2P Express Hardener Spot

HiChem Paint Technologies Pty Ltd

Chemwatch: 5205-22
Version No: 2.1.1.1

SECTION 1 IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING

Product Identifier

<table>
<thead>
<tr>
<th>Product name</th>
<th>2P Express Hardener Spot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synonyms</td>
<td>2PEXHS</td>
</tr>
<tr>
<td>Proper shipping name</td>
<td>PAINT (including paint, lacquer, enamel, shellac, varnish, polish, liquid filler and liquid lacquer base) or PAINT RELATED MATERIAL (including paint thinning or reducing compound)</td>
</tr>
<tr>
<td>Other means of identification</td>
<td>Not Available</td>
</tr>
</tbody>
</table>

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

Relevant identified uses

Use according to manufacturer’s directions. The use of a quantity of material in an unventilated or confined space may result in increased exposure and an irritating atmosphere developing. Before starting consider control of exposure by mechanical ventilation. Hardener.

Details of the supplier of the safety data sheet

<table>
<thead>
<tr>
<th>Registered company name</th>
<th>HiChem Paint Technologies Pty Ltd</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address</td>
<td>73 Hallam South Road Hallam VIC 3803 Australia</td>
</tr>
<tr>
<td>Telephone</td>
<td>+61 3 9796 3400</td>
</tr>
<tr>
<td>Fax</td>
<td>+61 3 9796 4500</td>
</tr>
<tr>
<td>Website</td>
<td><a href="http://www.hichem.com.au">www.hichem.com.au</a></td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:info@hichem.com.au">info@hichem.com.au</a></td>
</tr>
</tbody>
</table>

Emergency telephone number

<table>
<thead>
<tr>
<th>Association / Organisation</th>
<th>HiChem Paint Technologies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency telephone numbers</td>
<td>In Australia: HiChem: +61 3 9796 3400</td>
</tr>
<tr>
<td>Other emergency telephone numbers</td>
<td>+800 2436 225</td>
</tr>
</tbody>
</table>

CHEMWATCH EMERGENCY RESPONSE

<table>
<thead>
<tr>
<th>Primary Number</th>
<th>Alternative Number 1</th>
<th>Alternative Number 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1800 039 008</td>
<td>1800 039 008</td>
<td>+612 9186 1132</td>
</tr>
</tbody>
</table>

Once connected and if the message is not in your preferred language then please dial 01

SECTION 2 HAZARDS IDENTIFICATION

Classification of the substance or mixture

HAZARDOUS CHEMICAL. DANGEROUS GOODS. According to the WHS Regulations and the ADG Code.

<table>
<thead>
<tr>
<th>CHEMWATCH HAZARD RATINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flammability</td>
</tr>
<tr>
<td>Toxicity</td>
</tr>
<tr>
<td>Body Contact</td>
</tr>
<tr>
<td>Reactivity</td>
</tr>
<tr>
<td>Chronic</td>
</tr>
<tr>
<td>Poisons Schedule</td>
</tr>
</tbody>
</table>

Continued...
Flammable Liquid Category 2, Acute Toxicity (Oral) Category 4, Acute Toxicity (Inhalation) Category 4, Skin Corrosion/Irritation Category 2, Eye Irritation Category 2A, Respiratory Sensitizer Category 1, Skin Sensitizer Category 1, Reproductive Toxicity Category 2, Specific target organ toxicity - single exposure Category 3 (narcotic effects), Specific target organ toxicity - repeated exposure Category 2, Aspiration Hazard Category 1

Legend:

Label elements

GHS label elements

SIGNAL WORD | DANGER

Hazard statement(s)

H225 | Highly flammable liquid and vapour.
H302 | Harmful if swallowed.
H332 | Harmful if inhaled.
H315 | Causes skin irritation.
H319 | Causes serious eye irritation.
H344 | May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H317 | May cause an allergic skin reaction.
H361 | Suspected of damaging fertility or the unborn child.
H366 | May cause drowsiness or dizziness.
H373 | May cause damage to organs through prolonged or repeated exposure.
H304 | May be fatal if swallowed and enters airways.
AUH066 | Repeated exposure may cause skin dryness and cracking

Precautionary statement(s) Prevention

P201 | Obtain special instructions before use.
P210 | Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P260 | Do not breathe dust/fume/gas/mist/vapours/spray.
P271 | Use only outdoors or in a well-ventilated area.
P280 | Wear protective gloves/protective clothing/eye protection/face protection.
P281 | Use personal protective equipment as required.
P285 | In case of inadequate ventilation wear respiratory protection.
P301 | Ground/bond container and receiving equipment.
P303 | Use explosion-proof electrical/ventilating/lighting/intrinsically safe equipment.
P304 | Use only non-sparking tools.
P307 | Take precautionary measures against static discharge.
P270 | Do not eat, drink or smoke when using this product.
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 or doctor/physician.
P304+P340 | IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P306+P313 | IF exposed or concerned: Get medical advice/attention.
P310 | DO NOT Induce vomiting.
P342+P311 | IF experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.
P362 | Take off contaminated clothing and wash before reuse.
P370+P378 | In case of fire: Use alcohol resistant foam or normal protein foam for extinction.
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.
P333+P313 | If skin irritation or rash occurs: Get medical advice/attention.
P337+P313 | If eye irritation persists: Get medical advice/attention.
P301+P312 | IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P303+P361+P353 | IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P330 | Rinse mouth.

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 in accordance with local regulations.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

Substances
See section below for composition of Mixtures

Mixtures

<table>
<thead>
<tr>
<th>CAS No</th>
<th>[% (weight)]</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>108-68-3</td>
<td>10-30</td>
<td>toluene</td>
</tr>
<tr>
<td>28182-81-2</td>
<td>10-30</td>
<td>hexamethylene diisocyanate polymer</td>
</tr>
<tr>
<td>141-78-6</td>
<td>10-30</td>
<td>ethyl acetate</td>
</tr>
<tr>
<td>123-86-4</td>
<td>10-30</td>
<td>n-butyl acetate</td>
</tr>
<tr>
<td>64742-95-6</td>
<td>&lt;10</td>
<td>naphtha petroleum, light aromatic solvent</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ingredients determined not to be hazardous</td>
</tr>
</tbody>
</table>

SECTION 4 FIRST AID MEASURES

Description of first aid measures

Eye Contact
- If this product comes in contact with the eyes:
  > Wash out immediately with fresh running water.
  > 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.
  > Seek medical attention without delay; if pain persists or recurs seek medical attention.
  > Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

Skin Contact
- If skin contact occurs:
  > Immediately remove all contaminated clothing, including footwear.
  > Flush skin and hair with running water (and soap if available).
  > Seek medical attention in event of irritation.

Inhalation
- If fumes or combustion products are inhaled remove from contaminated area.
  > Lay patient down. Keep warm and rested.
  > Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
  > 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.
  > Transport to hospital, or doctor.

If aspiration of chemical or fire products is suspected, move person to an area free from risk of further exposure. Oxygen or artificial respiration should be administered as needed. Asthmatic-type symptoms may develop and may be immediate or delayed up to several hours. Treatment is essentially symptomatic. A physician should be consulted.

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.

For simple esters:

BASIC TREATMENT

- 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 (5 ml/kg recommended) for dilution where patient is able to swallow, has a strong gag reflex and does not drool.
- Give activated charcoal.

