SAFETY DATA SHEET
Thermal Bonding System, Part A

1. Identification

Product identifier
Product name          Thermal Bonding System, Part A
Product number         TBS-A, ETBS20S, ETBS01K, ZE

Recommended use of the chemical and restrictions on use
Application            Resin.
Uses advised against    No specific uses advised against are identified.

Details of the supplier of the safety data sheet
Supplier
ELECTROLUBE. A division of HK WENTWORTH LTD
HK WENTWORTH-AMERICA
PO Box 126257
Benbrook, Texas 76126
USA
info@hkw.us.com
+1 888-501-9203

Emergency telephone number
Emergency telephone
+1 202 464 2554 (USA only)
+44 1235 239670

2. Hazard(s) identification

Classification of the substance or mixture
Physical hazards        Not Classified
Health hazards          Skin Irrit. 2 - H315 Eye Irrit. 2A - H319 Skin Sens. 1 - H317
Environmental hazards   Aquatic Acute 1 - H400 Aquatic Chronic 1 - H410

Label elements
Pictogram

Signal word            Warning
Hazard statements       H315 Causes skin irritation.
                        H317 May cause an allergic skin reaction.
                        H319 Causes serious eye irritation.
                        H410 Very toxic to aquatic life with long lasting effects.
Thermal Bonding System, Part A

Precautionary statements

P261 Avoid breathing vapor/spray.
P264 Wash contaminated skin thoroughly after handling.
P272 Contaminated work clothing must not be allowed out of the workplace.
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P302+P352 If on skin: Wash with plenty of water.
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P333+P313 If skin irritation or rash occurs: Get medical advice/attention.
P337+P313 If eye irritation persists: Get medical advice/attention.
P362+P364 Take off contaminated clothing and wash it before reuse.
P391 Collect spillage.
P501 Dispose of contents/container in accordance with national regulations.

Contains

Reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight ≤ 700), Oxirane, (chloromethyl)-, polymer with .alpha.-hydro-.omega.-hydroxypoly(oxy(methyl-1,2-ethanediyl))

Other hazards

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

3. Composition/information on ingredients

<table>
<thead>
<tr>
<th>Mixtures</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>zinc oxide</strong></td>
<td>30-60%</td>
</tr>
<tr>
<td>CAS number: 1314-13-2</td>
<td></td>
</tr>
<tr>
<td>M factor (Acute) = 1</td>
<td>M factor (Chronic) = 1</td>
</tr>
</tbody>
</table>

**Classification**

Aquatic Acute 1 - H400
Aquatic Chronic 1 - H410

<table>
<thead>
<tr>
<th>Reaction product: bisphenol-A-(epichlorhydrin) epoxy resin</th>
<th>30-60%</th>
</tr>
</thead>
<tbody>
<tr>
<td>(number average molecular weight ≤ 700)</td>
<td></td>
</tr>
<tr>
<td>CAS number: 25068-38-6</td>
<td></td>
</tr>
</tbody>
</table>

**Classification**

Skin Irrit. 2 - H315
Eye Irrit. 2A - H319
Skin Sens. 1 - H317
Aquatic Chronic 2 - H411

<table>
<thead>
<tr>
<th>Oxirane, (chloromethyl)-, polymer with .alpha.-hydro-.omega.-hydroxypoly(oxy(methyl-1,2-ethanediyl))</th>
<th>10-30%</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS number: 9072-62-2</td>
<td></td>
</tr>
</tbody>
</table>

**Classification**

Skin Irrit. 2 - H315
Eye Irrit. 2A - H319
Skin Sens. 1 - H317
Aquatic Chronic 3 - H412
Thermal Bonding System, Part A

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

4. First-aid measures

<table>
<thead>
<tr>
<th>Description of first aid measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>General information</td>
</tr>
<tr>
<td>Get medical attention immediately. Show this Safety Data Sheet to the medical personnel.</td>
</tr>
<tr>
<td>Inhalation</td>
</tr>
<tr>
<td>Remove affected person from source of contamination. Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. Maintain an open airway. Loosen tight clothing such as collar, tie or belt. When breathing is difficult, properly trained personnel may assist affected person by administering oxygen. Place unconscious person on their side in the recovery position and ensure breathing can take place.</td>
</tr>
<tr>
<td>Ingestion</td>
</tr>
<tr>
<td>Rinse mouth thoroughly with water. Remove any dentures. Give a few small glasses of water or milk to drink. Stop if the affected person feels sick as vomiting may be dangerous. Do not induce vomiting unless under the direction of medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. Place unconscious person on their side in the recovery position and ensure breathing can take place. Maintain an open airway. Loosen tight clothing such as collar, tie or belt.</td>
</tr>
<tr>
<td>Skin Contact</td>
</tr>
<tr>
<td>It is important to remove the substance from the skin immediately. In the event of any sensitization symptoms developing, ensure further exposure is avoided. Remove contamination with soap and water or recognized skin cleansing agent. Get medical attention if symptoms are severe or persist after washing.</td>
</tr>
<tr>
<td>Eye contact</td>
</tr>
<tr>
<td>Rinse immediately with plenty of water. Remove any contact lenses and open eyelids wide apart. Continue to rinse for at least 10 minutes.</td>
</tr>
<tr>
<td>Protection of first aiders</td>
</tr>
<tr>
<td>First aid personnel should wear appropriate protective equipment during any rescue. If it is suspected that volatile contaminants are still present around the affected person, first aid personnel should wear an appropriate respirator or self-contained breathing apparatus. Wash contaminated clothing thoroughly with water before removing it from the affected person, or wear gloves. It may be dangerous for first aid personnel to carry out mouth-to-mouth resuscitation.</td>
</tr>
</tbody>
</table>

5. Fire-fighting measures

| Extinguishing media               |
| Suitable extinguishing media      |
| The product is not flammable. Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog. Use fire-extinguishing media suitable for the surrounding fire. |

Most important symptoms and effects, both acute and delayed

| General information               |
| See Section 11 for additional information on health hazards. The severity of the symptoms described will vary dependent on the concentration and the length of exposure. |
| Inhalation                        |
| Prolonged inhalation of high concentrations may damage respiratory system. |
| Ingestion                         |
| May cause sensitization or allergic reactions in sensitive individuals. May cause irritation. |
| Skin contact                      |
| May cause skin sensitization or allergic reactions in sensitive individuals. Redness. Irritating to skin. |
| Eye contact                       |
| Irritating to eyes.               |

Indication of immediate medical attention and special treatment needed

Notes for the doctor

Treat symptomatically. May cause sensitization or allergic reactions in sensitive individuals.
Thermal Bonding System, Part A

Unsuitable extinguishing media

Do not use water jet as an extinguisher, as this will spread the fire.

