



## Aro-Bond 905 (Aro-Bond DX9924)

### Ureka Global Ltd

Version No: 1.2

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

Chemwatch Hazard Alert Code: 4

Issue Date: 14/02/2023

Print Date: 14/02/2023

S.REACH.GB.EN

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

### 1.1. Product Identifier

|                               |                                |
|-------------------------------|--------------------------------|
| Product name                  | Aro-Bond 905 (Aro-Bond DX9924) |
| Chemical Name                 | Not Applicable                 |
| Synonyms                      | Not Available                  |
| Chemical formula              | Not Applicable                 |
| Other means of identification | UFI:V1GV-S0ES-300H-04UC        |

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

|                           |                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Chemical Product Category | PC1   Adhesives, sealants                                                                                                                                                                                                                                                                                                                                   |
| Relevant identified uses  | Substituted morpholine derivatives are the core of various natural products and biologically active compounds. This class of compounds has found important applications in pharmaceuticals and in agricultural use. Chiral morpholine derivatives have found numerous applications in asymmetric synthesis as chiral auxiliaries as well as chiral ligands. |
| Uses advised against      | No specific uses advised against are identified.                                                                                                                                                                                                                                                                                                            |

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

|                         |                                                                              |
|-------------------------|------------------------------------------------------------------------------|
| Registered company name | Ureka Global Ltd                                                             |
| Address                 | Unit 5 Decoypool Road, St Modwen Park, Newport, NP19 4RG United Kingdom      |
| Telephone               | +44 (0)117 971 1364                                                          |
| Fax                     | Not Available                                                                |
| Website                 | <a href="http://www.thenamethatsticks.com">www.thenamethatsticks.com</a>     |
| Email                   | <a href="mailto:sales@thenamethatsticks.com">sales@thenamethatsticks.com</a> |

### 1.4. Emergency telephone number

|                                   |               |
|-----------------------------------|---------------|
| Association / Organisation        | Not Available |
| Emergency telephone numbers       | Not Available |
| Other emergency telephone numbers | 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] | H334 - Sensitisation (Respiratory) Category 1, H373 - Specific Target Organ Toxicity - Repeated Exposure Category 2, H335 - Specific Target Organ Toxicity - Single Exposure (Respiratory Tract Irritation) Category 3, H315 - Skin Corrosion/Irritation Category 2, H319 - Serious Eye Damage/Eye Irritation Category 2, H317 - Sensitisation (Skin) Category 1, H351 - Carcinogenicity Category 2 |
| 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)

|      |                                                                                                      |
|------|------------------------------------------------------------------------------------------------------|
| H334 | May cause allergy or asthma symptoms or breathing difficulties if inhaled.                           |
| H373 | May cause damage to organs through prolonged or repeated exposure. (Respiratory system) (Inhalation) |
| H335 | May cause respiratory irritation.                                                                    |
| H315 | Causes skin irritation.                                                                              |
| H319 | Causes serious eye irritation.                                                                       |
| H317 | May cause an allergic skin reaction.                                                                 |
| H351 | Suspected of causing cancer.                                                                         |

Supplementary statement(s)

Not Applicable

Precautionary statement(s) Prevention

|      |                                                                                  |
|------|----------------------------------------------------------------------------------|
| P201 | Obtain special instructions before use.                                          |
| P260 | Do not breathe mist/vapours/spray.                                               |
| P271 | Use only outdoors or in a well-ventilated area.                                  |
| P280 | Wear protective gloves, protective clothing, eye protection and face protection. |
| P284 | [In case of inadequate ventilation] wear respiratory protection.                 |
| 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

|                |                                                                                                                                  |
|----------------|----------------------------------------------------------------------------------------------------------------------------------|
| P304+P340      | IF INHALED: Remove person to fresh air and keep comfortable for breathing.                                                       |
| P308+P313      | IF exposed or concerned: Get medical advice/ attention.                                                                          |
| P342+P311      | If experiencing respiratory symptoms: Call a POISON CENTER/doctor/physician/first aider.                                         |
| P302+P352      | IF ON SKIN: Wash with plenty of water and soap.                                                                                  |
| 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.                                                                         |

Precautionary statement(s) Storage

|           |                                                                  |
|-----------|------------------------------------------------------------------|
| P405      | Store locked up.                                                 |
| P403+P233 | Store in a well-ventilated place. Keep container tightly closed. |

Precautionary statement(s) Disposal

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

2.3. Other hazards

|                                                  |                                                                                         |
|--------------------------------------------------|-----------------------------------------------------------------------------------------|
| diphenylmethane diisocyanate (MDI) mixed isomers | Listed in the Europe Regulation (EC) No 1907/2006 - Annex XVII (Restrictions may apply) |
| 2,4'-diphenylmethane diisocyanate                | Listed in the Europe Regulation (EC) No 1907/2006 - Annex XVII (Restrictions may apply) |
| 4,4'-diphenylmethane diisocyanate (MDI)          | Listed in the Europe Regulation (EC) No 1907/2006 - Annex XVII (Restrictions may apply) |
| 2,2'-diphenylmethane diisocyanate                | Listed in the Europe Regulation (EC) No 1907/2006 - Annex XVII (Restrictions may apply) |

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 |
|------------------------------------------------------------------|-----------|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-----------------------------------|
| 1.26447-40-5<br>2.247-714-0<br>3.615-005-00-9<br>4.Not Available | <30       | diphenylmethane diisocyanate (MDI) mixed isomers | Acute Toxicity (Inhalation) Category 4, Skin Corrosion/Irritation Category 2, Serious Eye Damage/Eye Irritation Category 2, Sensitisation (Skin) Category 1, Sensitisation (Respiratory) Category 1, Carcinogenicity Category 2, Specific | Eye Irrit. 2; H319: C ≥ 5 %   Skin Irrit. 2; H315: C ≥ 5 %   Resp. Sens. 1; H334: C ≥ 0,1 | Not Available                     |

Continued...