ADVANCED TREATMENT

- Consider endotracheal or nasotracheal intubation for airway control in unconscious patient or where respiratory arrest has occurred.
- 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.
- Propranolol hydrochloride should be used to assist eye irrigation.
**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 arion and urinimal 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**

For sub-chronic and chronic exposures to isocyanates:

- This material may be a potent pulmonary sensitizer which causes bronchospasm even in patients without prior airway hyperreactivity.
- Clinical symptoms of exposure involve mucosal irritation of respiratory and gastrointestinal tracts.
- Conjunctival irritation, skin inflammation (erythema, pain, vesiculation) and gastrointestinal disturbances occur soon after exposure.
- Pulmonary symptoms include cough, burning, substernal pain and dyspnoea.
- Some cross-sensitivity occurs between different isocyanates.
- Noncardiogenic pulmonary oedema and bronchospasm are the most serious consequences of exposure. Markedly symptomatic patients should receive oxygen support and an intravenous line.
- Treatment for asthma includes inhaled sympathomimetics (epinephrine [adrenaline], terbutaline) and steroids.
- Activated charcoal (1 g/kg) and a cathartic (sorbitol, magnesium citrate) may be useful for ingestion.
- Mydriatics, systemic analgesics and topical antibiotics (Sulamyd) may be used for corneal abrasions.
- There is no effective therapy for sensitised workers.

**NOTE:** Isocyanates cause airway restriction in naive individuals with the degree of response dependant on the concentration and duration of exposure. They induce smooth muscle contraction which leads to bronchoconstrictive episodes. Acute changes in lung function, such as decreased FEV1, may not represent sensitivity.

[Karol & Jin, Frontiers in Molecular Toxicology, pp 56-61, 1992]

**Personnel who work with isocyanates, isocyanate prepolymers or polyisocyanates should have a pre-placement medical examination and periodic examinations thereafter, including a pulmonary function test. Anyone with a medical history of chronic respiratory disease, asthmatic or bronchial attacks, indications of allergic responses, recurrent eczema or sensitisation conditions of the skin should not handle or work with isocyanates. Anyone who develops chronic respiratory distress when working with isocyanates should be removed from exposure and examined by a physician. Further exposure must be avoided if a sensitivity to isocyanates or polyisocyanates has developed.**

Following acute or short term repeated exposures to toluene:

- Toluene is absorbed across the alveolar barrier, the blood/air mixture being 11.2:15.6 (at 37 degrees C). The concentration of toluene, in expired breath, is of the order of 18 ppm following sustained exposure to 100 ppm. The tissue/blood proportion is 1:10 except in adipose where the proportion is 8:10.

**Metabolism by microsomal mono-oxygenation, results in the production of hippuric acid. This may be detected in the urine in amounts between 0.5 and 2.5 g/24 hr which represents, on average 0.8 gm/gm of creatinine. The biological half-life of hippuric acid is in the order of 1-2 hours.**

- Primary threat to life from ingestion and/or inhalation is respiratory failure.
- Patients should be quickly evaluated for signs of respiratory distress (eg 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.
- Antiasthmatics complicate some hydrocarbon ingestion and/or inhalation and electrocardiographic evidence of myocardial damage 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 (adrenaline) 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 amphinylidine a second choice.

- Lavage is indicated in patients who require decontamination; ensure use.

**BIOLOGICAL EXPOSURE INDEX - BEI**

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

<table>
<thead>
<tr>
<th>Determinant</th>
<th>Index</th>
<th>Sampling Time</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>o-Cresol in urine</td>
<td>0.5 mg/L</td>
<td>End of shift</td>
<td>B</td>
</tr>
<tr>
<td>Hippuric acid in urine</td>
<td>1.6 g/g creatinine</td>
<td>End of shift</td>
<td>B, NS</td>
</tr>
<tr>
<td>Toluene in blood</td>
<td>0.05 mg/L</td>
<td>Prior to last shift of workweek</td>
<td></td>
</tr>
</tbody>
</table>

NS: Non-specific determinant; also observed after exposure to other material

**SECTION 5 FIREFIGHTING MEASURES**

**Extinguishing media**

- Small quantities of water in contact with hot liquid may react violently with generation of a large volume of rapidly expanding hot sticky semi-solid foam.
- Presents additional hazard when fire fighting in a confined space.
- Cooling with flooding quantities of water reduces this risk.
- Water spray or fog may cause fothing and should be used in large quantities.
- Alcohol stable foam.
- Dry chemical powder.
- BCF (where regulations permit).
- Carbon dioxide.
- Water spray or fog - Large fires only.

**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

**Advice for firefighters**

<table>
<thead>
<tr>
<th>Fire Fighting</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Alert Fire Brigade and tell them location and nature of hazard.</td>
<td></td>
</tr>
<tr>
<td>May be violently or explosively reactive.</td>
<td></td>
</tr>
<tr>
<td>Wear breathing apparatus plus protective gloves in the event of a fire.</td>
<td></td>
</tr>
<tr>
<td>Prevent, by any means available, spillage from entering drains or water course.</td>
<td></td>
</tr>
<tr>
<td>Consider evacuation (or protect in place).</td>
<td></td>
</tr>
<tr>
<td>Fight fire from a safe distance, with adequate cover.</td>
<td></td>
</tr>
<tr>
<td>If safe, switch off electrical equipment until vapour fire hazard removed.</td>
<td></td>
</tr>
<tr>
<td>Use water delivered as a fire spray to control the fire and cool adjacent area.</td>
<td></td>
</tr>
<tr>
<td>Avoid spraying water onto liquid pools.</td>
<td></td>
</tr>
<tr>
<td>Do not approach containers suspected to be hot.</td>
<td></td>
</tr>
<tr>
<td>Cool fire exposed containers with water spray from a protected location.</td>
<td></td>
</tr>
<tr>
<td>If safe to do so, remove containers from path of fire.</td>
<td></td>
</tr>
</tbody>
</table>

Continued...
Fire/Explosion Hazard

- Liquid and vapour are highly flammable.
- Severe fire hazard when exposed to heat, flame and/or oxidisers.
- Vapour may travel a considerable distance to source of ignition.
- Heating may cause expansion or decomposition leading to violent rupture of containers.
- On combustion, may emit toxic fumes of carbon monoxide (CO).

Combustion products include:
- carbon dioxide (CO2)
- isocyanates
- and minor amounts of hydrogen cyanide
- nitrogen oxides (NOx)
- other pyrolysis products typical of burning organic material.

Contains low boiling substance: Closed containers may rupture due to pressure buildup under fire conditions.

When heated at high temperatures many isocyanates decompose rapidly generating a vapour which pressurises containers, possibly to the point of rupture.

Release of toxic and/or flammable isocyanate vapours may then occur:
- Burns with acrid black smoke.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

See section 8

Environmental precautions

See section 12

Methods and material for containment and cleaning up

Minor Spills

- Remove all ignition sources.
- Clean up all spills immediately.
- Avoid breathing vapours and contact with skin and eyes.
- Control personal contact with the substance, by using protective equipment.
- Contain and absorb small quantities with vermiculite or other absorbent material.
- Wipe up.
- Collect residues in a flammable waste container.

For isocyanate spills of less than 40 litres (2 m²):
- Evacuate area from everybody not dealing with the emergency, keep them upwind and prevent further access, remove ignition sources and, if inside building, ventilate area as well as possible.
- Notify supervision and others as necessary.
- Put on personal protective equipment (suitable respiratory protection, face and eye protection, protective suit, gloves and impermeable boots).
- Dike the spill to prevent spreading and to contain additions of decontaminating solution.
- Prevent the material from entering drains.
- Estimate spill pool volume or area.
- Absorb and decontaminate - Completely cover the spill with wet sand, wet earth, vermiculite or other similar absorbent. - Add neutraliser for suitable formulations: see below) to the absorbent materials (equal to that of estimated spill pool volume). Intensify contact between spill, absorbent and neutraliser by carefully mixing with a rake and allow to react for 15 minutes
- Shovel absorbent/decontaminant solution mixture into a steel drum.
- Decontaminate surface. - Pour an equal amount of neutraliser solution over contaminated surface. - Scrub area with a stiff bristle brush, using moderate pressure. - Completely cover decontaminant with vermiculite or other similar absorbent. - After 5 minutes, shovel absorbent/decontamination solution mixture into the same steel drum used above.
- Monitor for residual isocyanate. If surface is decontaminated, proceed to next step. If contamination persists, repeat decontamination procedure immediately above
- Place loosely covered drum (release of carbon dioxide) outside for at least 72 hours. Label waste-containing drum appropriately. Remove waste materials for incineration.
- Decontaminate and remove personal protective equipment.
- Return to normal operation.
- Conduct accident investigation and consider measures to prevent reoccurrence.

