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

1.1. Product identifier
Product name       LIQUID HARDENER.
Product number     X0014

1.2. Relevant identified uses of the substance or mixture and uses advised against
Identified uses    Hardener. Mix With Resin Component And Pour Onto Application

1.3. Details of the supplier of the safety data sheet
Supplier           ITW Performance Polymers
                   Bay 150
                   Shannon Industrial Estate
                   Co. Clare
                   Ireland
                   V14 DF82
                   353(61)771500
                   353(61)471285
                   mail@itwpp.com

1.4. Emergency telephone number
Emergency telephone +44(0)1235 239 670 (24h)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture
Classification (EC 1272/2008)
Physical hazards    Not Classified
Health hazards      Skin Corr. 1B - H314 Eye Dam. 1 - H318 Skin Sens. 1 - H317 Repr. 2 - H361fd
Environmental hazards  Aquatic Chronic 2 - H411

2.2. Label elements
Pictogram

Signal word    Danger
Hazard statements H314 Causes severe skin burns and eye damage.
                 H317 May cause an allergic skin reaction.
                 H361fd Suspected of damaging fertility. Suspected of damaging the unborn child.
                 H411 Toxic to aquatic life with long lasting effects.
LIQUID HARDENER.

Precautionary statements

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P313 IF exposed or concerned: Get medical advice/ attention.
P333+P313 If skin irritation or rash occurs: Get medical advice/ attention.
P501 Dispose of contents/ container in accordance with national regulations.

Contains

DIMER/TOFA, reaction products with TETA, TRIETHYLENETETRAMINE, 2-PIPERAZIN-1-YLETHYLAMINE, 4-NONYLPHENOL, Branched

Supplementary precautionary statements

P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P260 Do not breathe vapour/ spray.
P261 Avoid breathing vapour/ spray.
P264 Wash contaminated skin thoroughly after handling.
P272 Contaminated work clothing should not be allowed out of the workplace.
P273 Avoid release to the environment.
P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P302+P352 IF ON SKIN: Wash with plenty of water.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P310 Immediately call a POISON CENTER/ doctor.
P321 Specific treatment (see medical advice on this label).
P362+P364 Take off contaminated clothing and wash it before reuse.
P363 Wash contaminated clothing before reuse.
P391 Collect spillage.
P405 Store locked up.

2.3. Other hazards

This product does not contain any substances classified as PBT or vPvB.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

<table>
<thead>
<tr>
<th>DIMER/TOFA, reaction products with TETA</th>
<th>30-60%</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS number: 68082-29-1</td>
<td></td>
</tr>
</tbody>
</table>

Classification

Skin Irrit. 2 - H315
Eye Dam. 1 - H318
Skin Sens. 1A - H317
Aquatic Chronic 2 - H411
### LIQUID HARDENER.

<table>
<thead>
<tr>
<th>TRIETHYLENETETRAMINE</th>
<th>30-60%</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS number: 112-24-3</td>
<td>EC number: 203-950-6</td>
</tr>
</tbody>
</table>

**Classification**
- Acute Tox. 4 - H312
- Skin Corr. 1B - H314
- Eye Dam. 1 - H318
- Skin Sens. 1 - H317
- Aquatic Chronic 3 - H412

<table>
<thead>
<tr>
<th>2-PIPERAZIN-1-YLETHYLAMINE</th>
<th>5-10%</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS number: 140-31-8</td>
<td>EC number: 205-411-0</td>
</tr>
</tbody>
</table>

**Classification**
- Acute Tox. 4 - H302
- Acute Tox. 4 - H312
- Skin Corr. 1B - H314
- Eye Dam. 1 - H318
- Skin Sens. 1 - H317
- Aquatic Chronic 3 - H412

<table>
<thead>
<tr>
<th>4-NONYLPHENOL, Branched</th>
<th>5-10%</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS number: 84852-15-3</td>
<td>EC number: 284-325-5</td>
</tr>
<tr>
<td>M factor (Acute) = 1</td>
<td>M factor (Chronic) = 1</td>
</tr>
</tbody>
</table>

**Classification**
- Acute Tox. 4 - H302
- Skin Corr. 1B - H314
- Eye Dam. 1 - H318
- Repr. 2 - H361fd
- Aquatic Acute 1 - H400
- Aquatic Chronic 1 - H410

The full text for all hazard statements is displayed in Section 16.