## Aro-Bond 905 (Aro-Bond DX9924)

| 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 |
|--------------------------------------------------------------------------|-----------|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
|                                                                          |           |                                                | Target Organ Toxicity - Single Exposure (Respiratory Tract Irritation) Category 3 , Specific Target Organ Toxicity - Repeated Exposure Category 2; H332, H315, H319, H317, H334, H351, H335, H373 [2]                                                                                                                                                                                                                                           | %   STOT SE 3; H335: C ≥ 5 %                                                                                           |                                   |
| 1.5873-54-1<br>2.227-534-9<br>3.615-005-00-9<br>4.Not Available          | <15       | <u>2,4'-diphenylmethane diisocyanate</u>       | Acute Toxicity (Inhalation) Category 4, Skin Corrosion/Irritation Category 2, Serious Eye Damage/Eye Irritation Category 2, Sensitisation (Skin) Category 1, Sensitisation (Respiratory) Category 1, Carcinogenicity Category 2, Specific Target Organ Toxicity - Single Exposure (Respiratory Tract Irritation) Category 3 , Specific Target Organ Toxicity - Repeated Exposure Category 2; H332, H315, H319, H317, H334, H351, H335, H373 [2] | Eye Irrit. 2; H319: C ≥ 5 %   Skin Irrit. 2; H315: C ≥ 5 %   Resp. Sens. 1; H334: C ≥ 0,1 %   STOT SE 3; H335: C ≥ 5 % | Not Available                     |
| 1.101-68-8<br>2.202-966-0 406-550-1<br>3.615-005-00-9<br>4.Not Available | <15       | <u>4,4'-diphenylmethane diisocyanate (MDI)</u> | Acute Toxicity (Inhalation) Category 4, Skin Corrosion/Irritation Category 2, Serious Eye Damage/Eye Irritation Category 2, Sensitisation (Skin) Category 1, Sensitisation (Respiratory) Category 1, Carcinogenicity Category 2, Specific Target Organ Toxicity - Single Exposure (Respiratory Tract Irritation) Category 3 , Specific Target Organ Toxicity - Repeated Exposure Category 2; H332, H315, H319, H317, H334, H351, H335, H373 [2] | Eye Irrit. 2; H319: C ≥ 5 %   Skin Irrit. 2; H315: C ≥ 5 %   Resp. Sens. 1; H334: C ≥ 0,1 %   STOT SE 3; H335: C ≥ 5 % | Not Available                     |
| 1.6425-39-4<br>2.229-194-7<br>3.Not Available<br>4.Not Available         | 1-5       | <u>2,2'-dimorpholinodiethyl ether</u>          | Acute Toxicity (Oral) Category 4, Skin Corrosion/Irritation Category 2, Serious Eye Damage/Eye Irritation Category 2, Sensitisation (Skin) Category 1; H302, H315, H319, H317 [1]                                                                                                                                                                                                                                                               | Not Available                                                                                                          | Not Available                     |
| 1.2536-05-2<br>2.219-799-4<br>3.615-005-00-9<br>4.Not Available          | <1        | <u>2,2'-diphenylmethane diisocyanate</u>       | Acute Toxicity (Inhalation) Category 4, Skin Corrosion/Irritation Category 2, Serious Eye Damage/Eye Irritation Category 2, Sensitisation (Skin) Category 1, Sensitisation (Respiratory) Category 1, Carcinogenicity Category 2, Specific Target Organ Toxicity - Single Exposure (Respiratory Tract Irritation) Category 3 , Specific Target Organ Toxicity - Repeated Exposure Category 2; H332, H315, H319, H317, H334, H351, H335, H373 [2] | Eye Irrit. 2; H319: C ≥ 5 %   Skin Irrit. 2; H315: C ≥ 5 %   Resp. Sens. 1; H334: C ≥ 0,1 %   STOT SE 3; H335: C ≥ 5 % | 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

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Eye Contact</b>  | <p>If this product comes in contact with the eyes:</p> <ul style="list-style-type: none"> <li>▶ Immediately hold eyelids apart and flush the eye continuously with running water.</li> <li>▶ 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.</li> <li>▶ Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.</li> <li>▶ Transport to hospital or doctor without delay.</li> <li>▶ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.</li> </ul>                                                                                                                                                                                                                                                    |
| <b>Skin Contact</b> | <p>If skin contact occurs:</p> <ul style="list-style-type: none"> <li>▶ Immediately remove all contaminated clothing, including footwear.</li> <li>▶ Flush skin and hair with running water (and soap if available).</li> <li>▶ Seek medical attention in event of irritation.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Inhalation</b>   | <ul style="list-style-type: none"> <li>▶ If fumes or combustion products are inhaled remove from contaminated area.</li> <li>▶ Lay patient down. Keep warm and rested.</li> <li>▶ Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.</li> <li>▶ 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.</li> <li>▶ Transport to hospital, or doctor, without delay.</li> </ul> <p>Following uptake by inhalation, 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.</p> |
| <b>Ingestion</b>    | <ul style="list-style-type: none"> <li>▶ Immediately give a glass of water.</li> <li>▶ First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

## 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

For sub-chronic and chronic exposures to isocyanates:

- ▶ This material may be a potent pulmonary sensitiser 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, ventilatory support and an intravenous line.

Continued...

## Aro-Bond 905 (Aro-Bond DX9924)

- ▶ Treatment for asthma includes inhaled sympathomimetics (epinephrine [adrenalin], 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.

[Ellenhorn and Barceloux; Medical Toxicology]

**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.

## SECTION 5 Firefighting measures

### 5.1. 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.
- ▶ Foam.
- ▶ Dry chemical powder.
- ▶ BCF (where regulations permit).

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

|                             |                                                                                                                                          |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Fire Incompatibility</b> | ▶ Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------|

### 5.3. Advice for firefighters

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Fire Fighting</b>         | <ul style="list-style-type: none"> <li>▶ Alert Fire Brigade and tell them location and nature of hazard.</li> <li>▶ Wear full body protective clothing with breathing apparatus.</li> <li>▶ Prevent, by any means available, spillage from entering drains or water course.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Fire/Explosion Hazard</b> | <ul style="list-style-type: none"> <li>- Combustible.</li> <li>- Moderate fire hazard when exposed to heat or flame.</li> <li>- When heated to high temperatures decomposes rapidly generating vapour which pressurises and may then rupture containers with release of flammable and highly toxic isocyanate vapour.</li> </ul> <p>Combustion products include:</p> <ul style="list-style-type: none"> <li>• carbon dioxide (CO2)</li> <li>• isocyanates</li> <li>• hydrogen cyanide</li> <li>• and minor amounts of</li> <li>• nitrogen oxides (NOx)</li> <li>• other pyrolysis products typical of burning organic material.</li> </ul> <p>May emit corrosive fumes.</p> <p>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</p> |

## 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

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Minor Spills</b> | <ul style="list-style-type: none"> <li>▶ Remove all ignition sources.</li> <li>▶ Clean up all spills immediately.</li> <li>▶ Avoid breathing vapours and contact with skin and eyes.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Major Spills</b> | <ul style="list-style-type: none"> <li>▶ Liquid Isocyanates and high isocyanate vapour concentrations will penetrate seals on self contained breathing apparatus - SCBA should be used inside encapsulating suit where this exposure may occur.</li> </ul> <p>For isocyanate spills of less than 40 litres (2 m2):</p> <ul style="list-style-type: none"> <li>▶ 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.</li> <li>▶ Notify supervision and others as necessary.</li> <li>▶ Put on personal protective equipment (suitable respiratory protection, face and eye protection, protective suit, gloves and impermeable boots).</li> <li>▶ Avoid contamination with water, alkalis and detergent solutions.</li> <li>▶ Material reacts with water and generates gas, pressurises containers with even drum rupture resulting.</li> <li>▶ <b>DO NOT</b> reseal container if contamination is suspected.</li> </ul> <p>Moderate hazard.</p> <ul style="list-style-type: none"> <li>▶ Clear area of personnel and move upwind.</li> <li>▶ Alert Fire Brigade and tell them location and nature of hazard.</li> </ul> |

### 6.4. Reference to other sections

## Aro-Bond 905 (Aro-Bond DX9924)

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

## SECTION 7 Handling and storage

### 7.1. Precautions for safe handling

|                                      |                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Safe handling</b>                 | <ul style="list-style-type: none"> <li>▶ Avoid all personal contact, including inhalation.</li> <li>▶ Wear protective clothing when risk of exposure occurs.</li> <li>▶ Use in a well-ventilated area.</li> <li>▶ <b>DO NOT allow clothing wet with material to stay in contact with skin</b></li> </ul>                                                                                              |
| <b>Fire and explosion protection</b> | See section 5                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Other information</b>             | <p>for commercial quantities of isocyanates:</p> <ul style="list-style-type: none"> <li>· Isocyanates should be stored in adequately banded areas. Nothing else should be kept within the same bunding. Pre-polymers need not be segregated.</li> <li>▶ Store in original containers.</li> <li>▶ Keep containers securely sealed.</li> <li>▶ No smoking, naked lights or ignition sources.</li> </ul> |