Special hazards arising from the substance or mixture

Specific hazards

Containers can burst violently or explode when heated, due to excessive pressure build-up.

Hazardous combustion products

Thermal decomposition or combustion products may include the following substances:

Harmful gases or vapors.

Advice for firefighters

Protective actions during firefighting

Avoid breathing fire gases or vapors. Evacuate area. Cool containers exposed to heat with water spray and remove them from the fire area if it can be done without risk. Cool containers exposed to flames with water until well after the fire is out. If a leak or spill has not ignited, use water spray to disperse vapors and protect men stopping the leak. Avoid discharge to the aquatic environment. Control run-off water by containing and keeping it out of sewers and watercourses. If risk of water pollution occurs, notify appropriate authorities.

Special protective equipment for firefighters

Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing. Standard Firefighter's clothing including helmets, protective boots and gloves will provide a basic level of protection for chemical incidents.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal precautions

No action shall be taken without appropriate training or involving any personal risk. Keep unnecessary and unprotected personnel away from the spillage. Wear protective clothing as described in Section 8 of this safety data sheet. Follow precautions for safe handling described in this safety data sheet. Wash thoroughly after dealing with a spillage. Ensure procedures and training for emergency decontamination and disposal are in place. Do not touch or walk into spilled material. Avoid contact with skin and eyes.

Environmental precautions

Environmental precautions

Avoid discharge into drains or watercourses or onto the ground. Avoid discharge to the aquatic environment. Large Spillages: Inform the relevant authorities if environmental pollution occurs (sewers, waterways, soil or air).

Methods and material for containment and cleaning up

Methods for cleaning up

Wear protective clothing as described in Section 8 of this safety data sheet. Clear up spills immediately and dispose of waste safely. Approach the spillage from upwind. Small Spillages: If the product is soluble in water, dilute the spillage with water and mop it up. Alternatively, or if it is not water-soluble, absorb the spillage with an inert, dry material and place it in a suitable waste disposal container. Large Spillages: If leakage cannot be stopped, evacuate area. Flush spilled material into an effluent treatment plant, or proceed as follows. Contain and absorb spillage with sand, earth or other non-combustible material. Place waste in labeled, sealed containers. Clean contaminated objects and areas thoroughly, observing environmental regulations. The contaminated absorbent may pose the same hazard as the spilled material. Flush contaminated area with plenty of water. Wash thoroughly after dealing with a spillage. Dangerous for the environment. Do not empty into drains. Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority.

Reference to other sections

For personal protection, see Section 8. See Section 11 for additional information on health hazards. See Section 12 for additional information on ecological hazards. For waste disposal, see Section 13.

7. Handling and storage
Thermal Bonding System, Part A

Precautions for safe handling

Usage precautions
Read and follow manufacturer’s recommendations. Wear protective clothing as described in Section 8 of this safety data sheet. Keep away from food, drink and animal feeding stuffs. Handle all packages and containers carefully to minimize spills. Keep container tightly sealed when not in use. Avoid the formation of mists. Avoid discharge to the aquatic environment. Do not handle until all safety precautions have been read and understood. Do not handle broken packages without protective equipment. Do not reuse empty containers.

Advice on general occupational hygiene
Wash promptly if skin becomes contaminated. Take off contaminated clothing and wash before reuse. Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product. Wash at the end of each work shift and before eating, smoking and using the toilet. Change work clothing daily before leaving workplace.

Conditions for safe storage, including any incompatibilities

Storage precautions
Store away from incompatible materials (see Section 10). Store in accordance with local regulations. Keep only in the original container. Keep container tightly closed, in a cool, well ventilated place. Keep containers upright. Protect containers from damage. Utilize retaining walls to prevent soil and water pollution in the event of spillage. The storage area floor should be leak-tight, jointless and not absorbent.

Storage class
Miscellaneous hazardous material storage.

Specific end use(s)
The identified uses for this product are detailed in Section 1.

8. Exposure Controls/personal protection

Control parameters

Occupational exposure limits

zinc oxide
Long-term exposure limit (8-hour TWA): OSHA 5 mg/m³ fume
Long-term exposure limit (8-hour TWA): OSHA 15 mg/m³ total dust
Long-term exposure limit (8-hour TWA): ACGIH 2 mg/m³ respirable fraction
Short-term exposure limit (15-minute): ACGIH 10 mg/m³ respirable fraction
Long-term exposure limit (8-hour TWA): OSHA 5 mg/m³ respirable fraction
OSHA = Occupational Safety and Health Administration.
ACGIH = American Conference of Governmental Industrial Hygienists.

zinc oxide (CAS: 1314-13-2)

Immediate danger to life and health 500 mg/m³

Amphorous Silica (CAS: 7631-86-9)

Immediate danger to life and health 3000 mg/m³

Exposure controls

Protective equipment
Thermal Bonding System, Part A

Appropriate engineering controls
Provide adequate ventilation. Personal, workplace environment or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Use process enclosures, local exhaust ventilation or other engineering controls as the primary means to minimize worker exposure. Personal protective equipment should only be used if worker exposure cannot be controlled adequately by the engineering control measures. Ensure control measures are regularly inspected and maintained. Ensure operatives are trained to minimize exposure.

Eye/face protection
Eyewear complying with an approved standard should be worn if a risk assessment indicates eye contact is possible. Personal protective equipment for eye and face protection should comply with OSHA 1910.133. Wear tight-fitting, chemical splash goggles or face shield. If inhalation hazards exist, a full-face respirator may be required instead.

Hand protection
Chemical-resistant, impervious gloves complying with an approved standard should be worn if a risk assessment indicates skin contact is possible. The most suitable glove should be chosen in consultation with the glove supplier/manufacturer, who can provide information about the breakthrough time of the glove material. To protect hands from chemicals, gloves should comply with OSHA 1910.138 and be demonstrated to be impervious to the chemical and resist degradation. Considering the data specified by the glove manufacturer, check during use that the gloves are retaining their protective properties and change them as soon as any deterioration is detected. Frequent changes are recommended.

Other skin and body protection
Appropriate footwear and additional protective clothing complying with an approved standard should be worn if a risk assessment indicates skin contamination is possible.

Hygiene measures
Provide eyewash station and safety shower. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse. Clean equipment and the work area every day. Good personal hygiene procedures should be implemented. Wash at the end of each work shift and before eating, smoking and using the toilet. When using do not eat, drink or smoke. Preventive industrial medical examinations should be carried out. Warn cleaning personnel of any hazardous properties of the product.

