

**Safety data sheet**  
according to 1907/2006/EC, Article 31

Printing date 18.06.2015

Version number 3

Revision: 18.06.2015

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

- **1.1 Product identifier**
- **Trade name:** 816 Hardener
- **Article number:** 49020
- **1.2 Relevant identified uses of the substance or mixture and uses advised against**  
No further relevant information available.
- **Application of the substance / the mixture** Epoxy curing agent
- **1.3 Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**  
FORBO Eurocol Deutschland GmbH  
August-Roebling-Str. 2  
D-99091 Erfurt  
Tel.: +49 (0)361 73041-0  
Fax: +49 (0)361 73041-92  
Website: <http://www.forbo-bonding.de>
- **Further information obtainable from:**  
Laboratory  
Ronny Dorna  
[Ronny.Dorna@forbo.com](mailto:Ronny.Dorna@forbo.com)
- **1.4 Emergency telephone number:** GGIZ +49-361-730730 (for Germany)

**SECTION 2: Hazards identification**

- **2.1 Classification of the substance or mixture**
- **Classification according to Regulation (EC) No 1272/2008**



GHS08 health hazard

Muta. 2      H341 Suspected of causing genetic defects.



GHS05 corrosion

Skin Corr. 1B   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.

- **2.2 Label elements**
- **Labelling according to Regulation (EC) No 1272/2008**  
The product is classified and labelled according to the CLP regulation.

(Contd. on page 2)

GB

## Safety data sheet according to 1907/2006/EC, Article 31

Printing date 18.06.2015

Version number 3

Revision: 18.06.2015

**Trade name: 816 Hardener**

(Contd. of page 1)

**· Hazard pictograms****· Signal word** *Danger***· Hazard-determining components of labelling:**

2,2'-iminodiethylamine  
phenol

**· Hazard statements**

H314 Causes severe skin burns and eye damage.

H317 May cause an allergic skin reaction.

H341 Suspected of causing genetic defects.

**· Precautionary statements**

P201 Obtain special instructions before use.

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P308+P313 IF exposed or concerned: Get medical advice/attention.

P310 Immediately call a POISON CENTER/doctor.

P405 Store locked up.

**· Additional information:**

Restricted to professional users.

Safety data sheet available on request.

**· 2.3 Other hazards****· Results of PBT and vPvB assessment**

· **PBT:** Not applicable.

· **vPvB:** Not applicable.

### SECTION 3: Composition/information on ingredients

**· 3.2 Chemical characterisation: Mixtures**

· **Description:** Mixture of substances listed below with nonhazardous additions.

**· Dangerous components:**

CAS: 111-40-0 EINECS: 203-865-4 Index number: 612-058-00-X	2,2'-iminodiethylamine ⚠ Skin Corr. 1B, H314; ⚠ Acute Tox. 4, H302; Acute Tox. 4, H312; Skin Sens. 1, H317	20-<25%
CAS: 108-95-2 EINECS: 203-632-7 Index number: 604-001-00-2	phenol ⚠ Acute Tox. 3, H301; Acute Tox. 3, H311; Acute Tox. 3, H331; ⚠ Muta. 2, H341; STOT RE 2, H373; ⚠ Skin Corr. 1B, H314	3-<10%

(Contd. on page 3)

**Safety data sheet**  
**according to 1907/2006/EC, Article 31**

Printing date 18.06.2015

Version number 3

Revision: 18.06.2015

**Trade name: 816 Hardener**

(Contd. of page 2)

· **Additional information:** For the wording of the listed risk phrases refer to section 16.

### **SECTION 4: First aid measures**

- **4.1 Description of first aid measures**
- **General information:**  
 Personal protection for the First Aider.  
 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.  
 If skin irritation continues, consult a doctor.
- **After eye contact:** Rinse opened eye for several minutes under running water. Then consult a doctor.
- **After swallowing:**  
 Do not induce vomiting; call for medical help immediately.  
 A person vomiting while laying on their back should be turned onto their side.
- **4.2 Most important symptoms and effects, both acute and delayed** No further relevant information available.
- **4.3 Indication of any immediate medical attention and special treatment needed**  
 No further relevant information available.

