

Safety Data Sheet

acc. to OSHA HCS

Printing date 05/19/2020

Reviewed on 05/19/2020

1 Identification

- **Product identifier**
- **Trade name:** SikaBiresin CR72 (MARINE 820 RESIN)
- **Article number:** 1820088-3
- **Application of the substance / the mixture**
Epoxy resin
Epoxy resin
- **Details of the supplier of the safety data sheet**
Sika Advanced Resins, US
EHS Department
- **Manufacturer/Supplier:**
Supplier's Name: Sika Advanced Resins, US
Headquarters:
30800 Stephenson Hwy
Madison Heights, MI 48071
USA



advancedresins.ehs@us.sika.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



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2 Hazard(s) identification

- **Classification of the substance or mixture**

 GHS07
 Skin Irrit. 2 H315 Causes skin irritation.
 Eye Irrit. 2A H319 Causes serious eye irritation.
 Skin Sens. 1 H317 May cause an allergic skin reaction.
- **Label elements**
- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms**

 GHS07
- **Signal word** Warning

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

Reaction Product of Bisphenol A and Epichlorohydrin
oxirane, mono[(C12-14-alkyloxy)methyl] derivs
Alkyl C12-C14 Glycidyl Ether
Methyl (1,2,2,6,6-pentamethyl-4-piperidyl) sebacate
Bis(1,2,2,6,6-pentamethyl-4-piperidyl) sebacate

· **Hazard statements**

Causes skin irritation.
Causes serious eye irritation.
May cause an allergic skin reaction.

· **Precautionary statements**

Avoid breathing dust/fume/gas/mist/vapors/spray
Avoid breathing dust/fume/gas/mist/vapors/spray
Wash thoroughly after handling.
Wear protective gloves / eye protection / face protection.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
Continue rinsing.
Take off contaminated clothing and wash it before reuse.
If skin irritation or rash occurs: Get medical advice/attention.
Specific treatment (see on this label).
If eye irritation persists: Get medical advice/attention.
Wash contaminated clothing before reuse.
Dispose of contents/container in accordance with local/regional/national/international regulations.

· **Classification system:**

· **NFPA ratings (scale 0 - 4)**



· **HMIS-ratings (scale 0 - 4)**

HEALTH	2	Health = 2
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.

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· Dangerous components:

CAS: 25068-38-6 NLP: 500-033-5	Reaction Product of Bisphenol A and Epichlorohydrin	50-100%
CAS: 68609-97-2 EINECS: 271-846-8	oxirane, mono[(C12-14-alkyloxy)methyl] derivs Alkyl C12-C14 Glycidyl Ether	10-20%
CAS: 41556-26-7	Bis(1,2,2,6,6-pentamethyl-4-piperidyl sebacate	≥0.1-<1%
CAS: 82919-37-7	Methyl (1,2,2,6,6-pentamethyl-4-piperidyl) sebacate	≥0.1-<1%

4 First-aid measures

- **Description of first aid measures**
- **General information:** Immediately remove any clothing soiled by the product.
- **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. If symptoms persist, consult a doctor.
- **After swallowing:** If symptoms persist consult 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.

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:** 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** Not required.
- **Environmental precautions:**
Dilute with plenty of water.
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).

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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:**

25068-38-6	Reaction Product of Bisphenol A and Epichlorohydrin	90 mg/m ³
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· **PAC-2:**

25068-38-6	Reaction Product of Bisphenol A and Epichlorohydrin	990 mg/m ³
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· **PAC-3:**

25068-38-6	Reaction Product of Bisphenol A and Epichlorohydrin	5,900 mg/m ³
------------	---	-------------------------

* 7 Handling and storage

· **Handling:**

· **Precautions for safe handling**

Ensure good ventilation/exhaustion at the workplace.
Prevent formation of aerosols.

· **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 product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

· **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.

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Wash hands before breaks and at the end of work.
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:**

Form:	Liquid
Color:	Whitish
· Odor:	Amine-like
· Odor threshold:	Not determined.

· **pH-value:** Not determined.

· **Change in condition**

Melting point/Melting range:	Undetermined.
Boiling point/Boiling range:	Undetermined.