Decontamination:

Treat isocyanate spills with sufficient amounts of isocyanate decontaminant preparation ("neutralising fluid"). Isocyanates and polyisocyanates are generally not miscible with water. Liquid surfactants are necessary to allow better dispersion of isocyanate and neutralising fluids/ preparations. Alkaline neutralisers react faster than water/surfactant mixtures alone.

Typically, such a preparation may consist of:

- Sawdust: 20 parts by weight Kieselguhr 40 parts by weight plus a mixture of (ammonia (s.g. 0.880) 8% v/v non-ionic surfactant 2% v/v water 90% v/v).
- Let stand for 24 hours
- Three commonly used neutralising fluids each exhibit advantages in different situations.

**Formulation A**
- liquid surfactant 0.2-2%
- sodium carbonate 5-10%
- water to 100%

**Formulation B**
- liquid surfactant 0.2-2%
- concentrated ammonia 3-8%
- water to 100%

**Formulation C**
- ethanol, isopropanol or butanol 50%
- concentrated ammonia 5%
- water to 100%

After application of any of these formulae, let stand for 24 hours.
Formulation B reacts faster than Formulation A. However, ammonia-based neutralisers should be used only under well-ventilated conditions to avoid overexposure to ammonia or if members of the emergency team wear suitable respiratory protection. Formulation C is especially suitable for cleaning of equipment from unreacted isocyanate and neutralizing under freezing conditions. Regard has to be taken to the flammability of the alcoholic solution.

- Avoid contamination with water, alkalis and detergent solutions.
- Material reacts with water and generates gas, pressurises containers with even drum rupture resulting.
- Do NOT reseal container if contamination is suspected.
- Open all containers with care.
- Clear area of personnel and move upwind.
- Alert Fire Brigade and tell them location and nature of hazard.
- May be violently or explosively reactive.
- Wear breathing apparatus plus protective gloves.
- Prevent, by any means available, spillage from entering drains or water course.
- Consider evacuation (or protect in place).
- No smoking, naked lights or ignition sources.
- Increase ventilation.
- Stop leak if safe to do so.
- Water spray or fog may be used to disperse /absorb vapour.
- Contain spill with sand, earth or vermiculite.
- Use only spark-free shovels and explosion proof equipment.
- Collect recoverable product into labelled containers for recycling.
- Absorb remaining product with sand, earth or vermiculite.
- Collect solid residues and seal in labelled drums for disposal.
- Wash area and prevent runoff into drains.
- If contamination of drains or waterways occurs, advise emergency services.

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

SECTION 7 HANDLING AND STORAGE

Precautions for safe handling

- Containers, even those that have been emptied, may contain explosive vapours.
- Do NOT cut, drill, grind, weld or perform similar operations on or near containers.
- Contains low boiling substance:
  - Storage in sealed containers may result in pressure buildup causing violent rupture of containers not rated appropriately.
  - Check for bulging containers.
  - Vent periodically.
  - Always release caps or seals slowly to ensure slow dissipation of vapours.
  - Do NOT allow clothing wet with material to stay in contact with skin.
  - Avoid all personal contact, including inhalation.
  - Wear protective clothing when risk of exposure occurs.
  - Use in a well-ventilated area.
  - Prevent concentration in hollows and sumps.
  - DO NOT enter confined spaces until atmosphere has been checked.
  - Avoid smoking, naked lights, heat or ignition sources.
  - When handling, DO NOT eat, drink or smoke.
  - Vapour may ignite on pumping or pouring due to static electricity.
  - DO NOT use plastic buckets.
  - Earth and secure metal containers when dispensing or pouring product.
  - Use spark-free tools when handling.
  - Avoid contact with incompatible materials.
  - Keep containers securely sealed.
  - Avoid physical damage to containers.
  - Always wash hands with soap and water after handling.
  - Work clothes should be laundered separately.
  - Use good occupational work practice.
  - Observe manufacturer's storage and handling recommendations contained within this SDS.
  - Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions.

Safe handling

Other information

- for commercial quantities of isocyanates:
  - Isocyanates should be stored in adequately bunded areas. Nothing else should be kept within the same bunding. Pre-polymers need not be segregated.
  - Drums of isocyanates should be stored under cover, out of direct sunlight, protected from rain, protected from physical damage and well away from moisture, acids and alkalis.
  - Where isocyanates are stored at elevated temperatures to prevent solidifying, adequate controls should be installed to prevent the high temperatures and precautions against fire should be taken.
  - Where stored in tanks, the more reactive isocyanates should be blanketed with a non-reactive gas such as nitrogen and equipped with absorptive type breather valve (to prevent vapour emissions). Transfer systems for isocyanates in bulk storage should be fully enclosed and use pump or vacuum systems. Warning signs, in appropriate languages, should be posted where necessary.
  - Areas in which polyurethane foam products are stored should be supplied with good general ventilation. Residual amounts of unreacted isocyanate may be present in the finished foam, resulting in hazardous atmospheric concentrations.
  - Store in original containers in approved flame-proof area.
  - No smoking, naked lights, heat or ignition sources.
  - DO NOT store in pits, depressions, basements or areas where vapours may be trapped.
  - Keep containers securely sealed.
  - Store away from incompatible materials in a cool, dry well ventilated area.
  - Protect containers against physical damage and check regularly for leaks.
  - Observe manufacturer's storage and handling recommendations contained within this SDS.

Conditions for safe storage, including any incompatibilities

Suitable container

- Packing as supplied by manufacturer.
- Plastic containers may only be used if approved for flammable liquid.
- Check that containers are clearly labelled and free from leaks.

Continued...
### SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

#### Control parameters

**OCCUPATIONAL EXPOSURE LIMITS (OEL)**

<table>
<thead>
<tr>
<th>INGREDIENT DATA</th>
<th>Ingredient</th>
<th>Material name</th>
<th>TWA</th>
<th>STEL</th>
<th>Peak</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Australia Exposure Standards</td>
<td>toluene</td>
<td>Toluene</td>
<td>191 mg/m³ / 50 ppm</td>
<td>574 mg/m³ / 150 ppm</td>
<td>Not Available</td>
<td>Sk</td>
</tr>
<tr>
<td>hexamethylene diisocyanate</td>
<td>isocyanates, all (as-NCO)</td>
<td>0.02 mg/m³</td>
<td>0.07 mg/m³</td>
<td>Not Available</td>
<td>Sen</td>
<td></td>
</tr>
<tr>
<td>Australia Exposure Standards</td>
<td>ethyl acetate</td>
<td>Ethyl acetate</td>
<td>720 mg/m³ / 200 ppm</td>
<td>1440 mg/m³ / 400 ppm</td>
<td>Not Available</td>
<td>Not Available</td>
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<tr>
<td>Australia Exposure Standards</td>
<td>n-butyl acetate</td>
<td>n-Butyl acetate</td>
<td>713 mg/m³ / 150 ppm</td>
<td>950 mg/m³ / 200 ppm</td>
<td>Not Available</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EMERGENCY LIMITS</th>
<th>Ingredient</th>
<th>Material name</th>
<th>TEEL-1</th>
<th>TEEL-2</th>
<th>TEEL-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>toluene</td>
<td>Toluene</td>
<td>Not Available</td>
<td>Not Available</td>
<td>Not Available</td>
<td></td>
</tr>
<tr>
<td>hexamethylene diisocyanate</td>
<td>Hexamethylene diisocyanate</td>
<td>7.8 mg/m³</td>
<td>86 mg/m³</td>
<td>510 mg/m³</td>
<td></td>
</tr>
<tr>
<td>ethyl acetate</td>
<td>Ethyl acetate</td>
<td>1,200 ppm</td>
<td>1,700 ppm</td>
<td>10000 ppm</td>
<td></td>
</tr>
<tr>
<td>n-butyl acetate</td>
<td>Butyl acetate, n-</td>
<td>Not Available</td>
<td>Not Available</td>
<td>Not Available</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Original IDLH</th>
<th>Revised IDLH</th>
</tr>
</thead>
<tbody>
<tr>
<td>toluene</td>
<td>2,000 ppm</td>
<td>500 ppm</td>
</tr>
<tr>
<td>hexamethylene diisocyanate</td>
<td>Not Available</td>
<td>Not Available</td>
</tr>
<tr>
<td>ethyl acetate</td>
<td>10,000 ppm</td>
<td>2,000 [LEL]ppm</td>
</tr>
<tr>
<td>n-butyl acetate</td>
<td>10,000 ppm</td>
<td>1,700 [LEL]ppm</td>
</tr>
<tr>
<td>naptha petroleum, light aromatic solvent</td>
<td>Not Available</td>
<td>Not Available</td>
</tr>
</tbody>
</table>

