

Printing date 05/07/2018

Reviewed on 09/13/2017

## 1 Identification

- **Product identifier**
- **Trade name:** Marine 823 Hardener
- **Article number:** 1823089
- **Application of the substance / the mixture** Epoxy curing agent
- **Details of the supplier of the safety data sheet** SikaAxson US - EHS Department
- **Manufacturer/Supplier:**  
Company Name: Axson Technologies US, Inc.-SikaAxson

Headquarters:  
 31200 Stephenson Hwy  
 Madison Heights, MI 48071  
 USA

Manufacturing Site:  
 1611 Hults Drive  
 Eaton Rapids, MI 48827  
 USA  
 ehs-us@axson.com

- **Information department:** Product safety department
- **Emergency telephone number:**  
 During normal opening times: +1 (248) 588-2270  
 CHEMTREC 24-hour Emergency: +1 (800) 424-9300

## 2 Hazard(s) identification

- **Classification of the substance or mixture**



GHS08 Health hazard

Resp. Sens. 1 H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Repr. 2 H361 Suspected of damaging fertility or the unborn child.



GHS05 Corrosion

Skin Corr. 1A H314 Causes severe skin burns and eye damage.

Eye Dam. 1 H318 Causes serious eye damage.



GHS09 Environment

Aquatic Chronic 2 H411 Toxic to aquatic life with long lasting effects.



GHS07

Acute Tox. 4 H312 Harmful in contact with skin.

(Contd. on page 2)

US



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## Safety Data Sheet

acc. to OSHA HCS

Printing date 05/07/2018

Reviewed on 09/13/2017

**Trade name: Marine 823 Hardener**

(Contd. of page 1)

Acute Tox. 4      H332 Harmful if inhaled.  
 Skin Sens. 1      H317 May cause an allergic skin reaction.  
 Aquatic Acute 3      H402 Harmful to aquatic life.

· **Label elements**

· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).

· **Hazard pictograms**



GHS05    GHS07    GHS08    GHS09

· **Signal word** Danger

· **Hazard-determining components of labeling:**

3,6-diazaoctanethylenediamin  
 2,2'-iminodiethylamine  
 Polyoxypropylenediamine  
 2-piperazin-1-ylethylamine  
 Teta, reaction products with propylene oxide  
 Polyoxylated Triethylenetetramine  
 bisphenol A

· **Hazard statements**

Harmful in contact with skin or if inhaled.  
 Causes severe skin burns and eye damage.  
 May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
 May cause an allergic skin reaction.  
 Suspected of damaging fertility or the unborn child.  
 Harmful to aquatic life.  
 Toxic to aquatic life with long lasting effects.

· **Precautionary statements**

Avoid breathing dust/fume/gas/mist/vapors/spray  
 Do not breathe dusts or mists.  
 Wear protective gloves/protective clothing/eye protection/face protection.  
 [In case of inadequate ventilation] wear respiratory protection.  
 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.  
 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.  
 Continue rinsing.  
 Immediately call a poison center/doctor.  
 Specific treatment (see on this label).  
 Take off contaminated clothing and wash it before reuse.  
 Store locked up.  
 Dispose of contents/container in accordance with local/regional/national/international regulations.

· **Classification system:**

· **NFPA ratings (scale 0 - 4)**



Health = 3  
 Fire = 1  
 Reactivity = 0

(Contd. on page 3)



BUILDING TRUST



## Safety Data Sheet

acc. to OSHA HCS

Printing date 05/07/2018

Reviewed on 09/13/2017

**Trade name: Marine 823 Hardener**

(Contd. of page 2)

· **HMIS-ratings (scale 0 - 4)**

HEALTH	3	Health = *3
FIRE	1	Fire = 1
REACTIVITY	0	Reactivity = 0

- **Other hazards**
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.

### 3 Composition/information on ingredients

- **Chemical characterization: Mixtures**
- **Description:** Mixture of the substances listed below with nonhazardous additions.