· **Flash point:** 150 °C (302 °F)

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Trade name: SikaBiresin CR72 (MARINE 820 RESIN)

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· Flammability (solid, gaseous):	Not applicable.
· Decomposition temperature:	Not determined.
· Auto igniting:	Product is not selfigniting.
· Danger of explosion:	Product does not present an explosion hazard.
· Explosion limits:	
Lower:	Not determined.
Upper:	Not determined.
· Vapor pressure:	Not determined.
· Density at 20 °C (68 °F):	1.13 g/cm ³ (9.43 lbs/gal)
· Relative density	Not determined.
· Vapor density	Not determined.
· Evaporation rate	Not determined.
· Solubility in / Miscibility with Water:	Fully miscible.
· Partition coefficient (n-octanol/water):	Not determined.
· Viscosity:	
Dynamic:	Not determined.
Kinematic:	Not determined.
· Solvent content:	
Organic solvents:	0.7 %
VOC content:	0.70 %
	7.9 g/l / 0.07 lb/gal
Solids content:	0.0 %
· Other information	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

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11 Toxicological information

- **Information on toxicological effects**
- **Acute toxicity:**
- **Primary irritant effect:**
- **on the skin:** Irritant to skin and mucous membranes.
- **on the eye:** Irritating effect.
- **Sensitization:** Sensitization possible through skin contact.
- **Additional toxicological information:**
The product shows the following dangers according to internally approved calculation methods for preparations:
Irritant
- **Carcinogenic categories**

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

None of the ingredients is listed.

· **NTP (National Toxicology Program)**

None of the ingredients is listed.

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

None of the ingredients is listed.

12 Ecological information

- **Toxicity**
- **Aquatic toxicity:** No further relevant information available.
- **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.
- **Additional ecological information:**
- **General notes:**
Water hazard class 2 (Self-assessment): hazardous for water
Do not allow product to reach ground water, water course or sewage system.
Danger to drinking water if even small quantities leak into the ground.
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **Other adverse effects** No further relevant information available.

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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.
- **Recommended cleansing agent:** Water, if necessary with cleansing agents.

14 Transport information

<ul style="list-style-type: none"> · UN-Number · DOT, ADN · IMDG, IATA 	<p>not regulated UN3082</p>
<ul style="list-style-type: none"> · UN proper shipping name · DOT, ADN · IMDG · IATA 	<p>not regulated ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Epoxy Resin), MARINE POLLUTANT ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Epoxy Resin)</p>
<ul style="list-style-type: none"> · Transport hazard class(es) · DOT, ADN · Class 	<p>not regulated</p>
<ul style="list-style-type: none"> · IMDG, IATA 	
	
<ul style="list-style-type: none"> · Class · Label 	<p>9 Miscellaneous dangerous substances and articles 9</p>
<ul style="list-style-type: none"> · Packing group · DOT · IMDG, IATA 	<p>not regulated III</p>
<ul style="list-style-type: none"> · Environmental hazards: · Marine pollutant: · Special marking (IATA): 	<p>Product contains environmentally hazardous substances: Bis(1,2,2,6,6-pentamethyl-4-piperidyl sebacate, Epoxy Resin Yes Symbol (fish and tree) Symbol (fish and tree)</p>
<ul style="list-style-type: none"> · Special precautions for user 	<p>Not applicable.</p>

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· EMS Number:	F-A,S-F
· Stowage Category	A
· Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.
· Transport/Additional information:	
· IMDG	
· Limited quantities (LQ)	5L
· Excepted quantities (EQ)	Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml
· UN "Model Regulation":	not regulated

15 Regulatory information

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

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

None of the ingredients is listed.

· **Section 313 (Specific toxic chemical listings):**

95-63-6 | 1,2,4-trimethylbenzene

· **TSCA (Toxic Substances Control Act):**

All components have the value ACTIVE.

· **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.

· **Hazardous Air Pollutants**

98-82-8 | cumene

· **Proposition 65**

· **Chemicals known to cause cancer:**

98-82-8 | cumene

· **Chemicals known to cause reproductive toxicity for females:**

None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for males:**

None of the ingredients is listed.

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

None of the ingredients is listed.

· **Carcinogenic categories**

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

None of the ingredients is listed.

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

None of the ingredients is listed.

· **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**



GHS07

· **Signal word** Warning

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

Reaction Product of Bisphenol A and Epichlorohydrin
oxirane, mono[(C12-14-alkyloxy)methyl] derivs
Alkyl C12-C14 Glycidyl Ether
Methyl (1,2,2,6,6-pentamethyl-4-piperidyl) sebacate
Bis(1,2,2,6,6-pentamethyl-4-piperidyl) sebacate

· **Hazard statements**

Causes skin irritation.
Causes serious eye irritation.
May cause an allergic skin reaction.

· **Precautionary statements**

Avoid breathing dust/fume/gas/mist/vapors/spray
Wash thoroughly after handling.
Wear protective gloves / eye protection / face protection.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
Continue rinsing.
Take off contaminated clothing and wash it before reuse.
If skin irritation or rash occurs: Get medical advice/attention.
Specific treatment (see on this label).
If eye irritation persists: Get medical advice/attention.
Wash contaminated clothing before reuse.
Dispose of contents/container in accordance with local/regional/national/international regulations.