### SECTION 4: First aid measures

#### 4.1. Description of first aid measures

**General information**
In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Do not breathe vapour/spray. Avoid contact with eyes.

**Inhalation**
Move affected person to fresh air at once. When breathing is difficult, properly trained personnel may assist affected person by administering oxygen. Get medical attention if any discomfort continues.

**Ingestion**
Do not induce vomiting. Give plenty of water to drink. Get medical attention.

**Skin contact**
Remove affected person from source of contamination. Wash skin thoroughly with soap and water. Get medical attention if irritation persists after washing.
LIQUID HARDENER.

Eye contact
Remove any contact lenses and open eyelids wide apart. Continue to rinse for at least 15 minutes and get medical attention. Get medical attention if irritation persists after washing.

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

General information
The severity of the symptoms described will vary dependent on the concentration and the length of exposure.

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

Notes for the doctor
No specific recommendations. If in doubt, get medical attention promptly.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media
Extinguish with the following media: Water. Foam, carbon dioxide or dry powder.

5.2. Special hazards arising from the substance or mixture

Specific hazards
Avoid breathing fire gases or vapours.

5.3. Advice for firefighters

Protective actions during firefighting
Keep up-wind to avoid fumes. Do not use water jet as an extinguisher, as this will spread the fire. Control run-off water by containing and keeping it out of sewers and watercourses.

Special protective equipment for firefighters
Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions
Avoid contact with skin and eyes. Wear protective clothing as described in Section 8 of this safety data sheet. Provide adequate ventilation.

6.2. Environmental precautions

Environmental precautions
Avoid the spillage or runoff entering drains, sewers or watercourses. Spillages or uncontrolled discharges into watercourses must be reported immediately to the Environmental Agency or other appropriate regulatory body.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up
Absorb spillage with non-combustible, absorbent material. Collect and place in suitable waste disposal containers and seal securely. Containers with collected spillage must be properly labelled with correct contents and hazard symbol.

6.4. Reference to other sections

Reference to other sections
Wear protective clothing as described in Section 8 of this safety data sheet.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Usage precautions
Provide adequate ventilation. Use only in well-ventilated areas. Avoid contact with skin and eyes. Avoid eating, drinking and smoking when using the product. Do not use in confined spaces without adequate ventilation and/or respirator. Do not eat, drink or smoke when using the product.

Advice on general occupational hygiene
Wash promptly with soap and water if skin becomes contaminated. Promptly remove any clothing that becomes wet or contaminated.

7.2. Conditions for safe storage, including any incompatibilities
LIQUID HARDENER.

**Storage precautions**

Store in tightly-closed, original container in a dry, cool and well-ventilated place. Store away from incompatible materials (see Section 10).

**7.3. Specific end use(s)**

The identified uses for this product are detailed in Section 1.2.

### SECTION 8: Exposure Controls/personal protection

#### 8.1. Control parameters

**TRIETHYLENETETRAMINE (CAS: 112-24-3)**

- **DNEL**
  - Workers - Inhalation; Long term systemic effects: 1 mg/m³
  - Workers - Inhalation; Short term systemic effects: 5380 mg/m³
  - Workers - Dermal; Long term systemic effects: 0.57 mg/kg/day

**2-PIPERAZIN-1-YLETHYLAMINE (CAS: 140-31-8)**

- **DNEL**
  - Workers - Inhalation; Long term systemic effects: 3.6 mg/m³
  - Workers - Inhalation; Short term systemic effects: 21.4 mg/m³
  - Workers - Dermal; Long term systemic effects: 3.3 mg/kg/day
  - Workers - Dermal; Long term systemic effects: 20 mg/kg/day
  - Workers - Dermal; Long term local effects: 0.006 mg/cm²

#### 8.2. Exposure controls

**Protective equipment**

- Provide adequate general and local exhaust ventilation. Use approved respirator if air contamination is above an acceptable level. Ensure operatives are trained to minimise exposure. Personal protective equipment should only be used if worker exposure cannot be controlled adequately by the engineering control measures.

