

## Safety Data Sheet

acc. to OSHA HCS

Printing date 02/05/2020

Reviewed on 02/05/2020

### 1 Identification

- **Product identifier**
- **Trade name:** ES221 Hardener
- **Article number:** I500889-2
- **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**



GHS06 Skull and crossbones

Acute Tox. 2 H330 Fatal if inhaled.



GHS08 Health hazard

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

Repr. 1B H360F May damage fertility.



GHS05 Corrosion

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

Eye Dam. 1 H318 Causes serious eye damage.



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Acute Tox. 4 H302 Harmful if swallowed.  
 Skin Sens. 1 H317 May cause an allergic skin reaction.  
 STOT SE 3 H335 May cause respiratory irritation.  
 Flam. Liq. 4 H227 Combustible liquid.

· **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  
 Aromatic amine epoxy adduct - trade secret  
 bisphenol A  
 1-methylimidazole  
 1,6-Hexanediamine, 2,2,4 (or 2,4,4)-trimethyl-

· **Hazard statements**

Combustible liquid.  
 Harmful if swallowed.  
 Fatal 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.  
 May damage fertility.  
 May cause respiratory irritation.

· **Precautionary statements**

Avoid breathing dust/fume/gas/mist/vapors/spray  
 Keep away from flames and hot surfaces. – No smoking.  
 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 is urgent (see on this label).  
 Store locked up.  
 Dispose of contents/container in accordance with local/regional/national/international regulations.

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- **Classification system:**
- **NFPA ratings (scale 0 - 4)**



- **HMIS-ratings (scale 0 - 4)**

HEALTH	3	Health = *3
FIRE	2	Fire = 2
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:**

	Aromatic amine epoxy adduct - trade secret	≥25-≤50%
CAS: 111-40-0 EINECS: 203-865-4	2,2'-iminodiethylamine	20-50%
CAS: 80-05-7 EINECS: 201-245-8	bisphenol A	20%
CAS: 616-47-7 EINECS: 210-484-7	1-methylimidazole	5%
CAS: 25513-64-8 EINECS: 247-134-8	1,6-Hexanediamine, 2,2,4 (or 2,4,4)-trimethyl-	≥1-<2.5%

### 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.  
Remove breathing apparatus only after contaminated clothing have been completely removed.  
In case of irregular breathing or respiratory arrest provide artificial respiration.

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- **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:**  
Immediately call a doctor.  
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:**  
CO<sub>2</sub>, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **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:**  
Do not allow product to reach sewage system or any water course.  
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.

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See Section 13 for disposal information.

**· Protective Action Criteria for Chemicals**
**· PAC-1:**

111-40-0	2,2'-iminodiethylamine	3 ppm
80-05-7	bisphenol A	15 mg/m <sup>3</sup>
616-47-7	1-methylimidazole	2.3 mg/m <sup>3</sup>

**· PAC-2:**

111-40-0	2,2'-iminodiethylamine	8.5 ppm
80-05-7	bisphenol A	110 mg/m <sup>3</sup>
616-47-7	1-methylimidazole	25 mg/m <sup>3</sup>

**· PAC-3:**

111-40-0	2,2'-iminodiethylamine	51 ppm
80-05-7	bisphenol A	650 mg/m <sup>3</sup>
616-47-7	1-methylimidazole	150 mg/m <sup>3</sup>

### 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 ignition sources away - Do not smoke.  
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 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.

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**111-40-0 2,2'-iminodiethylamine**

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.
- 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

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### 9 Physical and chemical properties

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

· **General Information**

· **Appearance:**

· <b>Form:</b>	Liquid
· <b>Color:</b>	Clear
· <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>	198 °C (388.4 °F)

· **Flash point:** 92 °C (197.6 °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:** Not determined.

· **Explosion limits:**

· <b>Lower:</b>	1 Vol %
· <b>Upper:</b>	10 Vol %

· **Vapor pressure at 20 °C (68 °F):** 0.5 hPa (0.4 mm Hg)

· **Density at 20 °C (68 °F):** 1.05 g/cm<sup>3</sup> (8.76 lbs/gal)

· **Relative density** Not determined.

· **Vapor density** Not determined.

· **Evaporation rate** Not determined.

· **Solubility in / Miscibility with**

· **Water:** Not miscible or difficult to mix.

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

· **Viscosity:**

· <b>Dynamic:</b>	Not determined.
· <b>Kinematic:</b>	Not determined.