### 7.2. Conditions for safe storage, including any incompatibilities

|                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Suitable container</b>                                                                                          | <ul style="list-style-type: none"> <li>▶ Metal can or drum</li> <li>▶ Packaging as recommended by manufacturer.</li> <li>▶ Check all containers are clearly labelled and free from leaks.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Storage incompatibility</b>                                                                                     | <ul style="list-style-type: none"> <li>▶ Avoid cross contamination between the two liquid parts of product (kit).</li> <li>▶ If two part products are mixed or allowed to mix in proportions other than manufacturer's recommendation, polymerisation with gelation and evolution of heat (exotherm) may occur.</li> <li>▶ This excess heat may generate toxic vapour</li> </ul> <p>Contains a six-membered heterocyclic ring.<br/>Six-membered heterocycles can be described as pi-deficient. Substitution by electronegative groups or additional nitrogen atoms in the ring significantly increase the pi-deficiency.</p> <p>For morpholines:<br/>Morpholine undergoes most chemical reactions typical for other secondary amines, though the presence of the ether oxygen withdraws electron density from the nitrogen, rendering it less nucleophilic (and less basic) than structurally similar secondary amines such as piperidine.</p> <ul style="list-style-type: none"> <li>· Avoid reaction with water, alcohols and detergent solutions. Isocyanates are electrophiles, and as such they are reactive toward a variety of nucleophiles including alcohols, amines, and even water. Upon treatment with an alcohol, an isocyanate forms a urethane linkage.</li> <li>▶ A range of exothermic decomposition energies for isocyanates is given as 20-30 kJ/mol.</li> <li>▶ The relationship between energy of decomposition and processing hazards has been the subject of discussion; it is suggested that values of energy released per unit of mass, rather than on a molar basis (J/g) be used in the assessment.</li> <li>▶ For example, in "open vessel processes" (with man-hole size openings, in an industrial setting), substances with exothermic decomposition energies below 500 J/g are unlikely to present a danger, whilst those in "closed vessel processes" (opening is a safety valve or bursting disk) present some danger where the decomposition energy exceeds 150 J/g.</li> </ul> |
| <b>Hazard categories in accordance with Regulation (EC) No 1272/2008</b>                                           | Not Available                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Qualifying quantity (tonnes) of dangerous substances as referred to in Article 3(10) for the application of</b> | Not Available                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

### 7.3. Specific end use(s)

See section 1.2

## SECTION 8 Exposure controls / personal protection

### 8.1. Control parameters

| <b>Ingredient</b>                                | <b>DNELs<br/>Exposure Pattern Worker</b>                                                                                                                                                                                                                                         | <b>PNECs<br/>Compartment</b>                                                                                                                                                                                                                                           |
|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| diphenylmethane diisocyanate (MDI) mixed isomers | Inhalation 0.05 mg/m <sup>3</sup> (Local, Chronic)<br>Inhalation 0.1 mg/m <sup>3</sup> (Local, Acute)<br><i>Inhalation 0.025 mg/m<sup>3</sup> (Local, Chronic) *</i><br><i>Inhalation 0.05 mg/m<sup>3</sup> (Local, Acute) *</i>                                                 | Not Available                                                                                                                                                                                                                                                          |
| 2,4'-diphenylmethane diisocyanate                | Inhalation 0.05 mg/m <sup>3</sup> (Local, Chronic)<br>Inhalation 0.1 mg/m <sup>3</sup> (Local, Acute)<br><i>Inhalation 0.025 mg/m<sup>3</sup> (Local, Chronic) *</i><br><i>Inhalation 0.05 mg/m<sup>3</sup> (Local, Acute) *</i>                                                 | 1 mg/L (Water (Fresh))<br>0.1 mg/L (Water - Intermittent release)<br>10 mg/L (Water (Marine))<br>1 mg/kg soil dw (Soil)<br>1 mg/L (STP)                                                                                                                                |
| 4,4'-diphenylmethane diisocyanate (MDI)          | Inhalation 0.05 mg/m <sup>3</sup> (Local, Chronic)<br>Inhalation 0.1 mg/m <sup>3</sup> (Local, Acute)<br><i>Inhalation 0.025 mg/m<sup>3</sup> (Local, Chronic) *</i><br><i>Inhalation 0.05 mg/m<sup>3</sup> (Local, Acute) *</i>                                                 | 1 mg/L (Water (Fresh))<br>0.1 mg/L (Water - Intermittent release)<br>10 mg/L (Water (Marine))<br>1 mg/kg soil dw (Soil)<br>1 mg/L (STP)                                                                                                                                |
| 2,2'-dimorpholinodiethyl ether                   | Dermal 1 mg/kg bw/day (Systemic, Chronic)<br>Inhalation 7.28 mg/m <sup>3</sup> (Systemic, Chronic)<br><i>Dermal 0.5 mg/kg bw/day (Systemic, Chronic) *</i><br><i>Inhalation 1.8 mg/m<sup>3</sup> (Systemic, Chronic) *</i><br><i>Oral 0.5 mg/kg bw/day (Systemic, Chronic) *</i> | 0.1 mg/L (Water (Fresh))<br>0.01 mg/L (Water - Intermittent release)<br>1 mg/L (Water (Marine))<br>8.2 mg/kg sediment dw (Sediment (Fresh Water))<br>0.82 mg/kg sediment dw (Sediment (Marine))<br>1.58 mg/kg soil dw (Soil)<br>100 mg/L (STP)<br>10 mg/kg food (Oral) |

Continued...

| Ingredient                        | DNELs<br>Exposure Pattern Worker                                                                                                                                     | PNECs<br>Compartment                                                                                                                    |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| 2,2'-diphenylmethane diisocyanate | Inhalation 0.05 mg/m³ (Local, Chronic)<br>Inhalation 0.1 mg/m³ (Local, Acute)<br>Inhalation 0.025 mg/m³ (Local, Chronic) *<br>Inhalation 0.05 mg/m³ (Local, Acute) * | 1 mg/L (Water (Fresh))<br>0.1 mg/L (Water - Intermittent release)<br>10 mg/L (Water (Marine))<br>1 mg/kg soil dw (Soil)<br>1 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). | diphenylmethane diisocyanate (MDI) mixed isomers | Isocyanates, all (as -NCO) Except methyl isocyanate | 0.02 mg/m3 | 0.07 mg/m3 | Not Available | Sen   |
| UK Workplace Exposure Limits (WELs). | 2,4'-diphenylmethane diisocyanate                | Isocyanates, all (as -NCO) Except methyl isocyanate | 0.02 mg/m3 | 0.07 mg/m3 | Not Available | Sen   |
| UK Workplace Exposure Limits (WELs). | 4,4'-diphenylmethane diisocyanate (MDI)          | Isocyanates, all (as -NCO) Except methyl isocyanate | 0.02 mg/m3 | 0.07 mg/m3 | Not Available | Sen   |
| UK Workplace Exposure Limits (WELs). | 2,2'-diphenylmethane diisocyanate                | Isocyanates, all (as -NCO) Except methyl isocyanate | 0.02 mg/m3 | 0.07 mg/m3 | Not Available | Sen   |

Emergency Limits

| Ingredient                                       | TEEL-1     | TEEL-2        | TEEL-3        |
|--------------------------------------------------|------------|---------------|---------------|
| diphenylmethane diisocyanate (MDI) mixed isomers | 29 mg/m3   | 40 mg/m3      | 240 mg/m3     |
| 4,4'-diphenylmethane diisocyanate (MDI)          | 0.45 mg/m3 | Not Available | Not Available |
| 4,4'-diphenylmethane diisocyanate (MDI)          | 29 mg/m3   | 40 mg/m3      | 240 mg/m3     |

| Ingredient                                       | Original IDLH | Revised IDLH  |
|--------------------------------------------------|---------------|---------------|
| diphenylmethane diisocyanate (MDI) mixed isomers | Not Available | Not Available |
| 2,4'-diphenylmethane diisocyanate                | Not Available | Not Available |
| 4,4'-diphenylmethane diisocyanate (MDI)          | 75 mg/m3      | Not Available |
| 2,2'-dimorpholinodiethyl ether                   | Not Available | Not Available |
| 2,2'-diphenylmethane diisocyanate                | Not Available | Not Available |