**Eye/face protection**

- Eyewear complying with an approved standard should be worn if a risk assessment indicates eye contact is possible. The following protection should be worn: Chemical splash goggles. Personal protective equipment for eye and face protection should comply with European Standard EN166.

**Hand protection**

- Wear protective gloves made of the following material: Rubber or plastic. To protect hands from chemicals, gloves should comply with European Standard EN374. When used with mixtures, the protection time of gloves cannot be accurately estimated. It is recommended that gloves are made of the following material: Butyl rubber. Laminate of polyethylene and ethylene vinyl alcohol (PE/EVOH). Neoprene. The selected gloves should have a breakthrough time of at least 8 hours.

**Other skin and body protection**

- Wear apron or protective clothing in case of contact.

**Hygiene measures**

- Provide eyewash station and safety shower. Keep away from food, drink and animal feeding stuffs. Good personal hygiene procedures should be implemented. Wash hands and any other contaminated areas of the body with soap and water before leaving the work site. Do not eat, drink or smoke when using the product. Change work clothing daily before leaving workplace. Promptly remove any clothing that becomes wet or contaminated.
LIQUID HARDENER.

Respiratory protection

If ventilation is inadequate, suitable respiratory protection must be worn. Respirator selection must be based on exposure levels, the hazards of the product and the safe working limits of the selected respirator. Wear a respirator fitted with the following cartridge: Combination filter, type A2/P2. Half mask and quarter mask respirators with replaceable filter cartridges should comply with European Standard EN140.

SECTION 9: Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Liquid.</td>
</tr>
<tr>
<td>Colour</td>
<td>Amber.</td>
</tr>
<tr>
<td>Odour</td>
<td>Amine.</td>
</tr>
<tr>
<td>pH</td>
<td>pH (concentrated solution): 10.5 @ 20 ºC</td>
</tr>
<tr>
<td>Melting point</td>
<td>n/a°C</td>
</tr>
<tr>
<td>Initial boiling point and range</td>
<td>232°C @</td>
</tr>
<tr>
<td>Flash point</td>
<td>&gt;93°C</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>&lt;&lt;1 (butyl acetate =1)</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>&lt;10mmHg @ °C</td>
</tr>
<tr>
<td>Vapour density</td>
<td>&gt;1</td>
</tr>
<tr>
<td>Relative density</td>
<td>0.98 @ 20 ºC</td>
</tr>
<tr>
<td>Solubility(ies)</td>
<td>Soluble in water.</td>
</tr>
</tbody>
</table>

9.2. Other information

Other information Not available.

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity

Strong oxidising agents. Acids.

10.2. Chemical stability

Stability

Stable at normal ambient temperatures and when used as recommended.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions Not available.

10.4. Conditions to avoid

Conditions to avoid

Avoid heat, flames and other sources of ignition. Avoid excessive heat for prolonged periods of time. Avoid exposure to high temperatures or direct sunlight.

10.5. Incompatible materials

Materials to avoid

Avoid contact with oxidising agents. Avoid contact with acids.

10.6. Hazardous decomposition products

Hazardous decomposition products

Fire or high temperatures create: Nitrous gases (NOx). Oxides of the following substances: Carbon monoxide (CO). Carbon dioxide (CO2). Vapours/gases/fumes of: Ammonia or amines.
LIQUID HARDENER.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity - oral
ATE oral (mg/kg) 3,901.37

Acute toxicity - dermal
ATE dermal (mg/kg) 2,052.27

Ingestion
Corrosive. Small amounts may cause serious damage.

Skin contact
Causes burns. Corrosive. Prolonged contact causes serious tissue damage. May be absorbed through the skin. May cause sensitisation by skin contact. May cause sensitisation or allergic reactions in sensitive individuals.

Eye contact
Causes burns. Risk of serious damage to eyes.

Acute and chronic health hazards
This product is corrosive. This product may cause skin and eye irritation. Prolonged contact may cause burns.

Route of entry
Inhalation Skin absorption Ingestion.

Target organs
Prolonged or repeated exposure may cause the following adverse effects: May cause damage to the liver and kidneys. Respiratory system, lungs Central nervous system

SECTION 12: Ecological Information

Ecotoxicity
Avoid releasing into the environment. The product contains a substance which is toxic to aquatic organisms and which may cause long-term adverse effects in the aquatic environment.