### **SECTION 5: Firefighting measures**

- **5.1 Extinguishing media**
- **Suitable extinguishing agents:**  
 CO<sub>2</sub>, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.  
 Use fire extinguishing methods suitable to surrounding conditions.
- **For safety reasons unsuitable extinguishing agents:** Water with full jet
- **5.2 Special hazards arising from the substance or mixture**  
 In case of fire, the following can be released:  
 Nitrogen oxides (NO<sub>x</sub>)  
 Carbon monoxide (CO)  
 Under certain fire conditions, traces of other toxic gases cannot be excluded.
- **5.3 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.  
 Collect contaminated fire fighting water separately. It must not enter the sewage system.

### **SECTION 6: Accidental release measures**

- **6.1 Personal precautions, protective equipment and emergency procedures**  
 Wear protective equipment. Keep unprotected persons away.  
 Ensure adequate ventilation

(Contd. on page 4)

**Safety data sheet**  
according to 1907/2006/EC, Article 31

Printing date 18.06.2015

Version number 3

Revision: 18.06.2015

**Trade name: 816 Hardener**

(Contd. of page 3)

- **6.2 Environmental precautions:**  
Do not allow to enter drains/ surface or ground water.  
Do not allow to penetrate the ground/soil.
- **6.3 Methods and material for containment and cleaning up:**  
Ensure adequate ventilation.  
Use neutralising agent.  
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).  
Dispose contaminated material as waste according to item 13.
- **6.4 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.

## SECTION 7: Handling and storage

- **7.1 Precautions for safe handling**  
Keep receptacles tightly sealed.  
Ensure good ventilation/exhaustion at the workplace.  
Prevent formation of aerosols.
- **Information about fire - and explosion protection:** No special measures required.
- **7.2 Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:**  
No special requirements.  
Prevent any seepage into the ground.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:**  
Keep container tightly sealed.  
Store in cool, dry conditions in well sealed receptacles.  
Store under lock and key and with access restricted to technical experts or their assistants only.
- **Recommended storage temperature:** +10 °C - +25 °C
- **Storage class:** 8 A
- **7.3 Specific end use(s)** No further relevant information available.

## SECTION 8: Exposure controls/personal protection

- **Additional information about design of technical facilities:** No further data; see item 7.
- **8.1 Control parameters**

· <b>Ingredients with limit values that require monitoring at the workplace:</b>	
<b>111-40-0 2,2'-iminodiethylamine</b>	
WEL	Long-term value: 4.3 mg/m <sup>3</sup> , 1 ppm
Sk	

(Contd. on page 5)

GB

**Safety data sheet**  
according to 1907/2006/EC, Article 31

Printing date 18.06.2015

Version number 3

Revision: 18.06.2015

**Trade name: 816 Hardener**

(Contd. of page 4)

**108-95-2 phenol**

WEL	Short-term value: 16 mg/m <sup>3</sup> , 4 ppm
	Long-term value: 7.8 mg/m <sup>3</sup> , 2 ppm
Sk	

- **Additional information:** The lists valid during the making were used as basis.
- **8.2 Exposure controls**
- **Personal protective equipment:**
- **General protective and hygienic measures:**  
The usual precautionary measures are to be adhered to when handling chemicals.  
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.
- **Respiratory protection:** Use suitable respiratory protective device in case of insufficient ventilation.
- **Recommended filter device for short term use:** Combination filter A-P2
- **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**  
Butyl rubber, BR  
Recommended thickness of the material:  $\geq 0.7$  mm  
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.  
Value for the permeation: Level  $\leq 6$
- **Eye protection:**



Safety glasses

- **Body protection:** Protective work clothing

GB

(Contd. on page 6)

**Safety data sheet**  
according to 1907/2006/EC, Article 31

Printing date 18.06.2015

Version number 3

Revision: 18.06.2015

Trade name: 816 Hardener

(Contd. of page 5)

### SECTION 9: Physical and chemical properties

#### · 9.1 Information on basic physical and chemical properties

##### · General Information

##### · Appearance:

Form:	Fluid
Colour:	Yellow-brown
Odour:	Amine-like

· pH-value at 20 °C:	10.3 Not applicable.
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· Change in condition	
Melting point/Melting range:	Undetermined.
Boiling point/Boiling range:	> 200 °C

· Flash point:	111 °C
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· Flammability (solid, gaseous):	Not applicable.
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· Ignition temperature:	325 °C
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· Decomposition temperature:	Undetermined.
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· Self-igniting:	Product is not selfigniting.
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· Danger of explosion:	Product does not present an explosion hazard.
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· Explosion limits:	
Lower:	1.0 Vol %
Upper:	10.0 Vol %

· Vapour pressure at 20 °C:	0.5 hPa
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· Density at 20 °C:	1.07 g/cm <sup>3</sup>
· Evaporation rate	Not determined.

