

**Safety Data Sheet**

according to Regulation (EC) No 1907/2006

**Hardener 285**

Revision date: 22.05.2020

Product code: 110120

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**SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1. Product identifier**

Hardener 285

**1.2. Relevant identified uses of the substance or mixture and uses advised against****Use of the substance/mixture**

epoxy resin systems

**1.3. Details of the supplier of the safety data sheet**

Company name:	R&G Faserverbundwerkstoffe GmbH	
	Composite Technology	
Street:	Im Meißel 7 - 13	
Place:	D-71111 Waldenbuch	
Post-office box:	1145	
	D-71107 Waldenbuch	
Telephone:	+49 (0)7157 5304-60	Telefax: +49 (0)7157 5304-70
e-mail:	info@r-g.de	
Internet:	www.r-g.de	
Responsible Department:	Management	

**1.4. Emergency telephone number:** Vergiftungs-Informationen-Zentrale Freiburg  
Tel: +49 (0)761 19240

**SECTION 2: Hazards identification****2.1. Classification of the substance or mixture****Regulation (EC) No. 1272/2008**

Hazard categories:

Acute toxicity: Acute Tox. 4

Skin corrosion/irritation: Skin Corr. 1B

Serious eye damage/eye irritation: Eye Dam. 1

Respiratory or skin sensitisation: Skin Sens. 1

Hazardous to the aquatic environment: Aquatic Chronic 3

Hazard Statements:

Harmful if swallowed or in contact with skin.

Causes severe skin burns and eye damage.

Causes serious eye damage.

May cause an allergic skin reaction.

Harmful to aquatic life with long lasting effects.

**2.2. Label elements****Regulation (EC) No. 1272/2008****Hazard components for labelling**

3-aminomethyl-3,5,5-trimethylcyclohexylamine

benzyl alcohol

nonylphenol

**Signal word:** Danger**Pictograms:****Hazard statements**

H302+H312

Harmful if swallowed or in contact with skin.

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H314	Causes severe skin burns and eye damage.
H318	Causes serious eye damage.
H317	May cause an allergic skin reaction.
H412	Harmful to aquatic life with long lasting effects.

### Precautionary statements

P280	Wear protective gloves/protective clothing/eye protection/face protection.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
P310	Immediately call a POISON CENTER/doctor.

### 2.3. Other hazards

No information available.

## SECTION 3: Composition/information on ingredients

### 3.2. Mixtures

#### Hazardous components

CAS No	Chemical name			Quantity
	EC No	Index No	REACH No	
	GHS Classification			
2855-13-2	3-aminomethyl-3,5,5-trimethylcyclohexylamine			>=75 - <90 %
	220-666-8	612-067-00-9		
	Acute Tox. 4, Acute Tox. 4, Skin Corr. 1B, Skin Sens. 1, Aquatic Chronic 3; H312 H302 H314 H317 H412			
100-51-6	benzyl alcohol			>=7 - <25 %
	202-859-9	603-057-00-5		
	Acute Tox. 4, Acute Tox. 4; H332 H302			
25154-52-3	nonylphenol			>=1 - <2.5 %
	246-672-0	601-053-00-8		
	Repr. 2, Acute Tox. 4, Skin Corr. 1B, Aquatic Acute 1, Aquatic Chronic 1; H361fd H302 H314 H400 H410			

Full text of H and EUH statements: see section 16.

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

#### General information

First aider: Pay attention to self-protection! Remove affected person from the danger area and lay down. Keep respiratory equipment at hand. First Aid for the person providing it can be dangerous to give mouth-to-mouth resuscitation.

#### After inhalation

Immediately call a POISON CENTER/doctor/?. Remove person to fresh air and keep comfortable for breathing. Move victim to fresh air. Put victim at rest and keep warm. In case of irregular breathing or respiratory arrest provide artificial respiration. First Aid for the person providing it can be dangerous to give mouth-to-mouth resuscitation. If unconscious place in recovery position and seek medical advice. In case of inhalation of decomposition products in symptoms may be delayed. The affected person may need to be kept under medical observation 48 hours.

#### After contact with skin

Immediately call a POISON CENTER/doctor/?. After contact with skin, wash immediately with polyethylene glycol, followed by plenty of water. Take off immediately all contaminated clothing and wash it before reuse. Medical treatment necessary.

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**After contact with eyes**

Immediately call a POISON CENTER/doctor/?. Remove contact lenses, if present and easy to do. Continue rinsing. Chemical burns must be treated promptly by a physician. In the case of complaints or Symtomen avoid further impacts. In case of contact with eyes flush immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart and consult an ophthalmologist.

