Limits (WELs).

**xylene is found on the following regulatory lists**

Great Britain GB mandatory classification and labelling list (GB MCL List)
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Not Classified as Carcinogenic
UK Workplace Exposure Limits (WELs).

**bisphenol A diglycidyl ether is found on the following regulatory lists**

Chemical Footprint Project - Chemicals of High Concern List
Great Britain GB mandatory classification and labelling list (GB MCL List)
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Not Classified as Carcinogenic
International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

**diacetone alcohol is found on the following regulatory lists**

Great Britain GB mandatory classification and labelling list (GB MCL List)
UK Workplace Exposure Limits (WELs).

**dapsone is found on the following regulatory lists**

FEI Equine Prohibited Substances List - Banned Substances
FEI Equine Prohibited Substances List (EPSL)
Great Britain GB mandatory classification and labelling list (GB MCL List)
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Not Classified as Carcinogenic
International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

**tallow dimethylbenzylammonium chloride/ hectorite is found on the following regulatory lists**

Not Applicable

**Additional Regulatory Information**

Not Applicable

This safety data sheet is in compliance with the following EU legislation and its adaptations - as far as applicable - : Directives 98/24/EC, - 92/85/EEC, - 94/33/EC, - 2008/98/EC, - 2010/75/EU; Commission Regulation (EU) 2020/878; Regulation (EC) No 1272/2008 as updated through ATPs.

**Information according to 2012/18/EU (Seveso III):**

| | |
|---|---|
| **Seveso Category** | P5a, P5b, P5c |

**15.2. Chemical safety assessment**

No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.

**National Inventory Status**

| National Inventory | Status |
|---|---|
| Australia - AIIC / Australia Non-Industrial Use | Yes |
| Canada - DSL | Yes |
| Canada - NDSL | No (methyl ethyl ketone; xylene; bisphenol A diglycidyl ether; diacetone alcohol; dapsone; tallow dimethylbenzylammonium chloride/ hectorite) |
| China - IECSC | Yes |
| Europe - EINEC / ELINCS / NLP | Yes |
| Japan - ENCS | No (tallow dimethylbenzylammonium chloride/ hectorite) |
| Korea - KECI | Yes |
| New Zealand - NZIoC | Yes |


Continued...

| National Inventory | Status |
|---|---|
| Philippines - PICCS | Yes |
| USA - TSCA | All chemical substances in this product have been designated as TSCA Inventory 'Active' |
| Taiwan - TCSI | Yes |
| Mexico - INSQ | No (bisphenol A diglycidyl ether) |
| Vietnam - NCI | Yes |
| Russia - FBEPH | No (tallow dimethylbenzylammonium chloride/ hectorite) |
| UAE - Control List (Banned/Restricted Substances) | No (methyl ethyl ketone; xylene; bisphenol A diglycidyl ether; diacetone alcohol; dapsone; tallow dimethylbenzylammonium chloride/ hectorite) |
| **Legend:** | Yes = All CAS declared ingredients are on the inventory<br>No = One or more of the CAS listed ingredients are not on the inventory. These ingredients may be exempt or will require registration. |

## SECTION 16 Other information

| | |
|---|---|
| **Revision Date** | 07/08/2026 |
| **Initial Date** | 11/27/2025 |

### Full text Risk and Hazard codes

| | |
|---|---|
| **EUH381** | Suspected of causing endocrine disruption in humans |
| **H226** | Flammable liquid and vapour. |
| **H302** | Harmful if swallowed. |
| **H312** | Harmful in contact with skin. |
| **H332** | Harmful if inhaled. |
| **H373** | May cause damage to organs through prolonged or repeated exposure. |

### Other information

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

For detailed advice on Personal Protective Equipment, refer to the following EU CEN Standards:
EN 166 Personal eye-protection
EN 340 Protective clothing
EN 374 Protective gloves against chemicals and micro-organisms
EN 13832 Footwear protecting against chemicals
EN 133 Respiratory protective devices

### Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]

| Classification according to regulation (EC) No 1272/2008 [CLP] and amendments | Classification Procedure |
|---|---|
| Flammable Liquids Category 2, H225 | Expert judgement |
| Aspiration Hazard Category 1, H304 | Expert judgement |
| Skin Corrosion/Irritation Category 2, H315 | Minimum classification |
| Sensitisation (Skin) Category 1, H317 | Calculation method |
| Serious Eye Damage/Eye Irritation Category 2, H319 | Minimum classification |
| Specific Target Organ Toxicity - Single Exposure (Narcotic Effects) Category 3, H336 | Calculation method |
| , EUH205 | Calculation method |

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**end of SDS**

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