Respiratory protection
Respiratory protection complying with an approved standard should be worn if a risk assessment indicates inhalation of contaminants is possible. Ensure all respiratory protective equipment is suitable for its intended use and is NIOSH approved. Check that the respirator fits tightly and the filter is changed regularly. Gas and combination filter cartridges should comply with OSHA 1910.134. Full face mask respirators with replaceable filter cartridges should comply with OSHA 1910.134. Half mask and quarter mask respirators with replaceable filter cartridges should comply with OSHA 1910.134.

Environmental exposure controls
Keep container tightly sealed when not in use. Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9. Physical and Chemical Properties

Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Liquid</td>
</tr>
<tr>
<td>Color</td>
<td>Blue</td>
</tr>
<tr>
<td>Odor</td>
<td>Not known</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>Not available</td>
</tr>
<tr>
<td>pH</td>
<td>Not available</td>
</tr>
<tr>
<td>Melting point</td>
<td>Not available</td>
</tr>
</tbody>
</table>
Thermal Bonding System, Part A

Initial boiling point and range  Not available.
Flash point  Not available.
Evaporation rate  Not available.
Evaporation factor  Not available.
Flammability (solid, gas)  Not available.
Upper/lower flammability or explosive limits  Not available.
Other flammability  Not available.
Vapor pressure  Not available.
Vapor density  Not available.
Relative density  Not available.
Bulk density  Not available.
Solubility(ies)  Not available.
Partition coefficient  Not available.
Auto-ignition temperature  Not available.
Decomposition Temperature  Not available.
Viscosity  70-80 Pa s @ 23°C
Explosive properties  Not considered to be explosive.
Oxidizing properties  Does not meet the criteria for classification as oxidizing.

10. Stability and reactivity

Reactivity  See the other subsections of this section for further details.
Stability  Stable at normal ambient temperatures and when used as recommended. Stable under the prescribed storage conditions.
Possibility of hazardous reactions  No potentially hazardous reactions known.
Conditions to avoid  There are no known conditions that are likely to result in a hazardous situation.
Materials to avoid  No specific material or group of materials is likely to react with the product to produce a hazardous situation.
Hazardous decomposition products  Does not decompose when used and stored as recommended. Thermal decomposition or combustion products may include the following substances: Harmful gases or vapors.

11. Toxicological information

Information on toxicological effects
Acute toxicity - oral
Notes (oral LD₅₀)  Based on available data the classification criteria are not met.
Acute toxicity - dermal
Notes (dermal LD₅₀)  Based on available data the classification criteria are not met.
# Thermal Bonding System, Part A

<table>
<thead>
<tr>
<th><strong>Acute toxicity - inhalation</strong></th>
<th>Based on available data the classification criteria are not met.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notes (Inhalation LC₅₀)</td>
<td></td>
</tr>
<tr>
<td><strong>Skin corrosion/irritation</strong></td>
<td></td>
</tr>
<tr>
<td>Animal data</td>
<td>Irritating.</td>
</tr>
<tr>
<td><strong>Serious eye damage/irritation</strong></td>
<td>Causes serious eye irritation.</td>
</tr>
<tr>
<td><strong>Respiratory sensitization</strong></td>
<td>Based on available data the classification criteria are not met.</td>
</tr>
<tr>
<td><strong>Skin sensitization</strong></td>
<td>May cause skin sensitization or allergic reactions in sensitive individuals.</td>
</tr>
<tr>
<td><strong>Germ cell mutagenicity</strong></td>
<td>Based on available data the classification criteria are not met.</td>
</tr>
<tr>
<td><strong>Carcinogenicity</strong></td>
<td>Based on available data the classification criteria are not met.</td>
</tr>
<tr>
<td><strong>IARC carcinogenicity</strong></td>
<td>Contains a substance which may be potentially carcinogenic. IARC Group 3 Not classifiable as to its carcinogenicity to humans.</td>
</tr>
<tr>
<td><strong>Reproductive toxicity</strong></td>
<td>Based on available data the classification criteria are not met.</td>
</tr>
<tr>
<td><strong>Specific target organ toxicity - single exposure</strong></td>
<td>Not classified as a specific target organ toxicant after a single exposure.</td>
</tr>
<tr>
<td>STOT - single exposure</td>
<td></td>
</tr>
<tr>
<td><strong>Specific target organ toxicity - repeated exposure</strong></td>
<td>Not classified as a specific target organ toxicant after repeated exposure.</td>
</tr>
<tr>
<td>STOT - repeated exposure</td>
<td></td>
</tr>
<tr>
<td><strong>Aspiration hazard</strong></td>
<td>Based on available data the classification criteria are not met.</td>
</tr>
<tr>
<td><strong>General information</strong></td>
<td>The severity of the symptoms described will vary dependent on the concentration and the length of exposure.</td>
</tr>
<tr>
<td><strong>Inhalation</strong></td>
<td>Prolonged inhalation of high concentrations may damage respiratory system.</td>
</tr>
<tr>
<td><strong>Ingestion</strong></td>
<td>May cause sensitization or allergic reactions in sensitive individuals. May cause irritation.</td>
</tr>
<tr>
<td><strong>Skin Contact</strong></td>
<td>May cause skin sensitization or allergic reactions in sensitive individuals. Redness. Irritating to skin.</td>
</tr>
<tr>
<td><strong>Eye contact</strong></td>
<td>Irritating to eyes.</td>
</tr>
<tr>
<td><strong>Route of entry</strong></td>
<td>Ingestion Inhalation Skin and/or eye contact</td>
</tr>
<tr>
<td><strong>Target Organs</strong></td>
<td>No specific target organs known.</td>
</tr>
<tr>
<td><strong>Medical considerations</strong></td>
<td>Skin disorders and allergies.</td>
</tr>
</tbody>
</table>

**Reaction product:** bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight ≤ 700)

**Skin corrosion/irritation**
The Thermal Bonding System, Part A

Skin corrosion/irritation
- Irritating to skin.

Serious eye damage/irritation

Serious eye damage/irritation
- Irritation of eyes is assumed.

Carcinogenicity
- No evidence of carcinogenicity in animal studies.

12. Ecological Information

Toxicity
- Aquatic Acute 1 - H400 Very toxic to aquatic life. Aquatic Chronic 1 - H410 Very toxic to aquatic life with long lasting effects.