**After ingestion**

Immediately call a POISON CENTER/doctor/?. Rinse mouth thoroughly with water. Remove person to fresh air and keep comfortable for breathing. Let water be drunken in little sips ( dilution effect). Do NOT induce vomiting. Risk of aspiration. Potential damage to lungs after vomiting. Never give anything by mouth to an unconscious person or a person with cramps. If unconscious place in recovery position and seek medical advice.

**4.2. Most important symptoms and effects, both acute and delayed**

Gastrointestinal complaints. Prolonged or repeated contact with skin or mucous membrane result in irritation symptoms such as redness, blistering, dermatitis, etc.

**4.3. Indication of any immediate medical attention and special treatment needed**

Symptoms may develop several hours following exposure; medical observation therefore necessary for at least 48 hours.

**SECTION 5: Firefighting measures****5.1. Extinguishing media****Suitable extinguishing media**

Use an extinguishing agent suitable for the surrounding fire.

**Unsuitable extinguishing media**

none known

**5.2. Special hazards arising from the substance or mixture**

When fire or if heated, a pressure increase will occur and the container may burst. Harmful to aquatic life with long lasting effects. Do not allow to enter into surface water or drains.

Decomposition products may include the following materials: Carbon dioxide (CO<sub>2</sub>) Carbon monoxide Nitrogen oxides (NO<sub>x</sub>).

**5.3. Advice for firefighters**

Evacuate all non-essential personnel. No action shall be taken involving any personal risk or without suitable training.

Fire-fighters should: Wear breathing apparatus without recirculating air and suitable protective clothing .

Fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic protection be chemical incidents.

**Additional information**

Suppress gases/vapours/mists with water spray jet. Collect contaminated fire extinguishing water separately. Do not allow entering drains or surface water.

**SECTION 6: Accidental release measures****6.1. Personal precautions, protective equipment and emergency procedures**

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Only allow access to authorised staff. Do not breathe in gases/vapours/aerosols. Provide adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment.

For emergency responders : Personal protective equipment see Section 8

**6.2. Environmental precautions**

Do not allow to enter into surface water or drains. share Pollution of rivers, lakes or sewers, according to local posited that the relevant competent authorities. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if environmental impacts caused by the

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product. (Sewers, waterways, soil or air) The containers from spill area.

### **6.3. Methods and material for containment and cleaning up**

Stop leak if safe to do so. Dilute with plenty of water. Wipe up with absorbent material (eg. cloth, fleece).  
Absorb with sand, earth, or another absorbent substance.

### **6.4. Reference to other sections**

Safe handling: see section 7  
Personal protection equipment: see section 8  
Disposal: see section 13

## SECTION 7: Handling and storage

### **7.1. Precautions for safe handling**

#### **Advice on safe handling**

Personal protection equipment: see section 8. Do not get in eyes, on skin, or on clothing. Do not breathe dust/fume/gas/mist/vapours/spray. Avoid release to the environment. Provide adequate room ventilation, if necessary with vapour extraction at the workplace. Keep only in the original container. Keep receptacles tightly sealed.

#### **Advice on protection against fire and explosion**

No special fire protection measures are necessary.

#### **Further information on handling**

When using do not eat, drink, smoke, sniff. Wash hands with soap and water before eating and drinking See Section 8, additional information on hygiene measures.

### **7.2. Conditions for safe storage, including any incompatibilities**

#### **Requirements for storage rooms and vessels**

Keep container tightly closed. Keep locked up. Store in a place accessible by authorized persons only. Provide adequate ventilation as well as local exhaust at critical locations. Keep container tightly closed and dry in a cool, well-ventilated place. Protect from heat and direct sunlight. Keep opened receptacles upright to prevent leakage.

#### **Hints on joint storage**

Keep away from incompatible substances under § 10.2. Keep away from food, drink and animal feedingstuffs.

### **7.3. Specific end use(s)**

Hardener (Crosslinker )

## SECTION 8: Exposure controls/personal protection

### **8.1. Control parameters**

### **8.2. Exposure controls**



#### **Appropriate engineering controls**

If handled uncovered, arrangements with local exhaust ventilation have to be used. Do not breathe gas/fumes/vapour/spray.

#### **Protective and hygiene measures**

Remove contaminated, saturated clothing immediately. Draw up and observe skin protection programme. Wash hands and face before breaks and after work and take a shower if necessary. When using do not eat or drink.

#### **Eye/face protection**

Suitable eye protection: goggles.

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**Hand protection**

When handling with chemical substances, protective gloves must be worn with the CE-label including the four control digits. The quality of the protective gloves resistant to chemicals must be chosen as a function of the specific working place concentration and quantity of hazardous substances. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

**Skin protection**

Wear suitable protective clothing.