**Exposure 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. Spraying of material or material in admixture with other components must be carried out in conditions conforming to local state regulations. Local exhaust ventilation with full face air supplied breathing apparatus (hood or helmet type) is normally required. Unprotected personnel must vacate spraying area.

**NOTE:** Isocyanate vapours will not be adequately absorbed by organic vapour respirators. 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.
### Personal protection

- Safety glasses with side shields.
- Chemical goggles.
- 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 the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in the 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.

### Eye and face protection

- Chemical goggles.
- Safety glasses with side shields.

### 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.
- For esters:
  - Do NOT use natural rubber, butyl rubber, EPDM or polystyrene-containing materials.
- The selection of suitable gloves does not only depend on the material, but also on further factors of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material cannot be calculated in advance and has therefore to be checked prior to the application.
- The exact breakthrough 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/NSZS 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/NSZS 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/NSZS 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.

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.
- 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.

- Do NOT wear natural rubber (latex gloves).
- Isocyanate resistant materials include Teflon, Viton, nitrile rubber and some PVA gloves.
- Protective gloves and overalls should be worn as specified in the appropriate national standard.
- Contaminated garments should be removed promptly and should not be re-used until they have been decontaminated.

**NOTE:** Natural rubber, neoprene, PVC can be affected by isocyanates.
## GLOVE SELECTION INDEX

Glove selection is based on a modified presentation of the: "Forsberg Clothing Performance Index".

The effects of the following substance(s) are taken into account in the computer-generated selection:

### 2P Express Hardener Spot

<table>
<thead>
<tr>
<th>Material</th>
<th>CPI</th>
</tr>
</thead>
<tbody>
<tr>
<td>#Methyl</td>
<td>acetate</td>
</tr>
<tr>
<td>#It-butyl</td>
<td>acetate</td>
</tr>
<tr>
<td>BUTYL</td>
<td>C</td>
</tr>
<tr>
<td>BUTYL/NEOPRENE</td>
<td>C</td>
</tr>
<tr>
<td>CPE</td>
<td>C</td>
</tr>
<tr>
<td>HYDARON</td>
<td>C</td>
</tr>
<tr>
<td>NATURAL RUBBER</td>
<td>C</td>
</tr>
<tr>
<td>NATURAL-NEOPRENE</td>
<td>C</td>
</tr>
<tr>
<td>NEOPRENE</td>
<td>C</td>
</tr>
<tr>
<td>NEOPRENE:NATURAL</td>
<td>C</td>
</tr>
<tr>
<td>NITRILE</td>
<td>C</td>
</tr>
<tr>
<td>NITRILE-PVC</td>
<td>C</td>
</tr>
<tr>
<td>PE</td>
<td>C</td>
</tr>
<tr>
<td>PE/EVAL/PE</td>
<td>C</td>
</tr>
<tr>
<td>PVA</td>
<td>C</td>
</tr>
<tr>
<td>PVC</td>
<td>C</td>
</tr>
<tr>
<td>SARANEX-23</td>
<td>C</td>
</tr>
<tr>
<td>SARANEX-23.2-PLY</td>
<td>C</td>
</tr>
<tr>
<td>TEFLON</td>
<td>C</td>
</tr>
<tr>
<td>VITON</td>
<td>C</td>
</tr>
<tr>
<td>VITON/4UTYL</td>
<td>C</td>
</tr>
<tr>
<td>VITON/CHLOROBUTYL</td>
<td>C</td>
</tr>
<tr>
<td>VITON/NEOPRENE</td>
<td>C</td>
</tr>
</tbody>
</table>

* 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 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.

<table>
<thead>
<tr>
<th>Required Minimum Protection Factor</th>
<th>Half-Face Respirator</th>
<th>Full-Face Respirator</th>
<th>Powered Air Respirator</th>
</tr>
</thead>
<tbody>
<tr>
<td>up to 10 x ES</td>
<td>A-AUS / Class 1</td>
<td>-</td>
<td>A-PAPR-AUS / Class 1</td>
</tr>
<tr>
<td>up to 50 x ES</td>
<td>Air-line*</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>up to 100 x ES</td>
<td>-</td>
<td>A-3</td>
<td>-</td>
</tr>
<tr>
<td>100+ x ES</td>
<td>-</td>
<td>Air-line**</td>
<td>-</td>
</tr>
</tbody>
</table>

* - Continuous-flow; ** - Continuous-flow or positive pressure demand

### Other protection

All employees working with isocyanates must be informed of the hazards from exposure to the contaminant and the precautions necessary to prevent damage to their health. They should be made aware of the need to carry out their work so that as little contamination as possible is produced, and of the importance of the proper use of all safeguards against exposure to themselves and their fellow workers. Adequate training, both in the proper execution of the task and in the use of all associated engineering controls, as well as in any personal protective equipment, is essential. Employees exposed to contamination hazards should be educated in the need for, and proper use of, facilities, clothing and equipment and thereby maintain a high standard of personal cleanliness. Special attention should be given to ensuring that all personnel understand instructions, especially newly recruited employees and those with local language difficulties, where they are known.

- Overall.
- PVC Apron.
- PVC protective suit may be required if exposure severe.
- Eyewash unit.
- Ensure there is ready access to a safety shower.
  - Some plastic personal protective equipment (PPE) (e.g. gloves, aprons, overshoe) are not recommended as they may produce static electricity.
  - For large scale or continuous use wear light-weave non-static clothing (no metallic fasteners, cuffs or pockets).
  - 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.

### Thermal hazards

Not Available

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**SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES**

Information on basic physical and chemical properties
### SECTION 10 STABILITY AND REACTIVITY

**Reactivity**
- See section 7

**Chemical stability**
- Unstable in the presence of incompatible materials.
- Product is considered stable.
- Hazardous polymerisation will not occur.