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

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** 05/19/2020 / 6

· **Abbreviations and acronyms:**

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)

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

Skin Irrit. 2: Skin corrosion/irritation – Category 2

Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A

Skin Sens. 1: Skin sensitisation – Category 1

· *** Data compared to the previous version altered.**

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1 Identification

- **Product identifier**
- **Trade name:** SikaBiresin CH72-1 (MARINE 822 HARD)
- **Article number:** 1822089-1
- **Application of the substance / the mixture** Epoxy curing agent
- **Details of the supplier of the safety data sheet**
Sika Advanced Resins, US
EHS Department
- **Manufacturer/Supplier:**
Supplier's Name: Sika Advanced Resins, US
Headquarters:
30800 Stephenson Hwy
Madison Heights, MI 48071
USA


advancedresins.ehs@us.sika.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





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2 Hazard(s) identification

- **Classification of the substance or mixture**
- 

GHS06 Skull and crossbones
Acute Tox. 3 H331 Toxic if inhaled.
- 

GHS08 Health hazard
Repr. 1B H360 May damage 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.
- 

GHS07
Skin Sens. 1 H317 May cause an allergic skin reaction.

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STOT SE 3 H335 May cause respiratory irritation.

· **Label elements**

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

· **Hazard pictograms**



· **Signal word** *Danger*

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

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

· **Hazard statements**

Toxic if inhaled.
 Causes severe skin burns and eye damage.
 May cause an allergic skin reaction.
 May damage fertility or the unborn child.
 May cause respiratory irritation.

· **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.
 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
 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).
 Wash contaminated clothing before reuse.
 Store locked up.
 Dispose of contents/container in accordance with local/regional/national/international regulations.

· **Classification system:**

· **NFPA ratings (scale 0 - 4)**



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· **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	20-50%
CAS: 9046-10-0	Polyoxypropylenediamine	10-20%
CAS: 26950-63-0	Teta, reaction products with propylene oxide Polyoxylated Triethylenetetramine	10-20%
CAS: 111-40-0 EINECS: 203-865-4	2,2'-iminodiethylamine	≥10- <20%
CAS: 80-05-7 EINECS: 201-245-8	bisphenol A	5-10%

4 First-aid measures

- **Description of first aid measures**
- **General information:**
Immediately remove any clothing soiled by the product.
Remove breathing apparatus only after contaminated clothing have been completely removed.
In case of irregular breathing or respiratory arrest provide artificial respiration.
- **After inhalation:**
Supply fresh air or oxygen; call for 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.

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- **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

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**
During heating or in case of fire poisonous gases are produced.
- **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**
Mount respiratory protective device.
Wear protective equipment. Keep unprotected persons away.
- **Environmental precautions:**
Dilute with plenty of water.
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 ³
111-40-0	2,2'-iminodiethylamine	3 ppm
80-05-7	bisphenol A	15 mg/m ³

· **PAC-2:**

112-24-3	3,6-diazaoctanethylenediamin	14 ppm
9046-10-0	Polyoxypropylenediamine	53 mg/m ³

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111-40-0	2,2'-iminodiethylamine	8.5 ppm
80-05-7	bisphenol A	110 mg/m ³
· PAC-3:		
112-24-3	3,6-diazaoctanethylenediamin	83 ppm
9046-10-0	Polyoxypropylenediamine	320 mg/m ³
111-40-0	2,2'-iminodiethylamine	51 ppm
80-05-7	bisphenol A	650 mg/m ³

7 Handling and storage

- **Handling:**
- **Precautions for safe handling**
Ensure good ventilation/exhaustion at the workplace.
Open and handle receptacle with care.
Prevent formation of aerosols.
- **Information about protection against explosions and fires:** Keep respiratory protective device available.
- **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.

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

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Trade name: SikaBiresin CH72-1 (MARINE 822 HARD)

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· **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.

Store protective clothing separately.

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:**

Form: Fluid

Color: According to product specification

· **Odor:** Characteristic

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· Odor threshold:	Not determined.
· pH-value:	Not determined.
· Change in condition	
Melting point/Melting range:	Undetermined.
Boiling point/Boiling range:	207.1 °C (404.8 °F)
· Flash point:	103 °C (217.4 °F)
· Flammability (solid, gaseous):	Not applicable.
· Ignition temperature:	325 °C (617 °F)
· Decomposition temperature:	Not determined.
· Auto igniting:	Product is not selfigniting.
· Danger of explosion:	Product does not present an explosion hazard.
· Explosion limits:	
Lower:	0.7 Vol %
Upper:	10 Vol %
· Vapor pressure at 20 °C (68 °F):	0.5 hPa (0.4 mm Hg)
· Density at 20 °C (68 °F):	1.01 g/cm ³ (8.43 lbs/gal)
· Relative density	Not determined.
· Vapor density	Not determined.
· Evaporation rate	Not determined.
· Solubility in / Miscibility with Water:	Fully miscible.
· Partition coefficient (n-octanol/water):	Not determined.
· Viscosity:	
Dynamic:	Not determined.
Kinematic:	Not determined.
· Solvent content:	
VOC content:	0.00 % 0.0 g/l / 0.00 lb/gal
Solids content:	9.6 %
· Other information	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.