**zinc oxide**

**Acute aquatic toxicity**
- LE(C)₅₀
  - 0.1 < L(E)C₅₀ ≤ 1
- M factor (Acute)
  - 1

**Chronic aquatic toxicity**
- M factor (Chronic)
  - 1

**Reaction product:** bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight ≤ 700)

**Acute toxicity - fish**
- LC₈₀, 96 hours: 1.3 mg/l, Onchorhynchus mykiss (Rainbow trout)

**Acute toxicity - aquatic invertebrates**
- EC₅₀, 48 hours: 2.1 mg/l, Daphnia magna

**Chronic toxicity - aquatic invertebrates**
- NOEC, 21 days: 0.3 mg/l, Daphnia magna

**Persistence and degradability**
- The degradability of the product is not known.

**Bioaccumulative potential**
- No data available on bioaccumulation.

**Partition coefficient**
- Not available.

**Mobility in soil**
- No data available.

**Other adverse effects**
Thermal Bonding System, Part A

Other adverse effects

None known.

13. Disposal considerations

Waste treatment methods

General information

The generation of waste should be minimized or avoided wherever possible. Reuse or recycle products wherever possible. This material and its container must be disposed of in a safe way. Disposal of this product, process solutions, residues and by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any local authority requirements. When handling waste, the safety precautions applying to handling of the product should be considered. Care should be taken when handling emptied containers that have not been thoroughly cleaned or rinsed out. Empty containers or liners may retain some product residues and hence be potentially hazardous.

Disposal methods

Do not empty into drains. Dispose of surplus products and those that cannot be recycled via a licensed waste disposal contractor. Waste, residues, empty containers, discarded work clothes and contaminated cleaning materials should be collected in designated containers, labeled with their contents. Incineration or landfill should only be considered when recycling is not feasible.

14. Transport information

General

For limited quantity packaging/limited load information, consult the relevant modal documentation using the data shown in this section.

UN Number

UN No. (TDG) 3082
UN No. (IMDG) 3082
UN No. (ICAO) 3082
UN No. (DOT) ID8000

UN proper shipping name

Proper shipping name (TDG) ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (CONTAINS zinc oxide, Reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight ≤ 700))

Proper shipping name (IMDG) ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (CONTAINS zinc oxide, Reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight ≤ 700))

Proper shipping name (ICAO) ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (CONTAINS zinc oxide, Reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight ≤ 700))

Proper shipping name (DOT) CONSUMER COMMODITY

Transport hazard class(es)

DOT hazard class 9
DOT hazard label 9
TDG class 9
TDG label(s) 9
IMDG Class 9
ICAO class/division 9
Thermal Bonding System, Part A

Transport labels

DOT transport labels

Packing group
TDG Packing Group III
IMDG packing group III
ICAO packing group III

Environmental hazards
Environmentally Hazardous Substance

Special precautions for user
Always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

EmS F-A, S-F

Transport in bulk according to Not applicable.
Annex II of MARPOL 73/78
and the IBC Code

15. Regulatory information

US Federal Regulations
SARA Section 302 Extremely Hazardous Substances Tier II Threshold Planning Quantities
None of the ingredients are listed or exempt.

CERCLA/Superfund, Hazardous Substances/Reportable Quantities (EPA)
None of the ingredients are listed or exempt.

SARA Extremely Hazardous Substances EPCRA Reportable Quantities
None of the ingredients are listed or exempt.

SARA 313 Emission Reporting
The following ingredients are listed or exempt:

zinc oxide
1.0 %

CAA Accidental Release Prevention
None of the ingredients are listed or exempt.

FDA - Essential Chemical
None of the ingredients are listed or exempt.
Thermal Bonding System, Part A

FDA - Precursor Chemical
None of the ingredients are listed or exempt.

SARA (311/312) Hazard Categories
None of the ingredients are listed or exempt.

OSHA Highly Hazardous Chemicals
None of the ingredients are listed or exempt.

US State Regulations
California Proposition 65 Carcinogens and Reproductive Toxins
The following ingredients are listed or exempt:
Amphorous Silica
Known to the State of California to cause cancer.

California Air Toxics "Hot Spots" (A-I)
The following ingredients are listed or exempt:
zinc oxide
Amphorous Silica

California Air Toxics "Hot Spots" (A-II)
None of the ingredients are listed or exempt.

California Directors List of Hazardous Substances
The following ingredients are listed or exempt:
zinc oxide
Amphorous Silica

Massachusetts "Right To Know" List
The following ingredients are listed or exempt:
zinc oxide
Amphorous Silica

Rhode Island "Right To Know" List
The following ingredients are listed or exempt:
zinc oxide

Minnesota "Right To Know" List
The following ingredients are listed or exempt:
zinc oxide
Amphorous Silica

New Jersey "Right To Know" List
The following ingredients are listed or exempt:
zinc oxide

Pennsylvania "Right To Know" List
The following ingredients are listed or exempt:
zinc oxide
Amphorous Silica

Inventories
Thermal Bonding System, Part A

US - TSCA
All the ingredients are listed or exempt.

US - TSCA 12(b) Export Notification
None of the ingredients are listed or exempt.

16. Other information

<table>
<thead>
<tr>
<th>Classification abbreviations and acronyms</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Eye Irrit. = Eye irritation</td>
<td></td>
</tr>
<tr>
<td>Skin Irrit. = Skin irritation</td>
<td></td>
</tr>
<tr>
<td>Skin Sens. = Skin sensitisation</td>
<td></td>
</tr>
<tr>
<td>Aquatic Acute = Hazardous to the aquatic environment (acute)</td>
<td></td>
</tr>
<tr>
<td>Aquatic Chronic = Hazardous to the aquatic environment (chronic)</td>
<td></td>
</tr>
</tbody>
</table>

Training advice
Read and follow manufacturer's recommendations. Only trained personnel should use this material.

Issued by
Bethan Massey

Revision date
6/23/2017

Revision
0

SDS No.
1694

Hazard statements in full
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long lasting effects.
H411 Toxic to aquatic life with long lasting effects.
H412 Harmful to aquatic life with long lasting effects.
SAFETY DATA SHEET
Thermal Bonding System, Part B

1. Identification

<table>
<thead>
<tr>
<th>Product identifier</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Product name</td>
<td>Thermal Bonding System, Part B</td>
</tr>
<tr>
<td>Product number</td>
<td>TBS-B, ETBS20S, ETBS01K, ZE</td>
</tr>
</tbody>
</table>

Recommended use of the chemical and restrictions on use

Application
Hardener.

Uses advised against
No specific uses advised against are identified.