**Possibility of hazardous reactions**
- See section 7

**Conditions to avoid**
- See section 7

**Incompatible materials**
- See section 7

**Hazardous decomposition products**
- See section 5

### SECTION 11 TOXICOLOGICAL INFORMATION

**Information on toxicological effects**

**Inhaled**
- Inhalation of vapours or aerosols (mists, fumes), generated by the material during the course of normal handling, may be harmful. 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.
- There is some evidence to suggest that the material can cause respiratory irritation in some persons. The body’s response to such irritation can cause further lung damage.
- The acute toxicity of inhaled alkylbenzenes is best described by central nervous system depression. As a rule, these compounds may also act as general anaesthetics.
- Systemic poisoning produced by general anaesthesia is characterised by lightheadedness, nervousness, apprehension, euphoria, confusion, dizziness, drowsiness, irritability, blurred or double vision, vomiting and sensations of heat, cold or numbness, twitching, tremors, unconsciousness and respiratory depression and arrest. Cardiac arrest may result from cardiovascular collapse. Bradycardia, and hypotension may also be produced.
- Inhaled alkylbenzene vapours cause death in animals at air levels that are relatively similar (typically LC50s are in the range 5000 - 8000 ppm for 4 to 8 hour exposures). It is likely that acute inhalation exposure to alkylbenzenes resembles that to general anaesthetics.
- Alkylbenzenes are not generally toxic other than at high levels of exposure. This may be because their metabolites have a low order of toxicity and are easily excreted. There is little or no evidence to suggest that metabolic pathways can become saturated leading to spillover to alternate pathways. Nor is there evidence that toxic reactive intermediates, which may produce subsequent toxic or mutagenic effects, are formed.
- Exposure to 400ppm ethyl acetate may cause mild eye, nose and throat irritation in an unacclimated persons. However, production workers with regular exposure have better tolerance.
- The vapour/mist may be highly irritating to the upper respiratory tract and lungs; the response may be severe enough to produce bronchitis and pulmonary oedema. Possible neurological symptoms arising from isocyanate exposure include headache, insomnia, euphoria, ataxia, anxiety neurosis, depression and paranoia. Gastrointestinal disturbances are characterised by nausea and vomiting. Pulmonary sensitisation may produce asthmatic reactions ranging from minor breathing difficulties to severe allergic attacks; this may occur following a single acute exposure or may develop without warning for several hours after exposure. Sensitized people can react to very low doses, and should not be allowed to work in situations allowing exposure to this material. Continued exposure of sensitised persons may lead to possible long term respiratory impairment.
- Inhalation hazard is increased at higher temperatures.
- The use of a quantity of material in an unventilated or confined space may result in increased exposure and an irritating atmosphere developing. Before starting consider control of exposure by mechanical ventilation.

**Ingestion**
- Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual.
- Acute intoxication by ethyl acetate causes impaired co-ordination, exhilaration, slurred speech, nausea, vomiting, and may progress to stupor, coma and death from failure of breathing or blood circulation.
- Considered an unlikely route of entry in commercial/industrial environments. The liquid may produce gastrointestinal discomfort and may be harmful if swallowed.

**Skin Contact**
- 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.
- Repeated exposure may cause skin cracking, fissuring or drying following normal handling and use.
- Skin contact with the material may damage the health of the individual; systemic effects may result following absorption.

---

**Appearance**
- Highly flammable liquid with a characteristic odour; does not mix with water.

**Physical state**
- Liquid

**Odour**
- Not Available

**Odour threshold**
- Not Available

**pH (as supplied)**
- Not Applicable

**Melting point / freezing point (°C)**
- Not Available

**Initial boiling point and boiling range (°C)**
- Not Available

**Flash point (°C)**
- -4.4 (ethyl acetate)

**Evaporation rate**
- Not Available

**Flammability**
- HIGHLY FLAMMABLE.

**Upper Explosive Limit (%)**
- Not Available

**Lower Explosive Limit (%)**
- Not Available

**Vapour pressure (kPa)**
- Not Available

**Solubility in water (g/L)**
- Immiscible

**Vapour density (Air = 1)**
- Not Available

**Surface Tension (dyn/cm or mN/m)**
- Not Available

**Viscosity (cSt)**
- Not Available

**Molecular weight (g/mol)**
- 937.91

**Odour threshold**
- Not Available

**Auto-ignition temperature (°C)**
- Not Available

**Decomposition temperature**
- Not Available

**Taste**
- Not Available

**Explosive properties**
- Not Available

**Oxidising properties**
- Not Available

**Hazardous decomposition**
- See section 7

**Physical state**
- Liquid
Open cuts, abraded or irritated skin should not be exposed to this material. 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.

**Eye**

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.

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.

**Chronic**

Inhalation this product is more likely to cause a sensitisation reaction in some persons compared to the general population. Skin contact with the material is more likely to cause a sensitisation reaction in some persons compared to the general population.

Harmful: danger of serious damage to health by prolonged exposure through inhalation.

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.

Based on experience with animal studies, exposure to the material may result in toxic effects to the development of the foetus, at levels which do not cause significant toxic effects to the mother.

Prolonged or repeated skin contact may cause drying with cracking, irritation and possible dermatitis following. There has been some concern that this material can cause cancer or mutations but there is not enough data to make an assessment.

Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure.

Intentional abuse (glue sniffing) or occupational exposure to toluene can result in chronic habituation. Chronic abuse has caused inco-ordination, tremors of the extremities (due to widespread cerebrum withering), headache, abnormal speech, temporary memory loss, convulsions, coma, drowsiness, reduced colour perception, blindness, nystagmus (rapid, involuntary eye movements), hearing loss leading to deafness and mild dementia.

Persons with a history of asthma or other respiratory problems or are known to be sensitised, should not be engaged in any work involving the handling of isocyanates. [CCTRADE-Bayer, APMF]

<table>
<thead>
<tr>
<th>2P Express Hardener Spot</th>
<th><strong>TOXICITY</strong></th>
<th><strong>IRRITATION</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>Not Available</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>toluene</th>
<th><strong>TOXICITY</strong></th>
<th><strong>IRRITATION</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dermal (rabbit) LD50: 12124 mg/kg[^2]</td>
<td>Eye (rabbit): 2mg/24h - SEVERE</td>
</tr>
<tr>
<td></td>
<td>Inhalation (rat) LC50: &gt;26700 ppm/1hr[^2]</td>
<td>Eye (rabbit): 0.87 mg - mild</td>
</tr>
<tr>
<td></td>
<td>Inhalation (rat) LC50: 49 mg/L/4hr[^2]</td>
<td>Eye (rabbit): 100 mg/30sec - mild</td>
</tr>
<tr>
<td></td>
<td>Oral (rat) LD50: 636 mg/kg[^2]</td>
<td>Skin (rabbit): 20 mg/24h - moderate</td>
</tr>
<tr>
<td></td>
<td>Skin (rabbit): 500 mg - moderate</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>hexamethylene diisocyanate polymer</th>
<th><strong>TOXICITY</strong></th>
<th><strong>IRRITATION</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dermal (rabbit) LD50: &gt;5000 mg/kg[^2]</td>
<td>Skin (rabbit): 500 mg - moderate</td>
</tr>
<tr>
<td></td>
<td>Inhalation (rat) LC50: 18.5 mg/L/1hr[^2]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Oral (rat) LD50: &gt;10000 mg/kg[^2]</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ethyl acetate</th>
<th><strong>TOXICITY</strong></th>
<th><strong>IRRITATION</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dermal (rabbit) LD50: &gt;18000 mg/kg[^2]</td>
<td>Eye (human): 400 ppm</td>
</tr>
<tr>
<td></td>
<td>Inhalation (mouse) LC50: &gt;18 mg/l/4hr[^1]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inhalation (mouse) LC50: 33.5 mg/l/2hr[^1]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inhalation (mouse) LC50: 45 mg/L/2hr[^2]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inhalation (rat) LC50: &gt;6000 ppm/6hr[^2]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inhalation (rat) LC50: 1600 ppm/l/2hr[^2]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inhalation (rat) LC50: 200 mg/l/1 hr[^1]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Oral (rat) LD50: 10170 mg/kg[^1]</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>n-butyl acetate</th>
<th><strong>TOXICITY</strong></th>
<th><strong>IRRITATION</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dermal (rabbit) LD50: &gt;14080 mg/kg[^1]</td>
<td>Eye (human): 300 mg</td>
</tr>
<tr>
<td></td>
<td>Inhalation (rat) LC50: 2000 ppm/4hr[^2]</td>
<td>Eye (rabbit): 20 mg (open)-SEVERE</td>
</tr>
<tr>
<td></td>
<td>Inhalation (rat) LC50: 390 ppm/4hr[^2]</td>
<td>Eye (rabbit): 20 mg/24h - moderate</td>
</tr>
<tr>
<td></td>
<td>Oral (rat) LD50: 10736 mg/kg[^1]</td>
<td>Skin (rabbit): 500 mg/24h-moderate</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>naphtha petroleum, light aromatic solvent</th>
<th><strong>TOXICITY</strong></th>
<th><strong>IRRITATION</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dermal (rabbit) LD50: &gt;1900 mg/kg[^1]</td>
<td>Not Available</td>
</tr>
<tr>
<td></td>
<td>Inhalation (rat) LC50: &gt;3670 ppm/8 hr[^2]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Oral (rat) LD50: &gt;4500 mg/kg[^1]</td>
<td></td>
</tr>
</tbody>
</table>

**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

Continued...
For toluene:

**Acute Toxicity**

Humans exposed to intermediate to high levels of toluene for short periods of time experience adverse central nervous system effects ranging from headaches to intoxication, convulsions, narcosis, and death. Similar effects are observed in short-term animal studies.