· **Dangerous components:**

CAS: 112-24-3 EINECS: 203-950-6	3,6-diazaoctanethylenediamin	≥25-≤50%
CAS: 9046-10-0	Polyoxypropylenediamine	≥25-≤50%
CAS: 140-31-8 EINECS: 205-411-0	2-piperazin-1-ylethylamine	10-20%
CAS: 26950-63-0	Teta, reaction products with propylene oxide Polyoxylated Triethylenetetramine	≥5-<10%
CAS: 111-40-0 EINECS: 203-865-4	2,2'-iminodiethylamine	≥1-<5%
CAS: 80-05-7 EINECS: 201-245-8	bisphenol A	≥1-<3%

### 4 First-aid measures

- **Description of first aid measures**
- **General information:**  
Immediately remove any clothing soiled by the product.  
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
- **After inhalation:**  
Supply fresh air and to be sure call for a doctor.  
In case of unconsciousness place patient stably in side position for transportation.
- **After skin contact:** Immediately wash with water and soap and rinse thoroughly.
- **After eye contact:** Rinse opened eye for several minutes under running water. Then consult a doctor.
- **After swallowing:** Drink copious amounts of water and provide fresh air. Immediately call a doctor.
- **Information for doctor:**
- **Most important symptoms and effects, both acute and delayed** No further relevant information available.
- **Indication of any immediate medical attention and special treatment needed**  
No further relevant information available.

US

(Contd. on page 4)



BUILDING TRUST



## Safety Data Sheet

acc. to OSHA HCS

Printing date 05/07/2018

Reviewed on 09/13/2017

Trade name: Marine 823 Hardener

(Contd. of page 3)

### 5 Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:** Use fire fighting measures that suit the environment.
- **Special hazards arising from the substance or mixture** No further relevant information available.
- **Advice for firefighters**
- **Protective equipment:**
  - Mouth respiratory protective device.
  - Wear self-contained respiratory protective device.
- **Additional information**
  - Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.

### 6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**
  - Wear protective equipment. Keep unprotected persons away.
- **Environmental precautions:**
  - Inform respective authorities in case of seepage into water course or sewage system.
  - Do not allow to enter sewers/ surface or ground water.
- **Methods and material for containment and cleaning up:**
  - Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
  - Use neutralizing agent.
  - Dispose contaminated material as waste according to item 13.
  - Ensure adequate ventilation.
- **Reference to other sections**
  - See Section 7 for information on safe handling.
  - See Section 8 for information on personal protection equipment.
  - See Section 13 for disposal information.
- **Protective Action Criteria for Chemicals**

#### · PAC-1:

112-24-3	3,6-diazaoctanethylenediamin	3 ppm
9046-10-0	Polyoxypropylenediamine	4.8 mg/m <sup>3</sup>
140-31-8	2-piperazin-1-ylethylamine	6.4 mg/m <sup>3</sup>
111-40-0	2,2'-iminodiethylamine	3 ppm
80-05-7	bisphenol A	15 mg/m <sup>3</sup>
107-15-3	ethylenediamine	0.88 ppm
75-56-9	propylene oxide	73 ppm

#### · PAC-2:

112-24-3	3,6-diazaoctanethylenediamin	14 ppm
9046-10-0	Polyoxypropylenediamine	53 mg/m <sup>3</sup>
140-31-8	2-piperazin-1-ylethylamine	71 mg/m <sup>3</sup>
111-40-0	2,2'-iminodiethylamine	8.5 ppm
80-05-7	bisphenol A	110 mg/m <sup>3</sup>
107-15-3	ethylenediamine	9.7 ppm
75-56-9	propylene oxide	290 ppm

(Contd. on page 5)



BUILDING TRUST



## Safety Data Sheet

acc. to OSHA HCS

Printing date 05/07/2018

Reviewed on 09/13/2017

Trade name: Marine 823 Hardener

(Contd. of page 4)