Occupational Exposure Banding

| Ingredient                     | Occupational Exposure Band Rating                                                                                                                                                                                                                                                                                                                                  | Occupational Exposure Band Limit |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| 2,2'-dimorpholinodiethyl ether | E                                                                                                                                                                                                                                                                                                                                                                  | ≤ 0.1 ppm                        |
| Notes:                         | Occupational exposure banding is a process of assigning chemicals into specific categories or bands based on a chemical's potency and the adverse health outcomes associated with exposure. The output of this process is an occupational exposure band (OEB), which corresponds to a range of exposure concentrations that are expected to protect worker health. |                                  |

8.2. Exposure controls

|                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8.2.1. Appropriate engineering controls | <ul style="list-style-type: none"><li>▶ All processes in which isocyanates are used should be enclosed wherever possible.</li><li>▶ Total enclosure, accompanied by good general ventilation, should be used to keep atmospheric concentrations below the relevant exposure standards.</li><li>▶ If total enclosure of the process is not feasible, local exhaust ventilation may be necessary.</li></ul> 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:<br>Process controls which involve changing the way a job activity or process is done to reduce the risk. |
| 8.2.2. Personal protection              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Eye and face protection                 | <ul style="list-style-type: none"><li>▶ Safety glasses with side shields.</li><li>▶ Chemical goggles.</li><li>▶ Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Skin protection                         | See Hand protection below                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Hands/feet protection                   | <b>NOTE:</b> <ul style="list-style-type: none"><li>▶ 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.</li><li>▶ Contaminated leather items, such as shoes, belts and watch-bands should be removed and destroyed.</li></ul> 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.                                                                                                                                       |

## Aro-Bond 905 (Aro-Bond DX9924)

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                         | <p>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.</p> <ul style="list-style-type: none"> <li>Do NOT wear natural rubber (latex gloves).</li> <li>Isocyanate resistant materials include Teflon, Viton, nitrile rubber and some PVA gloves.</li> <li>Protective gloves and overalls should be worn as specified in the appropriate national standard.</li> <li>Contaminated garments should be removed promptly and should not be re-used until they have been decontaminated.</li> <li><b>DO NOT use skin cream unless necessary and then use only minimum amount.</b></li> <li>Isocyanate vapour may be absorbed into skin cream and this increases hazard.</li> </ul> |
| <b>Body protection</b>  | See Other protection below                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Other protection</b> | <p>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 of any personal protective equipment, is essential.</p> <ul style="list-style-type: none"> <li>Overalls.</li> <li>P.V.C apron.</li> <li>Barrier cream.</li> </ul>                                                                     |

## 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:

Aro-Bond 905 (Aro-Bond DX9924)

| Material   | CPI |
|------------|-----|
| PE/EVAL/PE | A   |

\* 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

Full face respirator with supplied air.

- 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

For spraying or operations which might generate aerosols:

Full face respirator with supplied air.

- In certain circumstances, personal protection of the individual employee is necessary. Personal protective devices should be regarded as being supplementary to substitution and engineering control and should not be used in preference to them as they do nothing to eliminate the hazard.
- However, in some situations, minimising exposure to isocyanates by enclosure and ventilation is not possible, and occupational exposure standards may be exceeded, particularly during on-site mixing of paints, spray-painting, foaming and maintenance of machine and ventilation systems. In these situations, air-line respirators or self-contained breathing apparatus complying with the appropriate national standard must be used.
- Organic vapour respirators with particulate pre- filters and powered, air-purifying respirators are NOT suitable.**
- Personal protective equipment must be appropriately selected, individually fitted and workers trained in their correct use and maintenance. Personal protective equipment must be regularly checked and maintained to ensure that the worker is being protected.
- Air- line respirators or self-contained breathing apparatus complying with the appropriate national standard should be used during the clean-up of spills and the repair or clean-up of contaminated equipment and similar situations which cause emergency exposures to hazardous atmospheric concentrations of isocyanate.

## 8.2.3. Environmental exposure controls

See section 12

## SECTION 9 Physical and chemical properties

## 9.1. Information on basic physical and chemical properties

|                                                     |               |                                                |               |
|-----------------------------------------------------|---------------|------------------------------------------------|---------------|
| <b>Appearance</b>                                   | Cream paste   |                                                |               |
| <b>Physical state</b>                               | Liquid        | <b>Relative density (Water = 1)</b>            | 1.07          |
| <b>Odour</b>                                        | Slight        | <b>Partition coefficient n-octanol / water</b> | Not Available |
| <b>Odour threshold</b>                              | Not Available | <b>Auto-ignition temperature (°C)</b>          | >200          |
| <b>pH (as supplied)</b>                             | Not Available | <b>Decomposition temperature (°C)</b>          | >140          |
| <b>Melting point / freezing point (°C)</b>          | Not Available | <b>Viscosity (cSt)</b>                         | Not Available |
| <b>Initial boiling point and boiling range (°C)</b> | >200          | <b>Molecular weight (g/mol)</b>                | Not Available |
| <b>Flash point (°C)</b>                             | Not Available | <b>Taste</b>                                   | Not Available |
| <b>Evaporation rate</b>                             | Not Available | <b>Explosive properties</b>                    | Not Available |
| <b>Flammability</b>                                 | Not Available | <b>Oxidising properties</b>                    | Not Available |
| <b>Upper Explosive Limit (%)</b>                    | Not Available | <b>Surface Tension (dyn/cm or mN/m)</b>        | Not Available |
| <b>Lower Explosive Limit (%)</b>                    | Not Available | <b>Volatile Component (%vol)</b>               | Not Available |

Continued...



## Aro-Bond 905 (Aro-Bond DX9924)

|                          |               |                                   |               |
|--------------------------|---------------|-----------------------------------|---------------|
| Vapour pressure (kPa)    | Not Available | Gas group                         | Not Available |
| Solubility in water      | Immiscible    | pH as a solution (1%)             | Not Available |
| Vapour density (Air = 1) | Not Available | VOC g/L                           | 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                 | <ul style="list-style-type: none"> <li>Unstable in the presence of incompatible materials.</li> <li>Product is considered stable.</li> <li>Hazardous polymerisation will not occur.</li> <li>Presence of elevated temperatures.</li> </ul> |
| 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

|              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Inhaled      | The material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage. 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. Inhalation of aerosols (mists, fumes), generated by the material during the course of normal handling, may be harmful.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Ingestion    | The material has <b>NOT</b> been classified by EC Directives or other classification systems as "harmful by ingestion". This is because of the lack of corroborating animal or human evidence. Accidental ingestion of the material may be damaging to the health of the individual.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Skin Contact | This material can cause inflammation of the skin on contact in some persons. The material may accentuate any pre-existing dermatitis condition. Skin contact with the material may damage the health of the individual; systemic effects may result following absorption. 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          | This material may produce eye irritation in some persons and produce eye damage 24 hours or more after instillation. Moderate inflammation may be expected with redness; conjunctivitis may occur with prolonged exposure.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Chronic      | There has been concern that this material can cause cancer or mutations, but there is not enough data to make an assessment. Long-term exposure to respiratory irritants may result in airways disease, involving difficulty breathing and related whole-body problems. Inhaling 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. Toxic: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed. 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. Long term exposure to morpholine and some related compounds may produce liver and kidney changes. Animal testing has shown evidence of chronic nose irritation and inflammation, and damage to the eye. 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. The chemistry of reaction of isocyanates, as evidenced by MDI, in biological milieu is such that in the event of a true exposure of small MDI doses to the mouth, reactions will commence at once with biological macromolecules in the buccal region and will continue along the digestive tract prior to reaching the stomach. Reaction products will be a variety of polyureas and macromolecular conjugates with for example mucus, proteins and cell components. |

|                                                  |                                                   |                                                                                                               |
|--------------------------------------------------|---------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| Aro-Bond 905 (Aro-Bond DX9924)                   | TOXICITY                                          | IRRITATION                                                                                                    |
|                                                  | Not Available                                     | Not Available                                                                                                 |
| diphenylmethane diisocyanate (MDI) mixed isomers | TOXICITY                                          | IRRITATION                                                                                                    |
|                                                  | Dermal (rabbit) LD50: >6200 mg/kg <sup>[2]</sup>  | Skin (rabbit): 500 mg /24 hours Dermal Sensitiser *Respiratory Sensitiser (g.pig) *[* = Bayer CCINFO 2133615] |
|                                                  | Inhalation(Rat) LC50: 0.369 mg/l4h <sup>[2]</sup> |                                                                                                               |
| 2,4'-diphenylmethane diisocyanate                | Oral (Rat) LD50: >2000 mg/kg <sup>[2]</sup>       |                                                                                                               |
|                                                  | TOXICITY                                          | IRRITATION                                                                                                    |
|                                                  | Not Available                                     | Not Available                                                                                                 |

Continued...