**Humans** - Toluene ingestion or inhalation can result in severe central nervous system depression, and in large doses, can act as a narcotic. The ingestion of about 60 mL resulted in fatal nervous system depression within 30 minutes in one reported case.

Central nervous system effects (headaches, dizziness, intoxication) and eye irritation occurred following inhalation exposure to 100 ppm toluene 6 hours/day for 4 days.

**Exposure** - Toluene exposure in male mice given doses of 105 mg/kg/day for 28 days. Toluene in corn oil administered to F344 male and female rats by gavage 5 days/week for 13 weeks, induced prostration, hypoxia, ataxia, piloerection, lacrimation, excess salivation, and body tremors at doses 2500 mg/kg. Liver, kidney, and heart weights were also increased at this dose and histopathological lesions were seen in the liver, kidney, brain, and urinary bladder. The no-observed-adverse-effect level (NOAEL) for the study was 312 mg/kg (223 mg/kg/day) and the lowest-observed-adverse-effect level (LOAEL) for the study was 625 mg/kg (446 mg/kg/day).

**Subchronic/Chronic Effects:**

Repetitive doses of toluene cause adverse central nervous system effects and can damage the upper respiratory system, the liver, and the kidney. Adverse effects occur as a result of both oral and the injection exposure. A reported ingestion-observed-effect level in humans for adverse neurobehavioural effects is 88 ppm.

**Humans** - Chronic occupational exposure and incidences of toluene abuse have resulted in hepatomegaly and liver function changes. It has also resulted in nephrotoxicity and, in one case, was a cardiac sensitizer and fatal toxicosis.

**Animals** - The major target organs were for the subchronic/chronic toxicity of toluene are the nervous system, liver, and kidney. Depressed immune response has been reported in male mice given doses of 105 mg/kg/day for 28 days. Toluene in corn oil administered to F344 male and female rats by gavage 5 days/week for 13 weeks, induced prostration, hypoxia, ataxia, piloerection, lacrimation, excess salivation, and body tremors at doses 2500 mg/kg. Liver, kidney, and heart weights were also increased at this dose and histopathological lesions were seen in the liver, kidney, brain, and urinary bladder. The no-observed-adverse-effect level (NOAEL) for the study was 312 mg/kg (223 mg/kg/day) and the lowest-observed-adverse-effect level (LOAEL) for the study was 625 mg/kg (446 mg/kg/day).

**Developmental/Reproductive Toxicity**

Exposures to high levels of toluene can result in adverse effects in the developing human fetus. Several studies have indicated that high levels of toluene can also adversely affect the developing offspring in laboratory animals.

**Humans** - Variable growth, microcephaly, CNS dysfunction, attentional deficits, minor craniofacial and limb abnormalities, and developmental delay were seen in three human children exposed to toluene in utero as a result of maternal solvent abuse before and during pregnancy.

**Animals** - Sternebral alterations, extra ribs, and missing tails were reported following treatment of rats with 1500 mg/m3 toluene 24 hours/day during days 9-14 of gestation. Two of the dams died during the exposure. Another group of rats received 1000 mg/m3 8 hours/day during days 1-21 of gestation. No maternal deaths or toxicity occurred, however, minor skeletal retardation was present in the exposed fetuses. C57LP Mice were exposed to 500 or 1500 mg/m3 toluene continuously during 6-13 of pregnancy. All dams died at the high dose during the first 24 hours of exposure; however none died at 500 mg/m3. Decreased foetal weight was reported, but there were no differences in the incidences of skeletal malformations or anomalies between the treated and control offspring.

**Absorption** - Studies in humans and animals have demonstrated that toluene is readily absorbed via the lungs and the gastrointestinal tract. Absorption through the skin is estimated at about 1% of that absorbed by the lungs when exposed to toluene vapor.

Dermal absorption is expected to be higher upon exposure to the liquid; however, exposure is limited by the rapid evaporation of toluene.

**Distribution** - In studies with mice exposed to radiolabeled toluene by inhalation, high levels of radioactivity were present in body fat, bone marrow, spinal nerves, spinal cord, and brain white matter. Lower levels of radioactivity were present in blood, kidney, and liver. Accumulation of toluene has generally been found in adipose tissue, especially in tissues with high fat content, and in highly vasculatized tissues.

**Metabolism** - The metabolites of inhaled or ingested toluene include benzyl alcohol resulting from the hydroxylation of the methyl group. Further oxidation of the benzyl alcohol results in the formation of several compounds, including benzyl acetate, benzyl benzoate, and 3,4-dimethylhippuric acid. The major routes of excretion of 1,2,4-trimethylbenzene are exhalation of parent compound and elimination of urinary metabolites.

**Excretion** - The primary excretion route is via the urine as hippuric acid. The excretion of benzoic acid hydroxylated to 2,4-dimethylbenzoic acid and 3,4-dimethylhippuric acid. 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 reaction in more than 1% of the persons tested.

**Allergic reactions involving the respiratory tract are usually due to interactions between IgE antibodies and allergens and occur rapidly. Allergic potential of the allergen and period of exposure often determine the severity of symptoms. Some people may be genetically more prone than others, and exposure to other irritants may aggravate symptoms. Allergy causing activity is due to interactions with proteins. Attention should be paid to atopic diathesis, characterised by increased susceptibility to nasal inflammation, asthma and eczema. Exogenous allergic alveolitis is induced essentially by allergen specific immune complexes of the IgG type; cell-mediated reactions (T lymphocytes) may be involved. Such allergy is of the delayed type with onset up to four hours following exposure. Isocyanate vapours are irritating to the airways and can cause their inflammation, with wheezing, gasping, severe distress, even loss of consciousness and fluid in the lungs. Nervous system symptoms that may occur include headache, sleep disturbance, euphoria, inco-ordination, anxiety, depression and paranoia. The material may produce moderate eye irritation leading to inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

* Bayer SDS ** Ardez SDS

**N-Butyl Acetate**

The material may produce severe irritation to the eye causing pronounced irritation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

**For trimethylbenzenes:**

Absorption of 1,2,4-trimethylbenzene occurs after oral, inhalation, or dermal exposure. Occupationally, inhalation and dermal exposures are the most important routes of absorption although systemic intoxication from dermal absorption may still be possible. Intoxication may be due to the chemical comedating the chemical prompting quick removal. Following oral administration of the chemical to rats, 62.6% of the dose was recovered as urinary metabolites indicating substantial absorption.

1,2,4-Trimethylbenzene is lipophilic and may accumulate in fat and fatty tissues. In the blood stream, approximately 85% of the chemical is bound to red blood cells. Metabolism occurs by side-chain oxidation to form alcohols and carboxylic acids which are then conjugated with glucuronic acid, glycine, or sulfates for excretion of unchanged toluene through the lungs also accounts for 10-20%. Excretion of hippuric acid is usually complete within 24 hours after exposure.