12.1. Toxicity
Toxicity
Very toxic to aquatic organisms.

12.2. Persistence and degradability
Persistence and degradability
There are no data on the degradability of this product.

12.3. Bioaccumulative potential
Bioaccumulative potential
No data available on bioaccumulation.

12.4. Mobility in soil
Mobility
Do not discharge into drains or watercourses or onto the ground.

12.5. Results of PBT and vPvB assessment
Results of PBT and vPvB assessment
This product does not contain any substances classified as PBT or vPvB.

12.6. Other adverse effects
Other adverse effects
Not available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods
General information
When handling waste, the safety precautions applying to handling of the product should be considered.

Disposal methods
Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority.
LIQUID HARDENER.

Waste class 08 04 99

**SECTION 14: Transport information**

14.1. UN number

| UN No. (ADR/RID) | 2735 |
| UN No. (IMDG)    | 2735 |
| UN No. (ICAO)    | 2735 |

14.2. UN proper shipping name

| Proper shipping name (ADR/RID) | AMINES, LIQUID, CORROSIVE, N.O.S. (TRIETHYLENETETRAMINE, NONYL PHENOL) |
| Proper shipping name (IMDG)    | AMINES, LIQUID, CORROSIVE, N.O.S. (TRIETHYLENETETRAMINE, NONYL PHENOL) |
| Proper shipping name (ICAO)    | AMINES, LIQUID, CORROSIVE, N.O.S. (TRIETHYLENETETRAMINE, NONYL PHENOL) |
| Proper shipping name (ADN)     | AMINES, LIQUID, CORROSIVE, N.O.S. (TRIETHYLENETETRAMINE, NONYL PHENOL) |

14.3. Transport hazard class(es)

| ADR/RID class | 8 |
| ADR/RID label | 8 |
| IMDG class    | 8 |
| ICAO class/division | 8 |

Transport labels

![Transport labels](image)

14.4. Packing group

| ADR/RID packing group | II |
| IMDG packing group    | II |
| ICAO packing group    | II |

14.5. Environmental hazards

Environmentally hazardous substance/marine pollutant

![Environmental hazards](image)

14.6. Special precautions for user

| EmS | F-A, S-B |
| Emergency Action Code | 2X |
| Hazard Identification Number (ADR/RID) | 80 |
| Tunnel restriction code | (E) |

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code
**LIQUID HARDENER.**

### SECTION 15: Regulatory information

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

**EU legislation**


#### 15.2. Chemical safety assessment

No chemical safety assessment has been carried out.

### SECTION 16: Other information

<table>
<thead>
<tr>
<th>Date</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revision date</td>
<td>03/04/2018</td>
</tr>
<tr>
<td>Revision</td>
<td>17</td>
</tr>
<tr>
<td>Supersedes date</td>
<td>05/04/2017</td>
</tr>
<tr>
<td>Hazard statements in full</td>
<td></td>
</tr>
<tr>
<td>H302</td>
<td>Harmful if swallowed</td>
</tr>
<tr>
<td>H312</td>
<td>Harmful in contact with skin</td>
</tr>
<tr>
<td>H314</td>
<td>Causes severe skin burns and eye damage</td>
</tr>
<tr>
<td>H315</td>
<td>Causes skin irritation</td>
</tr>
<tr>
<td>H317</td>
<td>May cause an allergic skin reaction</td>
</tr>
<tr>
<td>H318</td>
<td>Causes serious eye damage</td>
</tr>
<tr>
<td>H361fd</td>
<td>Suspected of damaging fertility. Suspected of damaging the unborn child</td>
</tr>
<tr>
<td>H400</td>
<td>Very toxic to aquatic life</td>
</tr>
<tr>
<td>H410</td>
<td>Very toxic to aquatic life with long lasting effects</td>
</tr>
<tr>
<td>H411</td>
<td>Toxic to aquatic life with long lasting effects</td>
</tr>
<tr>
<td>H412</td>
<td>Harmful to aquatic life with long lasting effects</td>
</tr>
</tbody>
</table>

This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is, to the best of the company's knowledge and belief, accurate and reliable as of the date indicated. However, no warranty, guarantee or representation is made to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability of such information for his own particular use.