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- **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)

112-24-3 3,6-diazaoctanethylenediamin

Oral	LD50	2,000 mg/kg (rat)
Dermal	LD50	2,000 mg/kg (rabbit)

9046-10-0 Polyoxypropylenediamine

Oral	LD50	2,855 mg/kg (rabbit)
Dermal	LD50	2,980 mg/kg (rabbit)

111-40-0 2,2'-iminodiethylamine

Oral	LD50	1,553 mg/kg (rat)
Dermal	LD50	1,045 mg/kg (rabbit)

80-05-7 bisphenol A

Oral	LD50	3,250 mg/kg (rat)
Dermal	LD50	3,000 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 skin contact.

· **Additional toxicological information:**

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

Toxic

Corrosive

Irritant

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

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· **Carcinogenic categories**

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

None of the ingredients is listed.

· **NTP (National Toxicology Program)**

None of the ingredients is listed.

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

None of the ingredients is listed.

12 Ecological information

· **Toxicity**

· **Aquatic toxicity:**

96 hr LC50 >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)

· **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.

· **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.

· **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.

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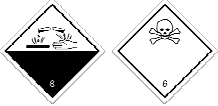
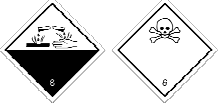
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Trade name: SikaBiresin CH72-1 (MARINE 822 HARD)

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- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to official regulations.
- **Recommended cleansing agent:** Water, if necessary with cleansing agents.

14 Transport information

· UN-Number · DOT, IMDG, IATA	UN2922
· UN proper shipping name · DOT · IMDG, IATA	Corrosive liquids, toxic, n.o.s. (Triethylenetetramine, Diethylenetriamine) CORROSIVE LIQUID, TOXIC, N.O.S. (TRIETHYLENETETRAMINE, DIETHYLENETRIAMINE)
· Transport hazard class(es) · DOT	
· Class · Label	8 Corrosive substances 8, 6.1
· IMDG	
· Class · Label	8 Corrosive substances 8/6.1
· IATA	
· Class · Label	8 Corrosive substances 8 (6.1)
· Packing group · DOT, IMDG, IATA	II

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Trade name: SikaBiresin CH72-1 (MARINE 822 HARD)

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· Environmental hazards:	
· Marine pollutant:	No
· Special precautions for user	Warning: Corrosive substances
· Hazard identification number (Kemler code):	86
· EMS Number:	F-A,S-B
· Segregation groups	Alkalis
· Stowage Category	B
· Stowage Code	SW2 Clear of living quarters.
· Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.
· Transport/Additional information:	
· DOT	
· Quantity limitations	On passenger aircraft/rail: 1 L On cargo aircraft only: 30 L
· IMDG	
· Limited quantities (LQ)	1L
· Excepted quantities (EQ)	Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml
· UN "Model Regulation":	UN 2922 CORROSIVE LIQUID, TOXIC, N.O.S. (TRIETHYLENETETRAMINE, DIETHYLENETRIAMINE), 8 (6.1), II

15 Regulatory information

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

· Sara

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

None of the ingredients is listed.

· **Section 313 (Specific toxic chemical listings):**

80-05-7 bisphenol A

· **TSCA (Toxic Substances Control Act):**

All components have the value ACTIVE.

· **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.

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· **Hazardous Air Pollutants**

None of the ingredients is listed.

· **Proposition 65**

· **Chemicals known to cause cancer:**

75-56-9 propylene oxide

· **Chemicals known to cause reproductive toxicity for females:**

80-05-7 bisphenol A

· **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**

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

None of the ingredients is listed.

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

None of the ingredients is listed.

· **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 GHS06 GHS07 GHS08

· **Signal word** *Danger*

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

2,2'-iminodiethylamine

3,6-diazaoctanethylenediamin

bisphenol A

Polyoxypropylenediamine

Teta, reaction products with propylene oxide

Polyoxylated Triethylenetetramine

· **Hazard statements**

Toxic if inhaled.

Causes severe skin burns and eye damage.

May cause an allergic skin reaction.

May damage fertility or the unborn child.