**Hexamethylene Disocyanate Polymer**

Attention should be paid to atopic diathesis, characterised by increased susceptibility to nasal inflammation, asthma and eczema. Exogenous allergic alveolitis is induced essentially by allergen specific immune complexes of the IgG type; cell-mediated reactions (T lymphocytes) may be involved. Such allergy is of the delayed type with onset up to four hours following exposure. Isocyanate vapours are irritating to the airways and can cause their inflammation, with wheezing, gasping, severe distress, even loss of consciousness and fluid in the lungs. Nervous system symptoms that may occur include headache, sleep disturbance, euphoria, inco-ordination, anxiety, depression and paranoia. The material may produce moderate eye irritation leading to inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

* Bayer SDS ** Ardez SDS

**Naphtha Petroleum, Light Aromatic Solvent**

The material may produce severe irritation to the eye causing pronounced irritation. Repeated or prolonged exposure to irritants may produce conjunctivitis.
1,2,4-Trimethylbenzene depresses the central nervous system. Exposure to solvent mixtures containing the chemical causes headache, fatigue, nervousness, and drowsiness. Occupationally, workers exposed to a solvent containing 50% 1,2,4-trimethylbenzene had nervousness, headaches, drowsiness, and vertigo (U.S. EPA). Headache, fatigue, and drowsiness were reported for workers exposed (no dose given) to paint thinner containing 80% 1,2,4- and 1,3,5-trimethylbenzene.

Results of the developmental toxicity study indicate that the C9 fraction caused adverse neurological effects at the highest dose (1500 ppm) tested.

Subchronic/Chronic Toxicity
Long-term exposure to solvents containing 1,2,4-trimethylbenzene may cause nervousness, tension, and bronchitis. Painters who worked for several years with a solvent containing 50% 1,2- and 30% 1,3,5-trimethylbenzene showed nervousness, tension and anxiety, asthmatic bronchitis, and arrhythmia; and animal studies in blood clotting, haematological effects may have been observed.

Rats given 1,2,4-trimethylbenzene orally at doses of 0.5 or 2.0 g/kg/day for 5 days/week for 4 weeks. All rats exposed to the high dose died and 1 rat in the low dose died (no times given); no other effects were reported. Rats exposed by inhalation to 1700 ppm of a trimethylbenzene isomeric mixture for 4 months had decreased weight gain, lymphopenia and neutropenia.

Genotoxicity: Results of various mutagenicity testing, indicate that the C9 fraction does not induce gene mutations in prokaryotes (Salmonella typhimurium/mammalian microsome assay); or in mammalian cells in culture (in Chinese hamster ovary cells with and without activation). The C9 fraction does not do not induce chromosome aberrations in Chinese hamster ovary cells with and without activation.

Developmental/Reproductive Toxicity: A three-generation reproductive study on the C9 fraction was conducted. CD rats (30/sex/group) were exposed by:

Continued...

Systemic Effects on Parental Generations: Males and F2 parents at 1480 ppm had statistically significant mean body weights much lower than controls (~33% for males; ~28% for females); body weights at 495 ppm adjusted for initial body weight when compared to controls. The F1 parents at 1480 ppm had statistically significantly decreased mean body weights (by ~13% in males and ~15% in females). The male rats in the 495 ppm exposed group had a 12% decrease in body weight gain when adjusted for initial body weight when compared to controls. Based on reduced body weight observed, the overall systemic toxicity LOAEC is 495 ppm (2430 mg/m3).

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TOLUENE & HEXAMETHYLENE DISOCYANATE POLYMER & N-BUTYL ACETATE

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.

## ECOLOGICAL INFORMATION

### Toxicity

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Endpoint</th>
<th>Test Duration (hr)</th>
<th>Species</th>
<th>Value</th>
<th>Source</th>
</tr>
</thead>
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<tr>
<td>toluene</td>
<td>LC50</td>
<td>96</td>
<td>Fish</td>
<td>0.007mg/L</td>
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<tr>
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<td>48</td>
<td>Crustacea</td>
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<tr>
<td>toluene</td>
<td>EC50</td>
<td>72</td>
<td>Algae or other aquatic plants</td>
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</tr>
<tr>
<td>toluene</td>
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<td>24</td>
<td>Algae or other aquatic plants</td>
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</tr>
<tr>
<td>toluene</td>
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<td>384</td>
<td>Crustacea</td>
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</tr>
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<td>toluene</td>
<td>NOEC</td>
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<td>Crustacea</td>
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<td>hexamethylene disocyanate polymer</td>
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<td>96</td>
<td>Fish</td>
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<td>ethyl acetate</td>
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<td>Fish</td>
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<td>Crustacea</td>
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<tr>
<td>ethyl acetate</td>
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<td>96</td>
<td>Algae or other aquatic plants</td>
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</tr>
<tr>
<td>ethyl acetate</td>
<td>BCF</td>
<td>24</td>
<td>Algae or other aquatic plants</td>
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<tr>
<td>ethyl acetate</td>
<td>EC0</td>
<td>168</td>
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<tr>
<td>ethyl acetate</td>
<td>NOEC</td>
<td>504</td>
<td>Crustacea</td>
<td>2.4mg/L</td>
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<td>n-butyl acetate</td>
<td>LC50</td>
<td>96</td>
<td>Fish</td>
<td>18mg/L</td>
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<td>n-butyl acetate</td>
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<td>Crustacea</td>
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<td>Algae or other aquatic plants</td>
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</tr>
<tr>
<td>n-butyl acetate</td>
<td>EC50</td>
<td>96</td>
<td>Fish</td>
<td>18mg/L</td>
<td>2</td>
</tr>
<tr>
<td>napththa petroleum, light aromatic solvent</td>
<td>EC50</td>
<td>48</td>
<td>Crustacea</td>
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<td>72</td>
<td>Algae or other aquatic plants</td>
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<tr>
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<td>72</td>
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<td>1</td>
</tr>
<tr>
<td>napththa petroleum, light aromatic solvent</td>
<td>NOEC</td>
<td>72</td>
<td>Algae or other aquatic plants</td>
<td>=1mg/L</td>
<td>1</td>
</tr>
</tbody>
</table>

**Legend:**
- 🟢 Data available but does not fill the criteria for classification
- 🔴 Data required to make classification available
- ⚫ Data Not Available to make classification

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.

---

Continued...
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 shrimps was dimethylphenalenes > methylphenalenes > naphthalenes. Anthracene 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 polyisocyanates:

Ecotoxicity: These substances are not expected to accumulate/biomagnify in the environment. These substances are toxic if inhaled. These substances are harmful to aquatic organisms and may cause long-term adverse effects in the aquatic environment.

DO NOT discharge into sewers or waterways.

Persistence and degradability

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Persistence: Water/Soil</th>
<th>Persistence: Air</th>
</tr>
</thead>
<tbody>
<tr>
<td>toluene</td>
<td>LOW (Half-life = 28 days)</td>
<td>LOW (Half-life = 4.33 days)</td>
</tr>
<tr>
<td>hexamethylene disocyanate polymer</td>
<td>HIGH</td>
<td>HIGH</td>
</tr>
<tr>
<td>ethyl acetate</td>
<td>LOW (Half-life = 14 days)</td>
<td>LOW (Half-life = 14.71 days)</td>
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<tr>
<td>n-butyl acetate</td>
<td>LOW</td>
<td>LOW</td>
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Bioaccumulative potential

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Bioaccumulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>toluene</td>
<td>LOW (BCF = 96)</td>
</tr>
<tr>
<td>hexamethylene disocyanate polymer</td>
<td>LOW (LogKOW = 7.5796)</td>
</tr>
<tr>
<td>ethyl acetate</td>
<td>HIGH (BCF = 3300)</td>
</tr>
<tr>
<td>n-butyl acetate</td>
<td>LOW (BCF = 14)</td>
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Mobility in soil

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Mobility</th>
</tr>
</thead>
<tbody>
<tr>
<td>toluene</td>
<td>LOW (KOC = 268)</td>
</tr>
<tr>
<td>hexamethylene disocyanate polymer</td>
<td>LOW (KOC = 18560000)</td>
</tr>
<tr>
<td>ethyl acetate</td>
<td>LOW (KOC = 6.131)</td>
</tr>
<tr>
<td>n-butyl acetate</td>
<td>LOW (KOC = 20.86)</td>
</tr>
</tbody>
</table>
SECTION 13 DISPOSAL CONSIDERATIONS

Waste treatment methods

- Containers may still present a chemical hazard/danger when empty.
- Return to supplier for reuse/recycling if possible.