Details of the supplier of the safety data sheet

<table>
<thead>
<tr>
<th>Supplier</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELECTROLUBE. A division of HK WENTWORTH LTD</td>
</tr>
<tr>
<td>HK WENTWORTH-AMERICA</td>
</tr>
<tr>
<td>PO Box 126257</td>
</tr>
<tr>
<td>Benbrook, Texas 76126</td>
</tr>
<tr>
<td>USA</td>
</tr>
<tr>
<td><a href="mailto:info@hkw.us.com">info@hkw.us.com</a></td>
</tr>
<tr>
<td>+1 888-501-9203</td>
</tr>
</tbody>
</table>

Emergency telephone number

<table>
<thead>
<tr>
<th>Emergency telephone</th>
</tr>
</thead>
<tbody>
<tr>
<td>+1 202 464 2554 (USA only)</td>
</tr>
<tr>
<td>+44 1235 239670</td>
</tr>
</tbody>
</table>

2. Hazard(s) identification

Classification of the substance or mixture

<table>
<thead>
<tr>
<th>Physical hazards</th>
<th>Not Classified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health hazards</td>
<td>Skin Corr. 1B - H314 Eye Dam. 1 - H318 Skin Sens. 1 - H317 STOT RE 2 - H373</td>
</tr>
<tr>
<td>Environmental hazards</td>
<td>Aquatic Acute 1 - H400 Aquatic Chronic 1 - H410</td>
</tr>
</tbody>
</table>

Label elements

<table>
<thead>
<tr>
<th>Pictogram</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="https://via.placeholder.com/150" alt="Image" /></td>
</tr>
</tbody>
</table>

Signal word
Danger

Hazard statements

- H314 Causes severe skin burns and eye damage.
- H317 May cause an allergic skin reaction.
- H373 May cause damage to organs through prolonged or repeated exposure.
- H410 Very toxic to aquatic life with long lasting effects.
Thermal Bonding System, Part B

Precautionary statements

P260 Do not breathe vapor/ spray.
P264 Wash contaminated skin thoroughly after handling.
P272 Contaminated work clothing must not be allowed out of the workplace.
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301+P330+P331 If swallowed: Rinse mouth. Do NOT induce vomiting.
P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304+P340 If inhaled: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P314 Get medical advice/ attention if you feel unwell.
P333+P313 If skin irritation or rash occurs: Get medical advice/ attention.
P362+P364 Take off contaminated clothing and wash it before reuse.
P391 Collect spillage.
P501 Dispose of contents/ container in accordance with national regulations.

Contains

4,4'-methylenebis(cyclohexylamine), Copolymer of benzenamine and formaldehyde, hydrogenated, 3,6-diazoctanethylenediamin

Other hazards

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

3. Composition/information on ingredients

<table>
<thead>
<tr>
<th>Mixtures</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>zinc oxide</strong></td>
<td>30-60%</td>
</tr>
<tr>
<td>CAS number: 1314-13-2</td>
<td></td>
</tr>
<tr>
<td>M factor (Acute) = 1</td>
<td>M factor (Chronic) = 1</td>
</tr>
<tr>
<td><strong>Classification</strong></td>
<td></td>
</tr>
<tr>
<td>Aquatic Acute 1 - H400</td>
<td></td>
</tr>
<tr>
<td>Aquatic Chronic 1 - H410</td>
<td></td>
</tr>
<tr>
<td><strong>Triethylenetetramine, propoxylated</strong></td>
<td>10-30%</td>
</tr>
<tr>
<td>CAS number: 26950-63-0</td>
<td></td>
</tr>
<tr>
<td><strong>Classification</strong></td>
<td></td>
</tr>
<tr>
<td>Eye Irrit. 2A - H319</td>
<td></td>
</tr>
<tr>
<td><strong>Copolymer of benzenamine and formaldehyde, hydrogenated</strong></td>
<td>5-10%</td>
</tr>
<tr>
<td>CAS number: 135108-88-2</td>
<td></td>
</tr>
<tr>
<td><strong>Classification</strong></td>
<td></td>
</tr>
<tr>
<td>Acute Tox. 4 - H302</td>
<td></td>
</tr>
<tr>
<td>Skin Corr. 1C - H314</td>
<td></td>
</tr>
<tr>
<td>Eye Dam. 1 - H318</td>
<td></td>
</tr>
<tr>
<td>Skin Sens. 1 - H317</td>
<td></td>
</tr>
<tr>
<td>STOT RE 2 - H373</td>
<td></td>
</tr>
<tr>
<td>Aquatic Chronic 3 - H412</td>
<td></td>
</tr>
</tbody>
</table>
### Thermal Bonding System, Part B

<table>
<thead>
<tr>
<th><strong>4,4’-methylenebis(cyclohexylamine)</strong></th>
<th>5-10%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CAS number:</strong> 1761-71-3</td>
<td></td>
</tr>
</tbody>
</table>

**Classification**
- Acute Tox. 4 - H302
- Skin Corr. 1B - H314
- Eye Dam. 1 - H318
- Skin Sens. 1B - H317
- STOT RE 2 - H373

<table>
<thead>
<tr>
<th><strong>3,6-diazaoctanethylenediamin</strong></th>
<th>1-5%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CAS number:</strong> 112-24-3</td>
<td></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

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

#### 4. First-aid measures

**Description of first aid measures**

**General Information**
Get medical attention immediately. Show this Safety Data Sheet to the medical personnel. Chemical burns must be treated by a physician.

**Inhalation**
Remove affected person from source of contamination. Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. Maintain an open airway. Loosen tight clothing such as collar, tie or belt. When breathing is difficult, properly trained personnel may assist affected person by administering oxygen. Place unconscious person on their side in the recovery position and ensure breathing can take place.

**Ingestion**
Rinse mouth thoroughly with water. Remove any dentures. Give a few small glasses of water or milk to drink. Stop if the affected person feels sick as vomiting may be dangerous. Do not induce vomiting unless under the direction of medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. Place unconscious person on their side in the recovery position and ensure breathing can take place. Maintain an open airway. Loosen tight clothing such as collar, tie or belt.

**Skin Contact**
It is important to remove the substance from the skin immediately. Take off immediately all contaminated clothing. Rinse immediately with plenty of water. Continue to rinse for at least 15 minutes and get medical attention. Chemical burns must be treated by a physician.

**Eye contact**
Rinse immediately with plenty of water. Remove any contact lenses and open eyelids wide apart. Continue to rinse for at least 10 minutes.
Thermal Bonding System, Part B

Protection of first aiders

First aid personnel should wear appropriate protective equipment during any rescue. If it is suspected that volatile contaminants are still present around the affected person, first aid personnel should wear an appropriate respirator or self-contained breathing apparatus. Wash contaminated clothing thoroughly with water before removing it from the affected person, or wear gloves. It may be dangerous for first aid personnel to carry out mouth-to-mouth resuscitation.

Most important symptoms and effects, both acute and delayed

General information

See Section 11 for additional information on health hazards. The severity of the symptoms described will vary dependent on the concentration and the length of exposure.