· PAC-3:		
112-24-3	3,6-diazaoctanethylenediamin	83 ppm
9046-10-0	Polyoxypropylenediamine	320 mg/m <sup>3</sup>
140-31-8	2-piperazin-1-ylethylamine	420 mg/m <sup>3</sup>
111-40-0	2,2'-iminodiethylamine	51 ppm
80-05-7	bisphenol A	650 mg/m <sup>3</sup>
107-15-3	ethylenediamine	20 ppm
75-56-9	propylene oxide	870 ppm

### 7 Handling and storage

- **Handling:**
- **Precautions for safe handling** Ensure good ventilation/exhaustion at the workplace.
- **Information about protection against explosions and fires:** No special measures required.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** No special requirements.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:** Keep receptacle tightly sealed.
- **Specific end use(s)** No further relevant information available.

### 8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.
- **Control parameters**
- **Components with limit values that require monitoring at the workplace:**  
The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit.  
At this time, the other constituents have no known exposure limits.

<b>112-24-3 3,6-diazaoctanethylenediamin</b>	
WEEL	Long-term value: 6 mg/m <sup>3</sup> , 1 ppm Skin
<b>111-40-0 2,2'-iminodiethylamine</b>	
REL	Long-term value: 4 mg/m <sup>3</sup> , 1 ppm Skin
TLV	Long-term value: 4.2 mg/m <sup>3</sup> , 1 ppm Skin

- **Additional information:** The lists that were valid during the creation were used as basis.
- **Exposure controls**
- **Personal protective equipment:**
- **General protective and hygienic measures:**  
Keep away from foodstuffs, beverages and feed.  
Immediately remove all soiled and contaminated clothing.  
Wash hands before breaks and at the end of work.

(Contd. on page 6)

US

**Trade name: Marine 823 Hardener**

(Contd. of page 5)

Avoid contact with the eyes.  
 Avoid contact with the eyes and skin.

· **Breathing equipment:**

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

· **Protection of hands:**



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

· **Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product 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.

· **Penetration time of glove material**

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

· **Eye protection:**



Tightly sealed goggles

## 9 Physical and chemical properties

· **Information on basic physical and chemical properties**

· **General Information**

· **Appearance:**

· <b>Form:</b>	Liquid
· <b>Color:</b>	Amber colored
· <b>Odor:</b>	Amine-like
· <b>Odor threshold:</b>	Not determined.

· **pH-value:** Not determined.

· **Change in condition**

· <b>Melting point/Melting range:</b>	Undetermined.
· <b>Boiling point/Boiling range:</b>	220.4 °C (428.7 °F)

· **Flash point:** 102 °C (215.6 °F)

· **Flammability (solid, gaseous):** Not applicable.

· **Ignition temperature:** 315 °C (599 °F)

· **Decomposition temperature:** Not determined.

(Contd. on page 7)



BUILDING TRUST



## Safety Data Sheet

acc. to OSHA HCS

Printing date 05/07/2018

Reviewed on 09/13/2017

Trade name: Marine 823 Hardener

(Contd. of page 6)

· <b>Auto igniting:</b>	Product is not selfigniting.
· <b>Danger of explosion:</b>	Product does not present an explosion hazard.
· <b>Explosion limits:</b>	
<b>Lower:</b>	0.7 Vol %
<b>Upper:</b>	10.5 Vol %
· <b>Vapor pressure at 20 °C (68 °F):</b>	0.1 hPa (0.1 mm Hg)
· <b>Density at 20 °C (68 °F):</b>	0.98 g/cm <sup>3</sup> (8.18 lbs/gal)
· <b>Relative density</b>	Not determined.
· <b>Vapor density</b>	Not determined.
· <b>Evaporation rate</b>	Not determined.
· <b>Solubility in / Miscibility with Water:</b>	Not miscible or difficult to mix.
· <b>Partition coefficient (n-octanol/water):</b>	Not determined.
· <b>Viscosity:</b>	
<b>Dynamic:</b>	Not determined.
<b>Kinematic:</b>	Not determined.
· <b>Solvent content:</b>	
<b>Organic solvents:</b>	0.0 %
<b>VOC content:</b>	0.01 %
	0.1 g/l / 0.00 lb/gl
<b>Solids content:</b>	1.2 %
· <b>Other information</b>	No further relevant information available.