· **Solvent content:**

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

· **Solids content:** 20.0 %

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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:**

#### 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)

#### 616-47-7 1-methylimidazole

Oral	LD50	1,400 mg/kg (mouse)
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- **Primary irritant effect:**
- **on the skin:** 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:  
Toxic  
Harmful  
Corrosive  
Irritant  
Very toxic

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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.

· **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.

Must not reach bodies of water or drainage ditch undiluted or unneutralized.

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.

### 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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**14 Transport information**

<ul style="list-style-type: none"> <li>· UN-Number</li> <li>· DOT, IMDG, IATA</li> </ul>	UN2922
<ul style="list-style-type: none"> <li>· UN proper shipping name</li> <li>· DOT</li> <li>· IMDG</li> <li>· IATA</li> </ul>	<p>Corrosive liquids, toxic, n.o.s. (Diethylenetriamine, 1-methylimidazole)</p> <p>CORROSIVE LIQUID, TOXIC, N.O.S. (DIETHYLENETRIAMINE, 1-methylimidazole), MARINE POLLUTANT</p> <p>CORROSIVE LIQUID, TOXIC, N.O.S. (DIETHYLENETRIAMINE, 1-methylimidazole)</p>
<ul style="list-style-type: none"> <li>· Transport hazard class(es)</li> <li>· DOT</li> </ul>	
<ul style="list-style-type: none"> <li>· Class</li> <li>· Label</li> </ul>	8 Corrosive substances 8, 6.1
<ul style="list-style-type: none"> <li>· IMDG</li> </ul>	
<ul style="list-style-type: none"> <li>· Class</li> <li>· Label</li> </ul>	8 Corrosive substances 8/6.1
<ul style="list-style-type: none"> <li>· IATA</li> </ul>	
<ul style="list-style-type: none"> <li>· Class</li> <li>· Label</li> </ul>	8 Corrosive substances 8 (6.1)
<ul style="list-style-type: none"> <li>· Packing group</li> <li>· DOT, IMDG, IATA</li> </ul>	II
<ul style="list-style-type: none"> <li>· Environmental hazards:</li> </ul>	Product contains environmentally hazardous substances: 1,3-Benzenedimethanamine, polymer with 2,2'-[(1-methylethylidene) bis(4,1-phenyleneoxymethylene)

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· <b>Marine pollutant:</b>	No Yes (DOT) Symbol (fish and tree)
· <b>Special precautions for user</b> · <b>Danger code (Kemler):</b> · <b>EMS Number:</b> · <b>Segregation groups</b> · <b>Stowage Category</b> · <b>Stowage Code</b>	Warning: Corrosive substances 86 F-A,S-B Alkalis B SW2 Clear of living quarters.
· <b>Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code</b>	Not applicable.
· <b>Transport/Additional information:</b> · <b>DOT</b> · <b>Quantity limitations</b> · <b>Remarks:</b>	On passenger aircraft/rail: 1 L On cargo aircraft only: 30 L Special marking with the symbol (fish and tree).
· <b>IMDG</b> · <b>Limited quantities (LQ)</b> · <b>Excepted quantities (EQ)</b>	1L Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml
· <b>UN "Model Regulation":</b>	UN 2922 CORROSIVE LIQUID, TOXIC, N.O.S. (DIETHYLENETRIAMINE, 1-METHYLIMIDAZOLE), 8 (6.1), II, ENVIRONMENTALLY HAZARDOUS

**15 Regulatory information**

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

· <b>Section 355 (extremely hazardous substances):</b>	None of the ingredients is listed.
· <b>Section 313 (Specific toxic chemical listings):</b>	80-05-7   bisphenol A
· <b>TSCA (Toxic Substances Control Act):</b>	All components have the value ACTIVE.
· <b>Chemicals regulated by TSCA Section 12(b)</b>	None of the ingredients is listed.

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**· 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:**

None of the ingredients is listed.

**· 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**
**· EPA (Environmental Protection Agency)**

None of the ingredients is listed.

**· 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

Aromatic amine epoxy adduct - trade secret

bisphenol A

1-methylimidazole

1,6-Hexanediamine, 2,2,4 (or 2,4,4)-trimethyl-

**· Hazard statements**

Combustible liquid.

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*Harmful if swallowed.*

*Fatal 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.*

*May damage fertility.*

*May cause respiratory irritation.*

· **Precautionary statements**

*Keep away from flames and hot surfaces. – No smoking.*

*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 is urgent (see on this label).*

*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** 02/05/2020 / 9

· **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

Flam. Liq. 4: Flammable liquids – Category 4

Acute Tox. 4: Acute toxicity – Category 4

Acute Tox. 2: Acute toxicity – Category 2

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

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*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. 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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