Inhalation

A single exposure may cause the following adverse effects: Severe irritation of nose and throat. Symptoms following overexposure may include the following: Corrosive to the respiratory tract.

Ingestion

May cause sensitization or allergic reactions in sensitive individuals. May cause chemical burns in mouth, esophagus and stomach. Symptoms following overexposure may include the following: Severe stomach pain. Nausea, vomiting.

Skin contact

May cause skin sensitization or allergic reactions in sensitive individuals. Causes severe burns. Symptoms following overexposure may include the following: Pain or irritation. Redness. Blistering may occur.

Eye contact

Causes serious eye damage. Symptoms following overexposure may include the following: Pain. Profuse watering of the eyes. Redness.

Indication of immediate medical attention and special treatment needed

Notes for the doctor

Treat symptomatically. May cause sensitization or allergic reactions in sensitive individuals.

5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media

The product is not flammable. Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog. Use fire-extinguishing media suitable for the surrounding fire.

Unsuitable extinguishing media

Do not use water jet as an extinguisher, as this will spread the fire.

Special hazards arising from the substance or mixture

Specific hazards

Containers can burst violently or explode when heated, due to excessive pressure build-up. Severe corrosive hazard. Water used for fire extinguishing, which has been in contact with the product, may be corrosive.

Hazardous combustion products

Thermal decomposition or combustion products may include the following substances: Very toxic or corrosive gases or vapors.

Advice for firefighters

Protective actions during firefighting

Avoid breathing fire gases or vapors. Evacuate area. Keep upwind to avoid inhalation of gases, vapors, fumes and smoke. Cool containers exposed to heat with water spray and remove them from the fire area if it can be done without risk. Cool containers exposed to flames with water until well after the fire is out. If a leak or spill has not ignited, use water spray to disperse vapors and protect men stopping the leak. Avoid discharge to the aquatic environment. Control run-off water by containing and keeping it out of sewers and watercourses. If risk of water pollution occurs, notify appropriate authorities.
### Thermal Bonding System, Part B

<table>
<thead>
<tr>
<th>Special protective equipment for firefighters</th>
<th>Regular protection may not be safe. Wear chemical protective suit. Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing. Standard Firefighter's clothing including helmets, protective boots and gloves will provide a basic level of protection for chemical incidents.</th>
</tr>
</thead>
</table>

### 6. Accidental release measures

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

**Personal precautions**

No action shall be taken without appropriate training or involving any personal risk. Keep unnecessary and unprotected personnel away from the spillage. Wear protective clothing as described in Section 8 of this safety data sheet. Follow precautions for safe handling described in this safety data sheet. Wash thoroughly after dealing with a spillage. Ensure procedures and training for emergency decontamination and disposal are in place. Do not touch or walk into spilled material. Avoid inhalation of vapors and spray/mists. Use suitable respiratory protection if ventilation is inadequate. Avoid contact with skin and eyes. Avoid contact with contaminated tools and objects.

**Environmental precautions**

Avoid discharge into drains or watercourses or onto the ground. Avoid discharge to the aquatic environment. Large Spillages: Inform the relevant authorities if environmental pollution occurs (sewers, waterways, soil or air).

### Methods and material for containment and cleaning up

**Methods for cleaning up**

Wear protective clothing as described in Section 8 of this safety data sheet. Clear up spills immediately and dispose of waste safely. This product is corrosive. Approach the spillage from upwind. Small Spillages: If the product is soluble in water, dilute the spillage with water and mop it up. Alternatively, or if it is not water-soluble, absorb the spillage with an inert, dry material and place it in a suitable waste disposal container. Large Spillages: If leakage cannot be stopped, evacuate area. Flush spilled material into an effluent treatment plant, or proceed as follows. Contain and absorb spillage with sand, earth or other non-combustible material. Place waste in labeled, sealed containers. Clean contaminated objects and areas thoroughly, observing environmental regulations. The contaminated absorbent may pose the same hazard as the spilled material. Flush contaminated area with plenty of water. Wash thoroughly after dealing with a spillage. Dangerous for the environment. Do not empty into drains. Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority.

### Reference to other sections

For personal protection, see Section 8. See Section 11 for additional information on health hazards. See Section 12 for additional information on ecological hazards. For waste disposal, see Section 13.

### 7. Handling and storage

#### Precautions for safe handling

**Usage precautions**

Read and follow manufacturer's recommendations. Wear protective clothing as described in Section 8 of this safety data sheet. Keep away from food, drink and animal feeding stuffs. Handle all packages and containers carefully to minimize spills. Keep container tightly sealed when not in use. Avoid the formation of mists. This product is corrosive. Immediate first aid is imperative. Avoid discharge to the aquatic environment. Do not handle until all safety precautions have been read and understood. Do not handle broken packages without protective equipment. Do not reuse empty containers.

**Advice on general occupational hygiene**

Wash promptly if skin becomes contaminated. Take off contaminated clothing and wash before reuse. Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product. Wash at the end of each work shift and before eating, smoking and using the toilet. Change work clothing daily before leaving workplace.
Thermal Bonding System, Part B

Conditions for safe storage, including any incompatibilities

Storage precautions
Store away from incompatible materials (see Section 10). Store in accordance with local regulations. Keep only in the original container. Keep container tightly closed, in a cool, well ventilated place. Keep containers upright. Protect containers from damage. Utilize retaining walls to prevent soil and water pollution in the event of spillage. The storage area floor should be leak-tight, jointless and not absorbent.

Storage class
Corrosive storage.

Specific end use(s)
The identified uses for this product are detailed in Section 1.

8. Exposure Controls/personal protection

Control parameters

Occupational exposure limits

zinc oxide
Long-term exposure limit (8-hour TWA): OSHA 5 mg/m³  fume
Long-term exposure limit (8-hour TWA): OSHA 15 mg/m³  total dust
Long-term exposure limit (8-hour TWA): ACGIH 2 mg/m³  respirable fraction
Short-term exposure limit (15-minute): ACGIH 10 mg/m³  respirable fraction
Long-term exposure limit (8-hour TWA): OSHA 5 mg/m³  respirable fraction

OSHA = Occupational Safety and Health Administration.
ACGIH = American Conference of Governmental Industrial Hygienists.

zinc oxide (CAS: 1314-13-2)

Immediate danger to life and health
500 mg/m³

Amphorous Silica (CAS: 7631-86-9)

Immediate danger to life and health
3000 mg/m³

Exposure controls

Protective equipment

Appropriate engineering controls
Provide adequate ventilation. Personal, workplace environment or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Use process enclosures, local exhaust ventilation or other engineering controls as the primary means to minimize worker exposure. Personal protective equipment should only be used if worker exposure cannot be controlled adequately by the engineering control measures. Ensure control measures are regularly inspected and maintained. Ensure operatives are trained to minimize exposure.