### 10 Stability and reactivity

- **Reactivity** No further relevant information available.
- **Chemical stability**
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials:** No further relevant information available.
- **Hazardous decomposition products:**  
?  
Carbon monoxide and carbon dioxide

### 11 Toxicological information

- **Information on toxicological effects**
- **Acute toxicity:**

#### · LD/LC50 values that are relevant for classification:

Oral	LD50	2,880 mg/kg (rat)
Dermal	LD50	2,980 mg/kg (rabbit)

(Contd. on page 8)

US



BUILDING TRUST



## Safety Data Sheet

acc. to OSHA HCS

Printing date 05/07/2018

Reviewed on 09/13/2017

Trade name: Marine 823 Hardener

(Contd. of page 7)

**112-24-3 3,6-diazaoctanethylenediamin**

Oral LD50 2,500 mg/kg (rat)

Dermal LD50 805 mg/kg (rabbit)

**9046-10-0 Polyoxypropylenediamine**

Oral LD50 2,855 mg/kg (rabbit)

Dermal LD50 2,980 mg/kg (rabbit)

**140-31-8 2-piperazin-1-ylethylamine**

Oral LD50 2,110 mg/kg (rat)

Dermal LD50 866 mg/kg (rabbit)

· **Primary irritant effect:**· **on the skin:** Strong caustic effect on skin and mucous membranes.· **on the eye:**

Strong caustic effect.

Strong irritant with the danger of severe eye injury.

· **Sensitization:**

Sensitization possible through inhalation.

Sensitization possible through skin contact.

· **Additional toxicological information:**

The product shows the following dangers according to internally approved calculation methods for preparations:

Harmful

Corrosive

Irritant

Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

· **Carcinogenic categories**· **IARC (International Agency for Research on Cancer)**

75-56-9 propylene oxide

2B

· **NTP (National Toxicology Program)**

75-56-9 propylene oxide

R

· **OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients is listed.

## 12 Ecological information

· **Toxicity**· **Aquatic toxicity:**

96 hr LC50 &gt;220 mg/l (Fish)

**9046-10-0 Polyoxypropylenediamine**

48 hr EC50 80 mg/l (daphnia)

96 hr LC50 772 mg/l (Fish)

72 or 96 hr ErC50 15 mg/l (Algae)

**140-31-8 2-piperazin-1-ylethylamine**

48 hr EC50 58 mg/l (Invertebrates)

(Contd. on page 9)

US



Printing date 05/07/2018

Reviewed on 09/13/2017

**Trade name: Marine 823 Hardener**

(Contd. of page 8)

96 hr LC50	2,190 mg/l (Fish)
72 or 96 hr ErC50	1,000 mg/l (Algae)

- **Persistence and degradability** No further relevant information available.
- **Behavior in environmental systems:**
- **Bioaccumulative potential** No further relevant information available.
- **Mobility in soil** No further relevant information available.
- **Ecotoxicological effects:**
- **Remark:** Toxic for fish
- **Additional ecological information:**
- **General notes:**  
*Water hazard class 3 (Self-assessment): extremely hazardous for water*  
*Do not allow product to reach ground water, water course or sewage system, even in small quantities.*  
*Must not reach bodies of water or drainage ditch undiluted or unneutralized.*  
*Danger to drinking water if even extremely small quantities leak into the ground.*  
*Also poisonous for fish and plankton in water bodies.*  
*Toxic for aquatic organisms*
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **Other adverse effects** No further relevant information available.