May cause respiratory irritation.

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· **Precautionary statements**

Do not breathe dusts or mists.

Wear protective gloves/protective clothing/eye protection/face protection.

If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

IF INHALED: Remove person to fresh air and keep comfortable for breathing.

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).

Wash contaminated clothing 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.

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** 07/27/2020 / 5

· **Abbreviations and acronyms:**

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. 3: Acute toxicity – Category 3

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

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

Skin Sens. 1: Skin sensitisation – Category 1

Repr. 1B: Reproductive toxicity – Category 1B

STOT SE 3: Specific target organ toxicity (single exposure) – Category 3

· *** Data compared to the previous version altered.**



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1 Identification

- **Product identifier**
- **Trade name:** SikaBiresin CH72-2 (MARINE 823 HARD)
- **Article number:** 1823089-1
- **Application of the substance / the mixture** Epoxy curing agent
- **Details of the supplier of the safety data sheet**
Sika Advanced Resins, US
EHS Department
- **Manufacturer/Supplier:**
Supplier's Name: Sika Advanced Resins, US
Headquarters:
30800 Stephenson Hwy
Madison Heights, MI 48071
USA

advancedresins.ehs@us.sika.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

Repr. 1B H360 May damage fertility or the unborn child.

STOT RE 1 H372 Causes damage to organs through prolonged or repeated exposure.



GHS05 Corrosion

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



GHS07

Acute Tox. 4 H332 Harmful if inhaled.

Skin Sens. 1 H317 May cause an allergic skin reaction.

- **Label elements**

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

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· **Hazard pictograms**



GHS05 GHS07 GHS08

· **Signal word** *Danger*

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

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

· **Hazard statements**

Harmful if inhaled.
Causes severe skin burns and eye damage.
May cause an allergic skin reaction.
May damage fertility or the unborn child.
Causes damage to organs through prolonged or repeated exposure.

· **Precautionary statements**

Avoid breathing dust/fume/gas/mist/vapors/spray
Do not breathe dusts or mists.
Wear protective gloves / eye protection / face protection.
If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
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).
Wash contaminated clothing before reuse.
Store locked up.
Dispose of contents/container in accordance with local/regional/national/international regulations.

· **Classification system:**

· **NFPA ratings (scale 0 - 4)**



· **HMIS-ratings (scale 0 - 4)**



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- **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	20-50%
CAS: 9046-10-0	Polyoxypropylenediamine	20-50%
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-<3%
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.

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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**
During heating or in case of fire poisonous gases are produced.
- **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**
Mount respiratory protective device.
Wear protective equipment. Keep unprotected persons away.
- **Environmental precautions:**
Dilute with plenty of water.
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 ³
140-31-8	2-piperazin-1-ylethylamine	6.4 mg/m ³
111-40-0	2,2'-iminodiethylamine	3 ppm
80-05-7	bisphenol A	15 mg/m ³

· **PAC-2:**

112-24-3	3,6-diazaoctanethylenediamin	14 ppm
9046-10-0	Polyoxypropylenediamine	53 mg/m ³
140-31-8	2-piperazin-1-ylethylamine	71 mg/m ³
111-40-0	2,2'-iminodiethylamine	8.5 ppm

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80-05-7	bisphenol A	110 mg/m ³
· PAC-3:		
112-24-3	3,6-diazaoctanethylenediamin	83 ppm
9046-10-0	Polyoxypropylenediamine	320 mg/m ³
140-31-8	2-piperazin-1-ylethylamine	420 mg/m ³
111-40-0	2,2'-iminodiethylamine	51 ppm
80-05-7	bisphenol A	650 mg/m ³

7 Handling and storage

- **Handling:**
- **Precautions for safe handling**
Ensure good ventilation/exhaustion at the workplace.
Open and handle receptacle with care.
Prevent formation of aerosols.
- **Information about protection against explosions and fires:** Keep respiratory protective device available.
- **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.

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

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· **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.

Store protective clothing separately.

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:**

Form:	Liquid
Color:	Amber colored
Odor:	Amine-like

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· Odor threshold:	Not determined.
· pH-value:	Not determined.
· Change in condition	
Melting point/Melting range:	Undetermined.
Boiling point/Boiling range:	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.
· Auto igniting:	Product is not selfigniting.
· Danger of explosion:	Product does not present an explosion hazard.
· Explosion limits:	
Lower:	0.7 Vol %
Upper:	10.5 Vol %
· Vapor pressure at 20 °C (68 °F):	0.1 hPa
· Density at 20 °C (68 °F):	0.98 g/cm ³ (8.18 lbs/gal)
· Relative density	Not determined.
· Vapor density	Not determined.
· Evaporation rate	Not determined.
· Solubility in / Miscibility with Water:	Fully miscible.
· Partition coefficient (n-octanol/water):	Not determined.
· Viscosity:	
Dynamic at 20 °C (68 °F):	>40 mPas
Kinematic:	Not determined.
· Solvent content:	
Organic solvents:	0.0 %
VOC content:	0.01 %
	0.1 g/l / 0.00 lb/gal
Solids content:	1.2 %
· Other information	No further relevant information available.