Eye/face protection
Eyewear complying with an approved standard should be worn if a risk assessment indicates eye contact is possible. Personal protective equipment for eye and face protection should comply with OSHA 1910.133. Wear tight-fitting, chemical splash goggles or face shield. If inhalation hazards exist, a full-face respirator may be required instead.
Thermal Bonding System, Part B

**Hand protection**

Chemical-resistant, impervious gloves complying with an approved standard should be worn if a risk assessment indicates skin contact is possible. The most suitable glove should be chosen in consultation with the glove supplier/manufacturer, who can provide information about the breakthrough time of the glove material. To protect hands from chemicals, gloves should comply with OSHA 1910.138 and be demonstrated to be impervious to the chemical and resist degradation. Considering the data specified by the glove manufacturer, check during use that the gloves are retaining their protective properties and change them as soon as any deterioration is detected. Frequent changes are recommended.

**Other skin and body protection**

Appropriate footwear and additional protective clothing complying with an approved standard should be worn if a risk assessment indicates skin contamination is possible.

**Hygiene measures**

Provide eyewash station and safety shower. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse. Clean equipment and the work area every day. Good personal hygiene procedures should be implemented. Wash at the end of each work shift and before eating, smoking and using the toilet. When using do not eat, drink or smoke. Preventive industrial medical examinations should be carried out. Warn cleaning personnel of any hazardous properties of the product.

**Respiratory protection**

Respiratory protection complying with an approved standard should be worn if a risk assessment indicates inhalation of contaminants is possible. Ensure all respiratory protective equipment is suitable for its intended use and is NIOSH approved. Check that the respirator fits tightly and the filter is changed regularly. Gas and combination filter cartridges should comply with OSHA 1910.134. Full face mask respirators with replaceable filter cartridges should comply with OSHA 1910.134. Half mask and quarter mask respirators with replaceable filter cartridges should comply with OSHA 1910.134.

**Environmental exposure controls**

Keep container tightly sealed when not in use. Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

### 9. Physical and Chemical Properties

**Information on basic physical and chemical properties**

- **Appearance**: Liquid.
- **Color**: Cream.
- **Odor**: Not known.
- **Odor threshold**: Not available.
- **pH**: Not available.
- **Melting point**: Not available.
- **Initial boiling point and range**: Not available.
- **Flash point**: Not available.
- **Evaporation rate**: Not available.
- **Evaporation factor**: Not available.
- **Flammability (solid, gas)**: Not available.
- **Upper/lower flammability or explosive limits**: Not available.
- **Other flammability**: Not available.
- **Vapor pressure**: Not available.
Thermal Bonding System, Part B

Vapor density Not available.
Relative density Not available.
Bulk density Not available.
Solubility(ies) Not available.
Partition coefficient Not available.
Auto-ignition temperature Not available.
Decomposition Temperature Not available.
Viscosity 70-80 Pa s @ 23°C
Explosive properties Not considered to be explosive.
Oxidizing properties Does not meet the criteria for classification as oxidizing.

10. Stability and reactivity
Reactivity See the other subsections of this section for further details.
Stability Stable at normal ambient temperatures and when used as recommended. Stable under the prescribed storage conditions.
Possibility of hazardous reactions No potentially hazardous reactions known.
Conditions to avoid There are no known conditions that are likely to result in a hazardous situation.
Materials to avoid No specific material or group of materials is likely to react with the product to produce a hazardous situation.
Hazardous decomposition products Does not decompose when used and stored as recommended. Thermal decomposition or combustion products may include the following substances: Corrosive gases or vapors.

11. Toxicological information
Information on toxicological effects
Acute toxicity - oral
Notes (oral LD₅₀) Based on available data the classification criteria are not met.
ATE oral (mg/kg) 2,193.86

Acute toxicity - dermal
Notes (dermal LD₅₀) Based on available data the classification criteria are not met.
ATE dermal (mg/kg) 22,833.89

Acute toxicity - inhalation
Notes (inhalation LC₅₀) Based on available data the classification criteria are not met.

Skin corrosion/irritation
Animal data Skin Corr. 1B - H314 Causes severe burns.

Serious eye damage/irritation
Serious eye damage/irritation Eye Dam. 1 - H318 Corrosive to skin. Corrosivity to eyes is assumed.
Respiratory sensitization
Thermal Bonding System, Part B

Respiratory sensitization
Based on available data the classification criteria are not met.

Skin sensitization
May cause skin sensitization or allergic reactions in sensitive individuals.

Germ cell mutagenicity
Based on available data the classification criteria are not met.

Carcinogenicity
Based on available data the classification criteria are not met.

IARC carcinogenicity
Contains a substance which may be potentially carcinogenic. IARC Group 3 Not classifiable as to its carcinogenicity to humans.

Reproductive toxicity
Based on available data the classification criteria are not met.

Specific target organ toxicity - single exposure
STOT - single exposure Not classified as a specific target organ toxicant after a single exposure.

Specific target organ toxicity - repeated exposure
STOT - repeated exposure Not classified as a specific target organ toxicant after repeated exposure.

Aspiration hazard
Based on available data the classification criteria are not met.

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

Inhalation
Corrosive to the respiratory tract. Symptoms following overexposure may include the following: Severe irritation of nose and throat.

Ingestion
May cause sensitization or allergic reactions in sensitive individuals. May cause chemical burns in mouth, esophagus and stomach. Symptoms following overexposure may include the following: Severe stomach pain. Nausea, vomiting.

Skin Contact
May cause skin sensitization or allergic reactions in sensitive individuals. Causes severe burns. Symptoms following overexposure may include the following: Pain or irritation. Redness. Blistering may occur.

Eye contact
Causes serious eye damage. Symptoms following overexposure may include the following: Pain. Profuse watering of the eyes. Redness.

Route of entry
Ingestion Inhalation Skin and/or eye contact

Target Organs
No specific target organs known.

Medical considerations
Skin disorders and allergies.