## Aro-Bond 905 (Aro-Bond DX9924)

| 4,4'-diphenylmethane diisocyanate (MDI) | TOXICITY                                          | IRRITATION                                                                                                    |
|-----------------------------------------|---------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
|                                         | Dermal (rabbit) LD50: >6200 mg/kg <sup>[2]</sup>  | Eye: no adverse effect observed (not irritating) <sup>[1]</sup>                                               |
|                                         | Inhalation(Rat) LC50: 0.368 mg/L4h <sup>[1]</sup> | Skin (rabbit): 500 mg /24 hours Dermal Sensitiser *Respiratory Sensitiser (g.pig) *[* = Bayer CCINFO 2133615] |
| 2,2'-dimorpholinodiethyl ether          | TOXICITY                                          | IRRITATION                                                                                                    |
|                                         | Dermal (rabbit) LD50: 746.24 mg/kg <sup>[1]</sup> | Eye (rabbit): irritant OECD 405                                                                               |
|                                         | Oral (Rat) LD50: >2000 mg/kg <sup>[1]</sup>       | Eye: adverse effect observed (irritating) <sup>[1]</sup>                                                      |
| 2,2'-diphenylmethane diisocyanate       | TOXICITY                                          | IRRITATION                                                                                                    |
|                                         | Inhalation(Rat) LC50: 0.527 mg/L4h <sup>[1]</sup> | Skin (rabbit): irritant OECD 404                                                                              |
|                                         |                                                   | Skin: no adverse effect observed (not irritating) <sup>[1]</sup>                                              |

**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

|                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4,4'-DIPHENYLMETHANE DIISOCYANATE (MDI)                                                                                                                                                                                              | Inhalation (human) TCLo: 0.13 ppm/30 mins Eye (rabbit): 0.10 mg moderate                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 2,2'-DIMORPHOLINODIETHYL ETHER                                                                                                                                                                                                       | <p>Overexposure to most of these materials may cause adverse health effects.</p> <p>Many amine-based compounds can cause release of histamines, which, in turn, can trigger allergic and other physiological effects, including constriction of the bronchi or asthma and inflammation of the cavity of the nose. Whole-body symptoms include headache, nausea, faintness, anxiety, a decrease in blood pressure, rapid heartbeat, itching, reddening of the skin, urticaria (hives) and swelling of the face, which are usually transient.</p> <p>There are generally four routes of possible or potential exposure: inhalation, skin contact, eye contact, and swallowing.</p> <p>Inhalation: Inhaling vapours may result in moderate to severe irritation of the tissues of the nose and throat and can irritate the lungs. Higher concentrations of certain amines can produce severe respiratory irritation, characterized by discharge from the nose, coughing, difficulty in breathing and chest pain. No experimental evidence available for genotoxicity in vitro (Ames test negative). *BASF</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Aro-Bond 905 (Aro-Bond DX9924) & DIPHENYLMETHANE DIISOCYANATE (MDI) MIXED ISOMERS & 2,4'-DIPHENYLMETHANE DIISOCYANATE & 4,4'-DIPHENYLMETHANE DIISOCYANATE (MDI) & 2,2'-DIPHENYLMETHANE DIISOCYANATE                                  | <p>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.</p> <p>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.</p> <p>Attention should be paid to atopic diathesis, characterised by increased susceptibility to nasal inflammation, asthma and eczema.</p> <p>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.</p> <p>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.</p> |
| Aro-Bond 905 (Aro-Bond DX9924) & DIPHENYLMETHANE DIISOCYANATE (MDI) MIXED ISOMERS & 2,4'-DIPHENYLMETHANE DIISOCYANATE & 4,4'-DIPHENYLMETHANE DIISOCYANATE (MDI) & 2,2'-DIMORPHOLINODIETHYL ETHER & 2,2'-DIPHENYLMETHANE DIISOCYANATE | <p>The following information refers to contact allergens as a group and may not be specific to this product.</p> <p>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.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| DIPHENYLMETHANE DIISOCYANATE (MDI) MIXED ISOMERS & 2,4'-DIPHENYLMETHANE DIISOCYANATE & 2,2'-DIPHENYLMETHANE DIISOCYANATE                                                                                                             | No significant acute toxicological data identified in literature search.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| DIPHENYLMETHANE DIISOCYANATE (MDI) MIXED ISOMERS & 4,4'-DIPHENYLMETHANE DIISOCYANATE (MDI)                                                                                                                                           | <p>The material may produce moderate eye irritation leading to inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.</p> <p>The substance is classified by IARC as Group 3:</p> <p><b>NOT</b> classifiable as to its carcinogenicity to humans.</p> <p>Evidence of carcinogenicity may be inadequate or limited in animal testing.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| DIPHENYLMETHANE DIISOCYANATE (MDI) MIXED ISOMERS & 2,4'-DIPHENYLMETHANE DIISOCYANATE & 4,4'-DIPHENYLMETHANE DIISOCYANATE (MDI) & 2,2'-DIPHENYLMETHANE DIISOCYANATE                                                                   | Aromatic and aliphatic diisocyanates may cause airway toxicity and skin sensitization. Monomers and prepolymers exhibit similar respiratory effect. Of the several members of diisocyanates tested on experimental animals by inhalation and oral exposure, some caused cancer while others produced a harmless outcome.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

Aro-Bond 905 (Aro-Bond DX9924)

|                                   |   |                          |   |
|-----------------------------------|---|--------------------------|---|
| 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 Disruption 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