· Solubility in / Miscibility with water:	Not miscible or difficult to mix.
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· Partition coefficient (n-octanol/water):	Undetermined.
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· Viscosity:	
Dynamic at 20 °C:	1000 mPas

· Solvent content:	
Organic solvents:	4.9 %
VOC (CE)	4.90 %

· 9.2 Other information	No further relevant information available.
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### SECTION 10: Stability and reactivity

#### · 10.1 Reactivity

#### · 10.2 Chemical stability

· Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.

(Contd. on page 7)

**Safety data sheet**  
according to 1907/2006/EC, Article 31

Printing date 18.06.2015

Version number 3

Revision: 18.06.2015

**Trade name: 816 Hardener**

(Contd. of page 6)

- **10.3 Possibility of hazardous reactions**  
Strong exothermic reaction with acids.  
Reacts with strong acids and alkali.  
Reacts with strong oxidising agents.
- **10.4 Conditions to avoid** No further relevant information available.
- **10.5 Incompatible materials:** No further relevant information available.
- **10.6 Hazardous decomposition products:** Corrosive gases/vapours

### SECTION 11: Toxicological information

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

- **LD/LC50 values relevant for classification:**

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

Oral	LD50	1080 mg/kg (rat)
Dermal	LD50	1090 mg/kg (rabbit)

#### 108-95-2 phenol

Oral	LD50	317 mg/kg (rat) (OECD 401)
	LDL0	140 mg/kg (human)
Dermal	LD50	670 mg/kg (rat) (OECD 402)
		850 mg/kg (rabbit)

- **Primary irritant effect:**
- **on the skin:** Caustic effect on skin and mucous membranes.
- **on the eye:** Strong caustic effect.
- **Sensitisation:** Sensitisation possible through skin contact.
- **Additional toxicological information:**  
The product shows the following dangers according to the calculation method of the General EU Classification Guidelines for Preparations as issued in the latest version:  
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.
- **CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)**  
Muta. 2

### SECTION 12: Ecological information

- **12.1 Toxicity**

- **Aquatic toxicity:**

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

EC50/48h	53.5 mg/l (Daphnia magna)
EC50/72h	1164 mg/l (Selenastrum capricornutum)

(Contd. on page 8)

GB



**Safety data sheet**  
according to 1907/2006/EC, Article 31

Printing date 18.06.2015

Version number 3

Revision: 18.06.2015

**Trade name: 816 Hardener**

(Contd. of page 7)

LC50/96h 1010 mg/l (*Poecilia reticulata*)**108-95-2 phenol**EC50/48h 10 mg/l (*Daphnia magna*)EC50/96h 150 mg/l (*Selenastrum capricornutum*) (OECD 201)LC50/96h 5.4 mg/l (*Onchorhynchus mykiss*)· **12.2 Persistence and degradability** No further relevant information available.· **Degree of elimination:****111-40-0 2,2'-iminodiethylamine**

Zahn-Wellens &gt;70 % / 28d (activated sludge) (OECD 302 B)

**108-95-2 phenol**

Biodegradability 85 % / 14d (activated sludge) (OECD 301 C)

· **12.3 Bioaccumulative potential** No further relevant information available.· **12.4 Mobility in soil** No further relevant information available.· **Ecotoxicological effects:**· **Behaviour in sewage processing plants:**· **Type of test**    **Effective concentration**    **Method**    **Assessment****108-95-2 phenol**

EC50/3h 860 mg/l (activated sludge) (OECD 209)

· **Bacteria inhibition EC 20 (mg/l according to ISO 8192 B):****108-95-2 phenol**EC10/0,5h 110 mg/l (*Pseudomonas putida*) (DIN 38412)· **Additional ecological information:**· **General notes:**

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.

Water hazard class 2 (German Regulation) (Self-assessment): hazardous for water

· **12.5 Results of PBT and vPvB assessment**· **PBT:** Not applicable.· **vPvB:** Not applicable.· **12.6 Other adverse effects** No further relevant information available.**SECTION 13: Disposal considerations**· **13.1 Waste treatment methods**· **Recommendation**

Must not be disposed together with household garbage. Do not allow product to reach sewage system.