Otherwise:
- If container cannot 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.
- Where possible retain label warnings and SDS and observe all notices pertaining to the product. 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.

A Hierarchy of Controls seems to be common - the user should investigate:
- Reduction
- Reuse
- Recycling
- Disposal (if all else fails)

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.

- DO NOT allow wash water from cleaning or process equipment to enter drains.
- It may be necessary to collect all wash water for treatment before disposal.
- In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first.
- Where in doubt contact the responsible authority.
- Recycle wherever possible.
- 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.
- Dispose of by: burial in a landfill specifically licenced to accept chemical and/or pharmaceutical wastes or incineration in a licenced apparatus (after admixture with suitable combustible material).
- Decontaminate empty containers. Observe all label safeguards until containers are cleaned and destroyed.

SECTION 14 TRANSPORT INFORMATION

Labels Required

![Flame symbol]

Marine Pollutant: NO
HAZCHEM: <3YE

Land transport (ADG)

| UN number | 1263 |
| UN proper shipping name | PAINT (including paint, lacquer, enamel, stain, shellac, varnish, polish, liquid filler and liquid lacquer base) or PAINT RELATED MATERIAL (including paint thinning or reducing compound) |
| Transport hazard class(es) | Class 3 |
| Subrisk | Not Applicable |
| Packing group | II |
| Environmental hazard | Not Applicable |
| Special precautions for user | Special provisions 163 367 |
| Limited quantity | 5 L |

Air transport (ICAO-IATA / DGR)

| UN number | 1263 |
| UN proper shipping name | Paint (including paint, lacquer, enamel, stain, shellac, varnish, polish, liquid filler and liquid lacquer base); Paint related material (including paint thinning or reducing compounds) |
| Transport hazard class(es) | ICAO/IATA Class 3 |
| ICAO / IATA Subrisk | Not Applicable |
| ERG Code | 3L |
| Packing group | II |
| Environmental hazard | Not Applicable |
| Special precautions for user | Special provisions A3 A72 A192 |
| 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 |
Sea transport (IMDG-Code / GGVSee)

<table>
<thead>
<tr>
<th>UN number</th>
<th>1263</th>
</tr>
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<tbody>
<tr>
<td>UN proper shipping name</td>
<td>PAINT (including paint, lacquer, enamel, stain, shellac solutions, varnish, polish, liquid filler and liquid lacquer base) or PAINT RELATED MATERIAL (including paint thinning or reducing compound)</td>
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</table>

<table>
<thead>
<tr>
<th>Transport hazard class(es)</th>
<th>IMDG Class</th>
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<tbody>
<tr>
<td>IMDG Subrisk</td>
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<tr>
<td>Packing group</td>
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<td></td>
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<tr>
<td>Environmental hazard</td>
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Special precautions for user

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<tr>
<th>EMS Number</th>
<th>F-E, S-E</th>
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<tbody>
<tr>
<td>Special provisions</td>
<td>163 367</td>
</tr>
<tr>
<td>Limited Quantities</td>
<td>5 L</td>
</tr>
</tbody>
</table>

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

Not Applicable

SECTION 15 REGULATORY INFORMATION

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

<table>
<thead>
<tr>
<th>TOLUENE (108-88-3) IS FOUND ON THE FOLLOWING REGULATORY LISTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia Exposure Standards</td>
</tr>
<tr>
<td>Australia Hazardous Substances Information System - Consolidated Lists</td>
</tr>
<tr>
<td>International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs</td>
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</table>

<table>
<thead>
<tr>
<th>HEXAMETHYLENE DIISOCYANATE POLYMER (28182-81-2) IS FOUND ON THE FOLLOWING REGULATORY LISTS</th>
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<tbody>
<tr>
<td>Australia Exposure Standards</td>
</tr>
<tr>
<td>Australia Hazardous Substances Information System - Consolidated Lists</td>
</tr>
<tr>
<td>Australia Inventory of Chemical Substances (AICS)</td>
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<table>
<thead>
<tr>
<th>ETHYL ACETATE (141-78-6) IS FOUND ON THE FOLLOWING REGULATORY LISTS</th>
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<tr>
<td>Australia Exposure Standards</td>
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<tr>
<td>Australia Hazardous Substances Information System - Consolidated Lists</td>
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<td>Australia Inventory of Chemical Substances (AICS)</td>
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<table>
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<tr>
<th>N-BUTYL ACETATE (123-86-4) IS FOUND ON THE FOLLOWING REGULATORY LISTS</th>
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<tbody>
<tr>
<td>Australia Exposure Standards</td>
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<tr>
<td>Australia Hazardous Substances Information System - Consolidated Lists</td>
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<tr>
<td>Australia Inventory of Chemical Substances (AICS)</td>
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<table>
<thead>
<tr>
<th>NAPHTHA PETROLEUM, LIGHT AROMATIC SOLVENT (64742-95-6) IS FOUND ON THE FOLLOWING REGULATORY LISTS</th>
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<td>Australia Hazardous Substances Information System - Consolidated Lists</td>
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<tr>
<td>Australia Inventory of Chemical Substances (AICS)</td>
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<table>
<thead>
<tr>
<th>National Inventory</th>
<th>Status</th>
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<tbody>
<tr>
<td>Australia - AICS</td>
<td>Y</td>
</tr>
<tr>
<td>Canada - DSL</td>
<td>Y</td>
</tr>
<tr>
<td>Canada - NDSL</td>
<td>N (toluene; ethyl acetate; n-butyl acetate; naphtha petroleum, light aromatic solvent)</td>
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<tr>
<td>China - IECSC</td>
<td>Y</td>
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<tr>
<td>Europe - EINEC / ELINCS / NLP</td>
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<td>Japan - ENCS</td>
<td>N (hexamethylene diisocyanate polymer)</td>
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<td>Korea - KECI</td>
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</tr>
<tr>
<td>New Zealand - NZIoC</td>
<td>Y</td>
</tr>
<tr>
<td>Philippines - PICCS</td>
<td>Y</td>
</tr>
<tr>
<td>USA - TSCA</td>
<td>Y</td>
</tr>
</tbody>
</table>

Legend:

Y = All ingredients are on the inventory
N = Not determined or one or more ingredients are not on the inventory and are not exempt from listing (see specific ingredients in brackets)

SECTION 16 OTHER INFORMATION

Other information

Ingredients with multiple cas numbers

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS No</th>
</tr>
</thead>
<tbody>
<tr>
<td>hexamethylene diisocyanate polymer</td>
<td>28182-81-2, 53200-31-0, 1192214-73-5</td>
</tr>
<tr>
<td>naphtha petroleum, light aromatic solvent</td>
<td>64742-95-6, 25550-14-5</td>
</tr>
</tbody>
</table>
Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references. A list of reference resources used to assist the committee may be found at:

www.chemwatch.net

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.

Definitions and abbreviations

PC — TWA: Permissible Concentration-Time Weighted Average
PC — STEL: Permissible Concentration-Short Term Exposure Limit
IARC: International Agency for Research on Cancer
ACGIH: American Conference of Governmental Industrial Hygienists
STEL: Short Term Exposure Limit
TEEL: Temporary Emergency Exposure Limit
IDLH: Immediately Dangerous to Life or Health Concentrations
OSF: Odour Safety Factor
NOAEL: No Observed Adverse Effect Level
LOAEL: Lowest Observed Adverse Effect Level
TLV: Threshold Limit Value
LOD: Limit Of Detection
OTV: Odour Threshold Value
BCF: BioConcentration Factors
BEI: Biological Exposure Index

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