|                                                                                                                                                                                                                                                                                                                                  |               |                    |                               |                  |               |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|--------------------|-------------------------------|------------------|---------------|
| Aro-Bond 905 (Aro-Bond DX9924)                                                                                                                                                                                                                                                                                                   | Endpoint      | Test Duration (hr) | Species                       | Value            | Source        |
|                                                                                                                                                                                                                                                                                                                                  | Not Available | Not Available      | Not Available                 | Not Available    | Not Available |
| diphenylmethane diisocyanate (MDI) mixed isomers                                                                                                                                                                                                                                                                                 | Endpoint      | Test Duration (hr) | Species                       | Value            | Source        |
|                                                                                                                                                                                                                                                                                                                                  | NOEC(ECx)     | 504h               | Crustacea                     | >=10mg/l         | 1             |
|                                                                                                                                                                                                                                                                                                                                  | EC50          | 96h                | Algae or other aquatic plants | 3230mg/l         | 1             |
|                                                                                                                                                                                                                                                                                                                                  | LC50          | 96h                | Fish                          | 95.24-134.37mg/l | Not Available |
| 2,4'-diphenylmethane diisocyanate                                                                                                                                                                                                                                                                                                | Endpoint      | Test Duration (hr) | Species                       | Value            | Source        |
|                                                                                                                                                                                                                                                                                                                                  | NOEC(ECx)     | 504h               | Crustacea                     | >=10mg/l         | 2             |
| 4,4'-diphenylmethane diisocyanate (MDI)                                                                                                                                                                                                                                                                                          | Endpoint      | Test Duration (hr) | Species                       | Value            | Source        |
|                                                                                                                                                                                                                                                                                                                                  | LC50          | 96h                | Fish                          | 95.24-134.37mg/l | Not Available |
|                                                                                                                                                                                                                                                                                                                                  | BCF           | 672h               | Fish                          | 61-150           | 7             |
|                                                                                                                                                                                                                                                                                                                                  | EC50          | 48h                | Crustacea                     | >100mg/l         | 2             |
|                                                                                                                                                                                                                                                                                                                                  | NOEC(ECx)     | 504h               | Crustacea                     | >=10mg/l         | 2             |
| 2,2'-dimorpholinodiethyl ether                                                                                                                                                                                                                                                                                                   | Endpoint      | Test Duration (hr) | Species                       | Value            | Source        |
|                                                                                                                                                                                                                                                                                                                                  | LC50          | 96h                | Fish                          | >2150mg/l        | 2             |
|                                                                                                                                                                                                                                                                                                                                  | EC50          | 48h                | Crustacea                     | >100mg/l         | 2             |
|                                                                                                                                                                                                                                                                                                                                  | NOEC(ECx)     | 48h                | Crustacea                     | 100mg/l          | 2             |
|                                                                                                                                                                                                                                                                                                                                  | EC50          | 72h                | Algae or other aquatic plants | >100mg/l         | 2             |
| 2,2'-diphenylmethane diisocyanate                                                                                                                                                                                                                                                                                                | Endpoint      | Test Duration (hr) | Species                       | Value            | Source        |
|                                                                                                                                                                                                                                                                                                                                  | NOEC(ECx)     | 504h               | Crustacea                     | >=10mg/l         | 2             |
| Legend: Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data |               |                    |                               |                  |               |

For Isocyanate Monomers:  
Environmental Fate: Isocyanates, (di- and polyfunctional isocyanates), are commonly used to make various polymers, such as polyurethanes. Polyurethanes find significant application in the manufacture of rigid and flexible foams. They are also used in the production of adhesives, elastomers, and coatings.  
**DO NOT discharge into sewer or waterways.**

12.2. Persistence and degradability

| Ingredient                              | Persistence: Water/Soil  | Persistence: Air            |
|-----------------------------------------|--------------------------|-----------------------------|
| 2,4'-diphenylmethane diisocyanate       | HIGH                     | HIGH                        |
| 4,4'-diphenylmethane diisocyanate (MDI) | LOW (Half-life = 1 days) | LOW (Half-life = 0.24 days) |
| 2,2'-dimorpholinodiethyl ether          | HIGH                     | HIGH                        |
| 2,2'-diphenylmethane diisocyanate       | HIGH                     | HIGH                        |

12.3. Bioaccumulative potential

| Ingredient                                       | Bioaccumulation        |
|--------------------------------------------------|------------------------|
| diphenylmethane diisocyanate (MDI) mixed isomers | LOW (BCF = 15)         |
| 2,4'-diphenylmethane diisocyanate                | HIGH (LogKOW = 5.4481) |
| 4,4'-diphenylmethane diisocyanate (MDI)          | LOW (BCF = 15)         |
| 2,2'-dimorpholinodiethyl ether                   | LOW (LogKOW = -1.3122) |
| 2,2'-diphenylmethane diisocyanate                | HIGH (LogKOW = 5.4481) |

12.4. Mobility in soil

| Ingredient                              | Mobility           |
|-----------------------------------------|--------------------|
| 2,4'-diphenylmethane diisocyanate       | LOW (KOC = 384000) |
| 4,4'-diphenylmethane diisocyanate (MDI) | LOW (KOC = 376200) |
| 2,2'-dimorpholinodiethyl ether          | LOW (KOC = 10)     |
| 2,2'-diphenylmethane diisocyanate       | LOW (KOC = 392000) |

12.5. Results of PBT and vPvB assessment

|                         | P             | B             | T             |
|-------------------------|---------------|---------------|---------------|
| Relevant available data | Not Available | Not Available | Not Available |
| PBT                     | ✗             | ✗             | ✗             |
| vPvB                    | ✗             | ✗             | ✗             |
| PBT Criteria fulfilled? | No            |               |               |
| vPvB                    | No            |               |               |

12.6. Endocrine Disruption 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 | <ul style="list-style-type: none"><li>Containers may still present a chemical hazard/ danger when empty.</li><li>Return to supplier for reuse/ recycling if possible.</li></ul> Otherwise: <ul style="list-style-type: none"><li>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.</li></ul> 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. <ul style="list-style-type: none"><li><b>DO NOT allow wash water from cleaning or process equipment to enter drains.</b></li><li>It may be necessary to collect all wash water for treatment before disposal.</li><li>In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first.</li><li><b>DO NOT recycle spilled material.</b></li><li>Consult State Land Waste Management Authority for disposal.</li><li>Neutralise spill material carefully and decontaminate empty containers and spill residues with 10% ammonia solution plus detergent or a proprietary decontaminant prior to disposal.</li></ul> |
| Waste treatment options      | Not Available                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Sewage disposal options      | Not Available                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

SECTION 14 Transport information

Labels Required

|                  |                |
|------------------|----------------|
| Marine Pollutant | NO             |
| HAZCHEM          | Not Applicable |

Land transport (ADR): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

|                                  |                                                                                                               |       |                |         |                |
|----------------------------------|---------------------------------------------------------------------------------------------------------------|-------|----------------|---------|----------------|
| 14.1. UN number                  | Not Applicable                                                                                                |       |                |         |                |
| 14.2. UN proper shipping name    | Not Applicable                                                                                                |       |                |         |                |
| 14.3. Transport hazard class(es) | <table><tr><td>Class</td><td>Not Applicable</td></tr><tr><td>Subrisk</td><td>Not Applicable</td></tr></table> | Class | Not Applicable | Subrisk | Not Applicable |
| Class                            | Not Applicable                                                                                                |       |                |         |                |
| Subrisk                          | Not Applicable                                                                                                |       |                |         |                |

## Aro-Bond 905 (Aro-Bond DX9924)

|                                    |                                |                |
|------------------------------------|--------------------------------|----------------|
| 14.4. Packing group                | Not Applicable                 |                |
| 14.5. Environmental hazard         | Not Applicable                 |                |
| 14.6. Special precautions for user | Hazard identification (Kemler) | Not Applicable |
|                                    | Classification code            | Not Applicable |
|                                    | Hazard Label                   | Not Applicable |
|                                    | Special provisions             | Not Applicable |
|                                    | Limited quantity               | Not Applicable |
|                                    | Tunnel Restriction Code        | Not Applicable |

## Air transport (ICAO-IATA / DGR): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

|                                    |                                                           |                |
|------------------------------------|-----------------------------------------------------------|----------------|
| 14.1. UN number                    | Not Applicable                                            |                |
| 14.2. UN proper shipping name      | Not Applicable                                            |                |
| 14.3. Transport hazard class(es)   | ICAO/IATA Class                                           | Not Applicable |
|                                    | ICAO / IATA Subrisk                                       | Not Applicable |
|                                    | ERG Code                                                  | Not Applicable |
| 14.4. Packing group                | Not Applicable                                            |                |
| 14.5. Environmental hazard         | Not Applicable                                            |                |
| 14.6. Special precautions for user | Special provisions                                        | Not Applicable |
|                                    | Cargo Only Packing Instructions                           | Not Applicable |
|                                    | Cargo Only Maximum Qty / Pack                             | Not Applicable |
|                                    | Passenger and Cargo Packing Instructions                  | Not Applicable |
|                                    | Passenger and Cargo Maximum Qty / Pack                    | Not Applicable |
|                                    | Passenger and Cargo Limited Quantity Packing Instructions | Not Applicable |
|                                    | Passenger and Cargo Limited Maximum Qty / Pack            | Not Applicable |