Triethylenetetramine, propoxylated

Acute toxicity - oral
Acute toxicity oral (LD₅₀ mg/kg) 4,500.0
Species Rat
Thermal Bonding System, Part B

ATE oral (mg/kg) 4,500.0

Copolymer of benzenamine and formaldehyde, hydrogenated

Acute toxicity - oral
ATE oral (mg/kg) 500.0

4,4'-methylenebis(cyclohexylamine)

Acute toxicity - oral
Acute toxicity oral (LD₅₀ mg/kg) 380.0
Species Rat
ATE oral (mg/kg) 380.0

Acute toxicity - dermal
Acute toxicity dermal (LD₅₀ mg/kg) 2,110.0
Species Rat
ATE dermal (mg/kg) 2,110.0

3,6-diazaoctanethylenediamin

Acute toxicity - dermal
ATE dermal (mg/kg) 1,100.0

12. Ecological Information

Toxicity
Aquatic Acute 1 - H400 Very toxic to aquatic life. Aquatic Chronic 1 - H410 Very toxic to aquatic life with long lasting effects.

zinc oxide

Acute aquatic toxicity
LE(C)₅₀ 0.1 < L(E)C50 ≤ 1
M factor (Acute) 1

Chronic aquatic toxicity
M factor (Chronic) 1

Persistence and degradability
The degradability of the product is not known.

Bioaccumulative potential
No data available on bioaccumulation.

Mobility in soil
Mobility No data available.

Other adverse effects
Other adverse effects

None known.

13. Disposal considerations

Waste treatment methods

General information

The generation of waste should be minimized or avoided wherever possible. Reuse or recycle products wherever possible. This material and its container must be disposed of in a safe way. Disposal of this product, process solutions, residues and by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any local authority requirements. When handling waste, the safety precautions applying to handling of the product should be considered. Care should be taken when handling emptied containers that have not been thoroughly cleaned or rinsed out. Empty containers or liners may retain some product residues and hence be potentially hazardous.

Disposal methods

Do not empty into drains. Dispose of surplus products and those that cannot be recycled via a licensed waste disposal contractor. Waste, residues, empty containers, discarded work clothes and contaminated cleaning materials should be collected in designated containers, labeled with their contents. Incineration or landfill should only be considered when recycling is not feasible.

14. Transport information

General

For limited quantity packaging/limited load information, consult the relevant modal documentation using the data shown in this section.

UN Number

UN No. (TDG) 1760
UN No. (IMDG) 1760
UN No. (ICAO) 1760
UN No. (DOT) ID8000

UN proper shipping name

Proper shipping name (TDG) CORROSIVE LIQUID, N.O.S. (CONTAINS 4,4’-methylenebis(cyclohexylamine), zinc oxide)
Proper shipping name (IMDG) CORROSIVE LIQUID, N.O.S. (CONTAINS 4,4’-methylenebis(cyclohexylamine), zinc oxide)
Proper shipping name (ICAO) CORROSIVE LIQUID, N.O.S. (CONTAINS 4,4’-methylenebis(cyclohexylamine), zinc oxide)
Proper shipping name (DOT) CONSUMER COMMODITY

Transport hazard class(es)

DOT hazard class 9
DOT hazard label 9
TDG class 8
TDG label(s) 8
IMDG Class 8
ICAO class/division 8

Transport labels
Thermal Bonding System, Part B

DOT transport labels

Packing group

TDG Packing Group II
IMDG packing group II
ICAO packing group II

Environmental hazards

Environmentally Hazardous Substance

Special precautions for user

Always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

EmS F-A, S-B

Transport in bulk according to Not applicable.
Annex II of MARPOL 73/78
and the IBC Code

15. Regulatory information

US Federal Regulations
SARA Section 302 Extremely Hazardous Substances Tier II Threshold Planning Quantities
None of the ingredients are listed or exempt.

CERCLA/Superfund, Hazardous Substances/Reportable Quantities (EPA)
None of the ingredients are listed or exempt.

SARA Extremely Hazardous Substances EPCRA Reportable Quantities
None of the ingredients are listed or exempt.

SARA 313 Emission Reporting
The following ingredients are listed or exempt:

- zinc oxide
  1.0 %

CAA Accidental Release Prevention
None of the ingredients are listed or exempt.

FDA - Essential Chemical
None of the ingredients are listed or exempt.

FDA - Precursor Chemical
None of the ingredients are listed or exempt.

SARA (311/312) Hazard Categories
None of the ingredients are listed or exempt.
Thermal Bonding System, Part B

**OSHA Highly Hazardous Chemicals**
None of the ingredients are listed or exempt.

**US State Regulations**

**California Proposition 65 Carcinogens and Reproductive Toxins**
The following ingredients are listed or exempt:

*Amphorous Silica*
Known to the State of California to cause cancer.

**California Air Toxics "Hot Spots" (A-I)**
The following ingredients are listed or exempt:

*zinc oxide*
*Amphorous Silica*

**California Air Toxics "Hot Spots" (A-II)**
None of the ingredients are listed or exempt.

**California Directors List of Hazardous Substances**
The following ingredients are listed or exempt:

*zinc oxide*
*Amphorous Silica*

**Massachusetts "Right To Know" List**
The following ingredients are listed or exempt:

*zinc oxide*
*3,6-diazaoctanethylenediamin*
*Amphorous Silica*

**Rhode Island "Right To Know" List**
The following ingredients are listed or exempt:

*zinc oxide*

**Minnesota "Right To Know" List**
The following ingredients are listed or exempt:

*zinc oxide*
*Amphorous Silica*

**New Jersey "Right To Know" List**
The following ingredients are listed or exempt:

*zinc oxide*
*3,6-diazaoctanethylenediamin*

**Pennsylvania "Right To Know" List**
The following ingredients are listed or exempt:

*zinc oxide*
*3,6-diazaoctanethylenediamin*
*Amphorous Silica*

**Inventories**
Thermal Bonding System, Part B

US - TSCA
All the ingredients are listed or exempt.

US - TSCA 12(b) Export Notification
None of the ingredients are listed or exempt.

16. Other information

<table>
<thead>
<tr>
<th>Classification abbreviations and acronyms</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eye Dam. = Serious eye damage</td>
<td></td>
</tr>
<tr>
<td>Skin Corr. = Skin corrosion</td>
<td></td>
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<tr>
<td>Skin Sens. = Skin sensitisation</td>
<td></td>
</tr>
<tr>
<td>Aquatic Acute = Hazardous to the aquatic environment (acute)</td>
<td></td>
</tr>
<tr>
<td>Aquatic Chronic = Hazardous to the aquatic environment (chronic)</td>
<td></td>
</tr>
</tbody>
</table>

Training advice
Read and follow manufacturer's recommendations. Only trained personnel should use this material.

Issued by
Bethan Massey

Revision date
6/23/2017

Revision
0

SDS No.
1695

Hazard statements in full
H302 Harmful if swallowed.
H312 Harmful in contact with skin.
H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H319 Causes serious eye irritation.
H373 May cause damage to organs through prolonged or repeated exposure.
H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long lasting effects.
H412 Harmful to aquatic life with long lasting effects.

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.