· **European waste catalogue**

08 00 00	WASTES FROM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS), ADHESIVES, SEALANTS AND PRINTING INKS
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08 04 00	wastes from MFSU of adhesives and sealants (including waterproofing products)
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08 04 09*	waste adhesives and sealants containing organic solvents or other dangerous substances
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(Contd. on page 9)



**Safety data sheet**  
according to 1907/2006/EC, Article 31

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**Trade name: 816 Hardener**

(Contd. of page 8)

- **Uncleaned packaging:**
- **Recommendation:** Disposal must be made according to official regulations.

### SECTION 14: Transport information

· <b>14.1 UN-Number</b>	
· <b>ADR, IMDG, IATA</b>	UN2735
· <b>14.2 UN proper shipping name</b>	
· <b>ADR</b>	2735 POLYAMINES, LIQUID, CORROSIVE, N.O.S. (DIETHYLENETRIAMINE)
· <b>IMDG, IATA</b>	POLYAMINES, LIQUID, CORROSIVE, N.O.S. (DIETHYLENETRIAMINE)
· <b>14.3 Transport hazard class(es)</b>	
· <b>ADR</b>	
	
· <b>Class</b>	8 (CT1) Corrosive substances.
· <b>Label</b>	8
· <b>IMDG, IATA</b>	
	
· <b>Class</b>	8 Corrosive substances.
· <b>Label</b>	8
· <b>14.4 Packing group</b>	
· <b>ADR, IMDG, IATA</b>	III
· <b>14.5 Environmental hazards:</b>	
· <b>Marine pollutant:</b>	No
· <b>14.6 Special precautions for user</b>	Warning: Corrosive substances.
· <b>Danger code (Kemler):</b>	80
· <b>EMS Number:</b>	F-A,S-B
· <b>Segregation groups</b>	Alkalies
· <b>14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</b>	Not applicable.
· <b>Transport/Additional information:</b>	
· <b>ADR</b>	
· <b>Limited quantities (LQ)</b>	5L
· <b>Transport category</b>	3

(Contd. on page 10)

**Safety data sheet**  
according to 1907/2006/EC, Article 31

Printing date 18.06.2015

Version number 3

Revision: 18.06.2015

**Trade name: 816 Hardener**

(Contd. of page 9)

· <b>Tunnel restriction code</b>	E
· <b>UN "Model Regulation":</b>	UN2735, POLYAMINES, LIQUID, CORROSIVE, N.O.S. (DIETHYLENETRIAMINE), 8, III

### SECTION 15: Regulatory information

- **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **National regulations:** Water hazard class 2 (German Regulation) (Self-assessment): hazardous for water
- **Information about limitation of use:**  
Employment restrictions concerning juveniles must be observed. (94/33/EC)  
Employment restrictions concerning pregnant and lactating women must be observed. (92/85/EC)
- **VOC (CE) 52.4 g/l**
- **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

### SECTION 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.*

- **Relevant phrases**  
H301 Toxic if swallowed.  
H302 Harmful if swallowed.  
H311 Toxic in contact with skin.  
H312 Harmful in contact with skin.  
H314 Causes severe skin burns and eye damage.  
H317 May cause an allergic skin reaction.  
H331 Toxic if inhaled.  
H341 Suspected of causing genetic defects.  
H373 May cause damage to organs through prolonged or repeated exposure.
- **Department issuing MSDS:** Laboratory
- **Contact:**  
Dr. Amina Chnirheb  
Amina.Chnirheb@forbo.com
- **Abbreviations and acronyms:**  
Acute Tox. 3: Acute toxicity, Hazard Category 3  
Acute Tox. 4: Acute toxicity, Hazard Category 4  
Skin Corr. 1B: Skin corrosion/irritation, Hazard Category 1B  
Eye Dam. 1: Serious eye damage/eye irritation, Hazard Category 1  
Skin Sens. 1: Sensitisation - Skin, Hazard Category 1  
Muta. 2: Germ cell mutagenicity, Hazard Category 2  
STOT RE 2: Specific target organ toxicity - Repeated exposure, Hazard Category 2
- **\* Data compared to the previous version altered.**