## Sea transport (IMDG-Code / GGVSee): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

|                                    |                    |                |
|------------------------------------|--------------------|----------------|
| 14.1. UN number                    | Not Applicable     |                |
| 14.2. UN proper shipping name      | Not Applicable     |                |
| 14.3. Transport hazard class(es)   | IMDG Class         | Not Applicable |
|                                    | IMDG Subrisk       | Not Applicable |
| 14.4. Packing group                | Not Applicable     |                |
| 14.5. Environmental hazard         | Not Applicable     |                |
| 14.6. Special precautions for user | EMS Number         | Not Applicable |
|                                    | Special provisions | Not Applicable |
|                                    | Limited Quantities | Not Applicable |

## Inland waterways transport (ADN): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

|                                    |                     |                |
|------------------------------------|---------------------|----------------|
| 14.1. UN number                    | Not Applicable      |                |
| 14.2. UN proper shipping name      | Not Applicable      |                |
| 14.3. Transport hazard class(es)   | Not Applicable      | Not Applicable |
| 14.4. Packing group                | Not Applicable      |                |
| 14.5. Environmental hazard         | Not Applicable      |                |
| 14.6. Special precautions for user | Classification code | Not Applicable |
|                                    | Special provisions  | Not Applicable |
|                                    | Limited quantity    | Not Applicable |
|                                    | Equipment required  | Not Applicable |
|                                    | Fire cones number   | Not Applicable |

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

Not Applicable

## 14.8. Transport in bulk in accordance with MARPOL Annex V and the IMSBC Code

| Product name                 | Group         |
|------------------------------|---------------|
| diphenylmethane diisocyanate | Not Available |

Continued...

| Product name                            | Group         |
|-----------------------------------------|---------------|
| (MDI) mixed isomers                     |               |
| 2,4'-diphenylmethane diisocyanate       | Not Available |
| 4,4'-diphenylmethane diisocyanate (MDI) | Not Available |
| 2,2'-dimorpholinodiethyl ether          | Not Available |
| 2,2'-diphenylmethane diisocyanate       | Not Available |

14.9. Transport in bulk in accordance with the IGC Code

| Product name                                     | Ship Type     |
|--------------------------------------------------|---------------|
| diphenylmethane diisocyanate (MDI) mixed isomers | Not Available |
| 2,4'-diphenylmethane diisocyanate                | Not Available |
| 4,4'-diphenylmethane diisocyanate (MDI)          | Not Available |
| 2,2'-dimorpholinodiethyl ether                   | Not Available |
| 2,2'-diphenylmethane diisocyanate                | Not Available |

SECTION 15 Regulatory information

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

|                                                                                                                                |                                                               |
|--------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
| diphenylmethane diisocyanate (MDI) mixed isomers is found on the following regulatory lists                                    |                                                               |
| Great Britain GB mandatory classification and labelling list (GB MCL)                                                          | UK Workplace Exposure Limits (WELs).                          |
| 2,4'-diphenylmethane diisocyanate is found on the following regulatory lists                                                   |                                                               |
| Great Britain GB mandatory classification and labelling list (GB MCL)                                                          | UK Workplace Exposure Limits (WELs).                          |
| 4,4'-diphenylmethane diisocyanate (MDI) is found on the following regulatory lists                                             |                                                               |
| Great Britain GB mandatory classification and labelling list (GB MCL)                                                          | UK REACH grandfathered registrations notified substances list |
| International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Not Classified as Carcinogenic | UK Workplace Exposure Limits (WELs).                          |
| 2,2'-dimorpholinodiethyl ether is found on the following regulatory lists                                                      |                                                               |
| Not Applicable                                                                                                                 |                                                               |
| 2,2'-diphenylmethane diisocyanate is found on the following regulatory lists                                                   |                                                               |
| Great Britain GB mandatory classification and labelling list (GB MCL)                                                          | UK Workplace Exposure Limits (WELs).                          |

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 | Not Available |
|-----------------|---------------|

15.2. Chemical safety assessment

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

ECHA SUMMARY

| Ingredient                                       | CAS number | Index No     | ECHA Dossier  |
|--------------------------------------------------|------------|--------------|---------------|
| diphenylmethane diisocyanate (MDI) mixed isomers | 26447-40-5 | 615-005-00-9 | Not Available |

| Harmonisation (C&L Inventory) | Hazard Class and Category Code(s)                                                                                              | Pictograms Signal Word Code(s) | Hazard Statement Code(s)                             |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------|--------------------------------|------------------------------------------------------|
| 1                             | Skin Irrit. 2; Skin Sens. 1; Eye Irrit. 2; Acute Tox. 2; Resp. Sens. 1; STOT SE 3; Carc. 2; STOT RE 2                          | GHS08; GHS06; Dgr              | H315; H317; H319; H330; H334; H335; H351; H373       |
| 2                             | Skin Irrit. 2; Skin Sens. 1; Eye Irrit. 2; Acute Tox. 2; Resp. Sens. 1; STOT SE 3; Carc. 2; STOT RE 2; STOT SE 3; Acute Tox. 4 | GHS08; GHS06; Dgr              | H315; H317; H319; H330; H334; H335; H351; H373; H370 |

Harmonisation Code 1 = The most prevalent classification. Harmonisation Code 2 = The most severe classification.

| Ingredient                        | CAS number | Index No     | ECHA Dossier  |
|-----------------------------------|------------|--------------|---------------|
| 2,4'-diphenylmethane diisocyanate | 5873-54-1  | 615-005-00-9 | Not Available |

| Harmonisation (C&L Inventory) | Hazard Class and Category Code(s)                                       | Pictograms Signal Word Code(s) | Hazard Statement Code(s)      |
|-------------------------------|-------------------------------------------------------------------------|--------------------------------|-------------------------------|
| 1                             | Skin Irrit. 2; Skin Sens. 1; Eye Irrit. 2; Acute Tox. 4; Resp. Sens. 1; | GHS08; Dgr                     | H315; H317; H319; H332; H334; |

Harmonisation Code 1 = The most prevalent classification. Harmonisation Code 2 = The most severe classification.

Aro-Bond 905 (Aro-Bond DX9924)

| Harmonisation (C&L Inventory) | Hazard Class and Category Code(s)                                                                     | Pictograms Signal Word Code(s) | Hazard Statement Code(s)                       |
|-------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------|------------------------------------------------|
|                               | STOT SE 3; Carc. 2; STOT RE 2                                                                         |                                | H335; H351; H373                               |
| 2                             | Skin Irrit. 2; Skin Sens. 1; Eye Irrit. 2; Acute Tox. 4; Resp. Sens. 1; STOT SE 3; Carc. 2; STOT RE 2 | GHS08; Dgr                     | H315; H317; H319; H332; H334; H335; H351; H373 |

Harmonisation Code 1 = The most prevalent classification. Harmonisation Code 2 = The most severe classification.