10 Stability and reactivity

· **Reactivity** No further relevant information available.

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Trade name: SikaBiresin CH72-2 (MARINE 823 HARD)

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- **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)

112-24-3 3,6-diazaoctanethylenediamin

Oral	LD50	2,000 mg/kg (rat)
Dermal	LD50	2,000 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.
- **Sensitization:** 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)**

None of the ingredients is listed.

- **NTP (National Toxicology Program)**

None of the ingredients is listed.

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(Contd. of page 8)

· OSHA-Ca (Occupational Safety & Health Administration)

None of the ingredients is listed.

12 Ecological information

· Toxicity

· Aquatic toxicity:

96 hr LC50	>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 (Invertabrates)
------------	-------------------------

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.

· 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.

· 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.

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Trade name: SikaBiresin CH72-2 (MARINE 823 HARD)

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· **Recommended cleansing agent:** Water, if necessary with cleansing agents.

14 Transport information

· **UN-Number**
· **DOT**
· **IMDG, IATA**

NA2735
UN2735

· **UN proper shipping name**
· **DOT**
· **IMDG**
· **IATA**

Amines, liquid, corrosive, n.o.s. (Triethylenetetramine, Polyoxypropylenediamine)
AMINES, LIQUID, CORROSIVE, N.O.S. (TRIETHYLENETETRAMINE, Polyoxypropylenediamine), MARINE POLLUTANT
AMINES, LIQUID, CORROSIVE, N.O.S. (TRIETHYLENETETRAMINE, Polyoxypropylenediamine)

· **Transport hazard class(es)**

· **DOT**



· **Class**
· **Label**

8 Corrosive substances
8

· **IMDG**



· **Class**
· **Label**

8 Corrosive substances
8

· **IATA**



· **Class**
· **Label**

8 Corrosive substances
8

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Trade name: SikaBiresin CH72-2 (MARINE 823 HARD)

(Contd. of page 10)

· Packing group · DOT, IMDG, IATA	<i>II</i>
· Environmental hazards: · Marine pollutant:	<i>Product contains environmentally hazardous substances: Polyoxypropylenediamine Yes Symbol (fish and tree)</i>
· Special precautions for user · Hazard identification number (Kemler code): · EMS Number: · Segregation groups · Stowage Category · Segregation Code	<i>Warning: Corrosive substances 80 F-A,S-B Alkalis A SG35 Stow "separated from" SGG1-acids</i>
· Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	<i>Not applicable.</i>
· Transport/Additional information: · DOT · Remarks:	<i>Special marking with the symbol (fish and tree).</i>
· IMDG · Limited quantities (LQ) · Excepted quantities (EQ)	<i>1L Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml</i>
· UN "Model Regulation":	<i>UN 2735 AMINES, LIQUID, CORROSIVE, N.O.S. (TRIETHYLENETETRAMINE, POLYOXYPROPYLENEDIAMINE), 8, II, ENVIRONMENTALLY HAZARDOUS</i>

15 Regulatory information

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

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

None of the ingredients is listed.

· **Section 313 (Specific toxic chemical listings):**

80-05-7 | *bisphenol A*

· **TSCA (Toxic Substances Control Act):**

All components have the value ACTIVE.

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· **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.

· **Hazardous Air Pollutants**

None of the ingredients is listed.

· **Proposition 65**

· **Chemicals known to cause cancer:**

75-56-9 propylene oxide

· **Chemicals known to cause reproductive toxicity for females:**

80-05-7 bisphenol A

· **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**

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

None of the ingredients is listed.

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

None of the ingredients is listed.

· **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

· **Signal word** Danger

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

3,6-diazaoctanethylenediamin

2,2'-iminodiethylamine

bisphenol A

Polyoxypropylenediamine

2-piperazin-1-ylethylamine

Teta, reaction products with propylene oxide

Polyoxylated Triethylenetetramine

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Trade name: SikaBiresin CH72-2 (MARINE 823 HARD)

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· **Hazard statements**

- Harmful if inhaled.
- Causes severe skin burns and eye damage.
- May cause an allergic skin reaction.
- May damage fertility or the unborn child.
- Causes damage to organs through prolonged or repeated exposure.