### 13 Disposal considerations

- **Waste treatment methods**
- **Recommendation:**  
*Must not be disposed of together with household garbage. Do not allow product to reach sewage system.*
- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to official regulations.

### 14 Transport information

- **UN-Number**
- **DOT** NA2735
- **IMDG, IATA** UN2735
- **UN proper shipping name**
- **DOT** Amines, liquid, corrosive, n.o.s. (Triethylenetetramine, Polyoxypropylenediamine)
- **IMDG** AMINES, LIQUID, CORROSIVE, N.O.S. (TRIETHYLENETETRAMINE, Polyoxypropylenediamine), MARINE POLLUTANT
- **IATA** AMINES, LIQUID, CORROSIVE, N.O.S. (TRIETHYLENETETRAMINE, Polyoxypropylenediamine)

(Contd. on page 10)

US

**Trade name: Marine 823 Hardener**

(Contd. of page 9)

 · **Transport hazard class(es)**

 · **DOT**

 · **Class** 8 Corrosive substances  
 · **Label** 8

 · **IMDG**

 · **Class** 8 Corrosive substances  
 · **Label** 8

 · **IATA**

 · **Class** 8 Corrosive substances  
 · **Label** 8

 · **Packing group**

 · **DOT, IMDG, IATA** II

 · **Environmental hazards:** Product contains environmentally hazardous substances:  
 Polyoxypropylenediamine

 · **Marine pollutant:** Yes  
 Symbol (fish and tree)

 · **Special precautions for user** Warning: Corrosive substances

 · **Danger code (Kemler):** 80

 · **EMS Number:** F-A,S-B

 · **Segregation groups** Alkalies

 · **Stowage Category** A

 · **Segregation Code** SG35 Stow "separated from" acids.

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

 · **Transport/Additional information:**

 · **DOT**

 · **Quantity limitations** On passenger aircraft/rail: 1 L  
 On cargo aircraft only: 30 L

 · **Remarks:** Special marking with the symbol (fish and tree).

(Contd. on page 11)



BUILDING TRUST



## Safety Data Sheet

acc. to OSHA HCS

Printing date 05/07/2018

Reviewed on 09/13/2017

Trade name: Marine 823 Hardener

(Contd. of page 10)

· <b>IMDG</b>	
· <b>Limited quantities (LQ)</b>	1L
· <b>Excepted quantities (EQ)</b>	Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml
· <b>UN "Model Regulation":</b>	UN 2735 AMINES, LIQUID, CORROSIVE, N.O.S. (TRIETHYLENETETRAMINE, POLYOXYPROPYLENEDIAMINE), 8, II, ENVIRONMENTALLY HAZARDOUS

### 15 Regulatory information

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

· Sara

· **Section 355 (extremely hazardous substances):**

107-15-3	ethylenediamine
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75-56-9	propylene oxide
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· **Section 313 (Specific toxic chemical listings):**

80-05-7	bisphenol A
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· **TSCA (Toxic Substances Control Act) (Substances not listed):**

All ingredients are listed.

· **Chemicals regulated by TSCA Section 12(b)**

None of the ingredients is listed.

· **Chemical regulated by TSCA 5(a)(2)rule:**

None of the ingredients is listed.

· **TSCA new (21st Century Act) (Substances not listed)**

26950-63-0	Teta, reaction products with propylene oxide Polyoxylated Triethylenetetramine
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· **Proposition 65**

· **Chemicals known to cause cancer:**

75-56-9	propylene oxide
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· **Chemicals known to cause reproductive toxicity for females:**

80-05-7	bisphenol A
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· **Chemicals known to cause reproductive toxicity for males:**

None of the ingredients is listed.

· **Chemicals known to cause developmental toxicity:**

None of the ingredients is listed.