| Ingredient                              | CAS number | Index No     | ECHA Dossier  |
|-----------------------------------------|------------|--------------|---------------|
| 4,4'-diphenylmethane diisocyanate (MDI) | 101-68-8   | 615-005-00-9 | Not Available |

| Harmonisation (C&L Inventory) | Hazard Class and Category Code(s)                                                                                              | Pictograms Signal Word Code(s) | Hazard Statement Code(s)                                         |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------|--------------------------------|------------------------------------------------------------------|
| 1                             | Skin Irrit. 2; Skin Sens. 1; Eye Irrit. 2; Acute Tox. 4; Resp. Sens. 1; STOT SE 3; Carc. 2; STOT RE 2                          | GHS08; Dgr                     | H315; H317; H319; H332; H334; H335; H351; H373                   |
| 2                             | Skin Sens. 1B; Eye Irrit. 2; Resp. Sens. 1; STOT SE 3; Carc. 2; STOT SE 3; Muta. 2; Acute Tox. 2; STOT RE 1; Aquatic Chronic 4 | GHS08; Dgr; GHS06              | H315; H317; H319; H334; H335; H351; H370; H330; H341; H372; H413 |
| 1                             | Skin Irrit. 2; Skin Sens. 1; Eye Irrit. 2; Acute Tox. 2; Resp. Sens. 1; STOT SE 3; Carc. 2; STOT RE 2                          | GHS08; GHS06; Dgr              | H315; H317; H319; H330; H334; H335; H351; H373                   |
| 2                             | Skin Irrit. 2; Skin Sens. 1; Eye Irrit. 2; Acute Tox. 2; Resp. Sens. 1; STOT SE 3; Carc. 2; STOT RE 2; STOT SE 3; Acute Tox. 4 | GHS08; GHS06; Dgr              | H315; H317; H319; H330; H334; H335; H351; H373; H370             |

Harmonisation Code 1 = The most prevalent classification. Harmonisation Code 2 = The most severe classification.

| Ingredient                     | CAS number | Index No      | ECHA Dossier  |
|--------------------------------|------------|---------------|---------------|
| 2,2'-dimorpholinodiethyl ether | 6425-39-4  | Not Available | Not Available |

| Harmonisation (C&L Inventory) | Hazard Class and Category Code(s)         | Pictograms Signal Word Code(s) | Hazard Statement Code(s)     |
|-------------------------------|-------------------------------------------|--------------------------------|------------------------------|
| 1                             | Eye Irrit. 2                              | GHS07; Wng                     | H319                         |
| 2                             | Eye Irrit. 2; Skin Irrit. 2; Acute Tox. 4 | GHS07; Wng; GHS09              | H319; H315; H302; H413; H317 |

Harmonisation Code 1 = The most prevalent classification. Harmonisation Code 2 = The most severe classification.

| Ingredient                        | CAS number | Index No     | ECHA Dossier  |
|-----------------------------------|------------|--------------|---------------|
| 2,2'-diphenylmethane diisocyanate | 2536-05-2  | 615-005-00-9 | Not Available |

| Harmonisation (C&L Inventory) | Hazard Class and Category Code(s)                                                                     | Pictograms Signal Word Code(s) | Hazard Statement Code(s)                       |
|-------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------|------------------------------------------------|
| 1                             | Skin Irrit. 2; Skin Sens. 1; Eye Irrit. 2; Acute Tox. 4; Resp. Sens. 1; STOT SE 3; Carc. 2; STOT RE 2 | GHS08; Dgr                     | H315; H317; H319; H332; H334; H335; H351; H373 |
| 2                             | Skin Irrit. 2; Skin Sens. 1; Eye Irrit. 2; Resp. Sens. 1; STOT SE 3; Carc. 2; STOT RE 2; Acute Tox. 3 | GHS08; Dgr; GHS06              | H315; H317; H319; H334; H335; H351; H373; H331 |

Harmonisation Code 1 = The most prevalent classification. Harmonisation Code 2 = The most severe classification.

National Inventory Status

| National Inventory                              | Status                                                                                                                                                                                               |
|-------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Australia - AIIC / Australia Non-Industrial Use | Yes                                                                                                                                                                                                  |
| Canada - DSL                                    | Yes                                                                                                                                                                                                  |
| Canada - NDSL                                   | No (diphenylmethane diisocyanate (MDI) mixed isomers; 2,4'-diphenylmethane diisocyanate; 4,4'-diphenylmethane diisocyanate (MDI); 2,2'-dimorpholinodiethyl ether; 2,2'-diphenylmethane diisocyanate) |
| China - IECSC                                   | Yes                                                                                                                                                                                                  |
| Europe - EINEC / ELINCS / NLP                   | Yes                                                                                                                                                                                                  |
| Japan - ENCS                                    | Yes                                                                                                                                                                                                  |
| Korea - KECI                                    | Yes                                                                                                                                                                                                  |
| New Zealand - NZIoC                             | Yes                                                                                                                                                                                                  |
| Philippines - PICCS                             | Yes                                                                                                                                                                                                  |
| USA - TSCA                                      | Yes                                                                                                                                                                                                  |
| Taiwan - TCSI                                   | Yes                                                                                                                                                                                                  |
| Mexico - INSQ                                   | No (2,4'-diphenylmethane diisocyanate; 2,2'-dimorpholinodiethyl ether; 2,2'-diphenylmethane diisocyanate)                                                                                            |
| Vietnam - NCI                                   | Yes                                                                                                                                                                                                  |
| Russia - FBEPH                                  | No (2,2'-diphenylmethane diisocyanate)                                                                                                                                                               |
| 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 | 14/02/2023 |
| Initial Date  | 14/02/2023 |

## Aro-Bond 905 (Aro-Bond DX9924)

## Full text Risk and Hazard codes

|             |                                                                 |
|-------------|-----------------------------------------------------------------|
| <b>H302</b> | Harmful if swallowed.                                           |
| <b>H330</b> | Fatal if inhaled.                                               |
| <b>H331</b> | Toxic if inhaled.                                               |
| <b>H332</b> | Harmful if inhaled.                                             |
| <b>H341</b> | Suspected of causing genetic defects.                           |
| <b>H370</b> | Causes damage to organs.                                        |
| <b>H372</b> | Causes damage to organs through prolonged or repeated exposure. |
| <b>H413</b> | May cause long lasting harmful effects to aquatic life.         |

## SDS Version Summary

| Version | Date of Update | Sections Updated                                                                                                                                        |
|---------|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0.2     | 14/02/2023     | Hazards identification - Classification, Composition / information on ingredients - Ingredients, Physical and chemical properties - Physical Properties |

## Other information

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.

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.

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

## 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

ES: Exposure Standard

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

AIIC: Australian Inventory of Industrial Chemicals

DSL: Domestic Substances List

NDSL: Non-Domestic Substances List

IECSC: Inventory of Existing Chemical Substance in China

EINECS: European INventory of Existing Commercial chemical Substances

ELINCS: European List of Notified Chemical Substances

NLP: No-Longer Polymers

ENCS: Existing and New Chemical Substances Inventory

KECI: Korea Existing Chemicals Inventory

NZIoC: New Zealand Inventory of Chemicals

PICCS: Philippine Inventory of Chemicals and Chemical Substances

TSCA: Toxic Substances Control Act

TCSI: Taiwan Chemical Substance Inventory

INSQ: Inventario Nacional de Sustancias Químicas

NCI: National Chemical Inventory

FBEPH: Russian Register of Potentially Hazardous Chemical and Biological Substances

## 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 |
|------------------------------------------------------------------------------------------------------------|--------------------------|
| Sensitisation (Respiratory)<br>Category 1, H334                                                            | Minimum classification   |
| Specific Target Organ Toxicity -<br>Repeated Exposure Category 2,<br>H373                                  | Calculation method       |
| Specific Target Organ Toxicity -<br>Single Exposure (Respiratory<br>Tract Irritation) Category 3 ,<br>H335 | Minimum classification   |



| Classification according to regulation (EC) No 1272/2008 [CLP] and amendments | Classification Procedure |
|-------------------------------------------------------------------------------|--------------------------|
| Skin Corrosion/Irritation Category 2, H315                                    | Minimum classification   |
| Serious Eye Damage/Eye Irritation Category 2, H319                            | Minimum classification   |
| Sensitisation (Skin) Category 1, H317                                         | Calculation method       |
| Carcinogenicity Category 2, H351                                              | Calculation method       |

Powered by AuthorITe, from Chemwatch.