· **Precautionary statements**

- Do not breathe dusts or mists.
 - Wear protective gloves / eye protection / face protection.
 - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
 - IF INHALED: Remove person to fresh air and keep comfortable for breathing.
 - 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).
 - Wash contaminated clothing 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.

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** 05/21/2020 / 1

· **Abbreviations and acronyms:**

- 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
- Skin Sens. 1: Skin sensitisation – Category 1
- Repr. 1B: Reproductive toxicity – Category 1B
- STOT RE 1: Specific target organ toxicity (repeated exposure) – Category 1

· *** Data compared to the previous version altered.**



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1 Identification

- **Product identifier**
- **Trade name:** SikaBiresin CH72-3 (MARINE 824 HARD)
- **Article number:** 1824089-1
- **Application of the substance / the mixture** Epoxy hardener
- **Details of the supplier of the safety data sheet**
Sika Advanced Resins, US
EHS Department
- **Manufacturer/Supplier:**
Supplier's Name: Sika Advanced Resins, US
Headquarters:
30800 Stephenson Hwy
Madison Heights, MI 48071
USA

advancedresins.ehs@us.sika.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**



GHS05 Corrosion

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



GHS07

Skin Sens. 1 H317 May cause an allergic skin reaction.

- **Label elements**
- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms**



GHS05 GHS07

- **Signal word** Danger

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Trade name: SikaBiresin CH72-3 (MARINE 824 HARD)

(Contd. of page 1)

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

3,6-diazaoctanethylenediamin
 Polyoxypropylenediamine
 Teta, reaction products with propylene oxide
 Polyoxylated Triethylenetetramine

· **Hazard statements**

Causes severe skin burns and eye damage.
 May cause an allergic skin reaction.

· **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.
 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
 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).
 Wash contaminated clothing before reuse.
 Store locked up.
 Dispose of contents/container in accordance with local/regional/national/international regulations.

· **Classification system:**

· **NFPA ratings (scale 0 - 4)**



· **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.

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· Dangerous components:

CAS: 112-24-3 EINECS: 203-950-6	3,6-diazaoctanethylenediamin	20-50%
CAS: 9046-10-0	Polyoxypropylenediamine	20-50%
CAS: 26950-63-0	Teta, reaction products with propylene oxide Polyoxylated Triethylenetetramine	10-20%

4 First-aid measures

- **Description of first aid measures**
- **General information:** Immediately remove any clothing soiled by the product.
- **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.

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**
During heating or in case of fire poisonous gases are produced.
- **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**
Mount respiratory protective device.
Wear protective equipment. Keep unprotected persons away.
- **Environmental precautions:**
Dilute with plenty of water.

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- 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 ³
· PAC-2:		
112-24-3	3,6-diazaoctanethylenediamin	14 ppm
9046-10-0	Polyoxypropylenediamine	53 mg/m ³
· PAC-3:		
112-24-3	3,6-diazaoctanethylenediamin	83 ppm
9046-10-0	Polyoxypropylenediamine	320 mg/m ³

7 Handling and storage

- **Handling:**
- **Precautions for safe handling**
Ensure good ventilation/exhaustion at the workplace.
Prevent formation of aerosols.
- **Information about protection against explosions and fires:** Keep respiratory protective device available.
- **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.

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- **Control parameters**

- **Components with limit values that require monitoring at the workplace:**

The following constituent is the only constituent of the product which has a PEL, TLV or other recommended exposure limit.

At this time, the other constituents have no known exposure limits.

112-24-3 3,6-diazaoctanethylenediamin

WEEL	Long-term value: 6 mg/m ³ , 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.

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

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9 Physical and chemical properties

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

· **General Information**

· **Appearance:**

· Form:	Liquid
· Color:	Amber colored
· Odor:	Amine-like
· Odor threshold:	Not determined.

· **pH-value:** Not determined.

· **Change in condition**

· Melting point/Melting range:	Undetermined.
· Boiling point/Boiling range:	232 °C (449.6 °F)

· **Flash point:** 122 °C (251.6 °F)

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

· **Ignition temperature:** 335 °C (635 °F)

· **Decomposition temperature:** Not determined.

· **Auto igniting:** Product is not selfigniting.

· **Danger of explosion:** Product does not present an explosion hazard.

· **Explosion limits:**

· Lower:	0.7 Vol %
· Upper:	6.7 Vol %

· **Vapor pressure:** Not determined.

· **Density at 20 °C (68 °F):** 0.98 g/cm³ (8.18 lbs/gal)

· **Relative density** Not determined.

· **Vapor density** Not determined.

· **Evaporation rate** Not determined.

· **Solubility in / Miscibility with**

· **Water:** Fully miscible.

· **Partition coefficient (n-octanol/water):** Not determined.