· **Carcinogenic categories**

· **EPA (Environmental Protection Agency)**

107-15-3	ethylenediamine	D
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75-56-9	propylene oxide	B2
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(Contd. on page 12)



BUILDING TRUST



## Safety Data Sheet

acc. to OSHA HCS

Printing date 05/07/2018

Reviewed on 09/13/2017

**Trade name: Marine 823 Hardener**

(Contd. of page 11)

· **TLV (Threshold Limit Value established by ACGIH)**

107-15-3	ethylenediamine	A4
75-56-9	propylene oxide	A3

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**

75-56-9	propylene oxide
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· **Listed in CWC Regulations**

None of the ingredients is listed.

· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).

· **Hazard pictograms**



GHS05 GHS07 GHS08 GHS09

· **Signal word** Danger

· **Hazard-determining components of labeling:**

3,6-diazaoctanethylenediamin  
 2,2'-iminodiethylamine  
 Polyoxypropylenediamine  
 2-piperazin-1-ylethylamine  
 Teta, reaction products with propylene oxide  
 Polyoxylated Triethylenetetramine  
 bisphenol A

· **Hazard statements**

Harmful in contact with skin or if inhaled.  
 Causes severe skin burns and eye damage.  
 May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
 May cause an allergic skin reaction.  
 Suspected of damaging fertility or the unborn child.  
 Harmful to aquatic life.  
 Toxic to aquatic life with long lasting effects.

· **Precautionary statements**

Do not breathe dusts or mists.  
 Wear protective gloves/protective clothing/eye protection/face protection.  
 [In case of inadequate ventilation] wear respiratory protection.  
 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.  
 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.  
 Continue rinsing.  
 Immediately call a poison center/doctor.  
 Specific treatment (see on this label).  
 Take off contaminated clothing and wash it before reuse.  
 Store locked up.  
 Dispose of contents/container in accordance with local/regional/national/international regulations.

· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

US

(Contd. on page 13)



BUILDING TRUST



## Safety Data Sheet

acc. to OSHA HCS

Printing date 05/07/2018

Reviewed on 09/13/2017

**Trade name: Marine 823 Hardener**

(Contd. of page 12)

### 16 Other information

*This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.*

· **Date of preparation / last revision** 05/07/2018 / 1

· **Abbreviations and acronyms:**

*ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)*

*IMDG: International Maritime Code for Dangerous Goods*

*DOT: US Department of Transportation*

*IATA: International Air Transport Association*

*ACGIH: American Conference of Governmental Industrial Hygienists*

*EINECS: European Inventory of Existing Commercial Chemical Substances*

*ELINCS: European List of Notified Chemical Substances*

*CAS: Chemical Abstracts Service (division of the American Chemical Society)*

*NFPA: National Fire Protection Association (USA)*

*HMIS: Hazardous Materials Identification System (USA)*

*VOC: Volatile Organic Compounds (USA, EU)*

*LC50: Lethal concentration, 50 percent*

*LD50: Lethal dose, 50 percent*

*PBT: Persistent, Bioaccumulative and Toxic*

*vPvB: very Persistent and very Bioaccumulative*

*NIOSH: National Institute for Occupational Safety*

*OSHA: Occupational Safety & Health*

*TLV: Threshold Limit Value*

*PEL: Permissible Exposure Limit*

*REL: Recommended Exposure Limit*

*Acute Tox. 4: Acute toxicity – Category 4*

*Skin Corr. 1A: Skin corrosion/irritation – Category 1A*

*Eye Dam. 1: Serious eye damage/eye irritation – Category 1*

*Resp. Sens. 1: Respiratory sensitisation – Category 1*

*Skin Sens. 1: Skin sensitisation – Category 1*

*Repr. 2: Reproductive toxicity – Category 2*

*Aquatic Acute 3: Hazardous to the aquatic environment - acute aquatic hazard – Category 3*

*Aquatic Chronic 2: Hazardous to the aquatic environment - long-term aquatic hazard – Category 2*