· **Viscosity:**

· Dynamic:	Not determined.
· Kinematic:	Not determined.

· **Solvent content:**

· VOC content:	0.00 %
	0.0 g/l / 0.00 lb/gal

· **Solids content:** 0.0 %

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· **Other information** 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:**

112-24-3 3,6-diazaoctanethylenediamin

Oral	LD50	2,000 mg/kg (rat)
Dermal	LD50	2,000 mg/kg (rabbit)

9046-10-0 Polyoxypropylenediamine

Oral	LD50	2,855 mg/kg (rabbit)
Dermal	LD50	2,980 mg/kg (rabbit)

- **Primary irritant effect:**
- **on the skin:** Strong caustic effect on skin and mucous membranes.
- **on the eye:** Strong caustic effect.
- **Sensitization:** Sensitization possible through skin contact.

- **Additional toxicological information:**

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

None of the ingredients is listed.

- **NTP (National Toxicology Program)**

None of the ingredients is listed.

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· OSHA-Ca (Occupational Safety & Health Administration)

None of the ingredients is listed.

12 Ecological information

· Toxicity

· Aquatic toxicity:

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)

· 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.

· 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.

· 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.

· Recommended cleansing agent: Water, if necessary with cleansing agents.

14 Transport information

· UN-Number

· DOT

NA2735

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· IMDG, IATA	UN2735
· UN proper shipping name · DOT · IMDG · IATA	<i>Amines, liquid, corrosive, n.o.s. (Triethylenetetramine, Polyoxypropylenediamine)</i> AMINES, LIQUID, CORROSIVE, N.O.S. (TRIETHYLENETETRAMINE, Polyoxypropylenediamine), MARINE POLLUTANT AMINES, LIQUID, CORROSIVE, N.O.S. (TRIETHYLENETETRAMINE, Polyoxypropylenediamine)
· Transport hazard class(es) · DOT	
	
· Class · Label	8 Corrosive substances 8
· IMDG	
	
· Class · Label	8 Corrosive substances 8
· IATA	
	
· Class · Label	8 Corrosive substances 8
· Packing group · DOT, IMDG, IATA	III
· Environmental hazards: · Marine pollutant:	<i>Product contains environmentally hazardous substances: Polyoxypropylenediamine</i> Yes Symbol (fish and tree)
· Special precautions for user · Hazard identification number (Kemler code): · EMS Number:	Warning: Corrosive substances 80 F-A,S-B

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· Segregation groups	Alkalis
· Stowage Category	A
· Segregation Code	SG35 Stow "separated from" SGG1-acids
· Transport in bulk according to Annex II of MARPOL73/78 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).
· IMDG	
· Limited quantities (LQ)	1L
· Excepted quantities (EQ)	Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml
· UN "Model Regulation":	UN 2735 AMINES, LIQUID, CORROSIVE, N.O.S. (TRIETHYLENETETRAMINE , POLYOXYPROPYLENEDIAMINE), 8, III, ENVIRONMENTALLY HAZARDOUS

15 Regulatory information

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

· Section 355 (extremely hazardous substances):	None of the ingredients is listed.
· Section 313 (Specific toxic chemical listings):	None of the ingredients is listed.
· TSCA (Toxic Substances Control Act):	All components have the value ACTIVE.
· 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.
· Hazardous Air Pollutants	None of the ingredients is listed.

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Reviewed on 05/21/2020

Trade name: SikaBiresin CH72-3 (MARINE 824 HARD)

(Contd. of page 10)

· **Proposition 65**

· **Chemicals known to cause cancer:**

75-56-9 propylene oxide

· **Chemicals known to cause reproductive toxicity for females:**

None of the ingredients is listed.

· **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**

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

None of the ingredients is listed.

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

None of the ingredients is listed.

· **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

· **Signal word** Danger

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

3,6-diazaoctanethylenediamin

Polyoxypropylenediamine

Teta, reaction products with propylene oxide

Polyoxylated Triethylenetetramine

· **Hazard statements**

Causes severe skin burns and eye damage.

May cause an allergic skin reaction.

· **Precautionary statements**

Do not breathe dusts or mists.

Wear protective gloves/protective clothing/eye protection/face protection.

If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

IF INHALED: Remove person to fresh air and keep comfortable for breathing.

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.

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Safety Data Sheet

acc. to OSHA HCS

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- Specific treatment (see on this label).
 Wash contaminated clothing 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.

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** 05/21/2020 / 7
- **Abbreviations and acronyms:**
 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
 Skin Corr. 1A: Skin corrosion/irritation – Category 1A
 Skin Sens. 1: Skin sensitisation – Category 1
- *** Data compared to the previous version altered.**

US



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