**Respiratory protection**

In case of inadequate ventilation wear respiratory protection.

**SECTION 9: Physical and chemical properties****9.1. Information on basic physical and chemical properties**

Physical state:	Liquid
Colour:	clear
Odour:	like: Amines

**Test method**

pH-Value:	not determined
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**Changes in the physical state**

Melting point:	not determined
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Initial boiling point and boiling range:	> 200 °C
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Flash point:	> 100 °C ISO 2719
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**Flammability**

Solid:	not applicable
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Gas:	not applicable
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Lower explosion limits:	not determined
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Upper explosion limits:	not determined
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**Auto-ignition temperature**

Solid:	not applicable
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Gas:	not applicable
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Decomposition temperature:	not determined
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**Oxidizing properties**

Not oxidising.

Vapour pressure:	not determined
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Density:	0,94 g/cm <sup>3</sup>
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Water solubility:	easily soluble
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**Solubility in other solvents**

not determined

Partition coefficient:	not determined
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Viscosity / dynamic:	ISO 9371
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Vapour density:	not determined
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Evaporation rate:	not determined
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**9.2. Other information**

Solid content:	not determined
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## SECTION 10: Stability and reactivity

### 10.1. Reactivity

No hazardous reaction when handled and stored according to provisions.

### 10.2. Chemical stability

The product is stable under storage at normal ambient temperatures.

### 10.3. Possibility of hazardous reactions

No known hazardous reactions.

### 10.4. Conditions to avoid

none

### 10.5. Incompatible materials

No information available.

### 10.6. Hazardous decomposition products

No known hazardous decomposition products.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

#### ATEmix calculated

ATE (oral) 1052,0 mg/kg

#### Acute toxicity

CAS No	Chemical name				
	Exposure route	Dose	Species	Source	Method
2855-13-2	3-aminomethyl-3,5,5-trimethylcyclohexylamine				
	oral	LD50 mg/kg	1030	Rat	OECD 401
	dermal	LD50 mg/kg	1840	Rabbit	Manufacturer
	inhalation (4 h) aerosol	LC50 mg/l	> 5,01	Rat	OECD 403
100-51-6	benzyl alcohol				
	oral	LD50 mg/kg	1230	Rat	GESTIS
	inhalation vapour	ATE	11 mg/l		
	inhalation aerosol	ATE	1,5 mg/l		
25154-52-3	nonylphenol				
	oral	LD50 mg/kg	580	Rat	GESTIS

#### Additional information on tests

The mixture is classified as hazardous according to regulation (EC) No 1272/2008 [CLP].

## SECTION 12: Ecological information

### 12.1. Toxicity

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

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CAS No	Chemical name					
	Aquatic toxicity	Dose	[h]   [d]	Species	Source	Method
2855-13-2	3-aminomethyl-3,5,5-trimethylcyclohexylamine					
	Acute fish toxicity	LC50 110 mg/l	96 h	Leuciscus idus (golden orfe)	Regulation (EC) No. 440/2008, Annex, C.1	
	Acute algae toxicity	ErC50 > 50 mg/l	72 h	Scenedesmus subspicatus	Regulation (EC) No. 440/2008, Annex, C.3	
	Acute crustacea toxicity	EC50 388 mg/l	48 h	Chaetogammarus marinus	IUCLID	

#### 12.2. Persistence and degradability

The product has not been tested.

CAS No	Chemical name				
	Method	Value	d	Source	
	Evaluation				
2855-13-2	3-aminomethyl-3,5,5-trimethylcyclohexylamine				
	OECD 301A/ ISO 7827/ EEC 92/69/V, C.4-A	8 %	28	IUCLID	
	Not readily biodegradable (according to OECD criteria)				

#### 12.3. Bioaccumulative potential

The product has not been tested.

#### Partition coefficient n-octanol/water

CAS No	Chemical name	Log Pow
2855-13-2	3-aminomethyl-3,5,5-trimethylcyclohexylamine	0,8
100-51-6	benzyl alcohol	1,05

#### BCF

CAS No	Chemical name	BCF	Species	Source
2855-13-2	3-aminomethyl-3,5,5-trimethylcyclohexylamine	3,16	Quantitative structure-activity relationship (QSAR)	IUCLID

#### 12.4. Mobility in soil

The product has not been tested.

#### 12.5. Results of PBT and vPvB assessment

Results of PBT and vPvB assessment: not persistent.

#### 12.6. Other adverse effects

No information available.

#### Further information

Do not allow to enter into surface water or drains. Do not allow to enter into soil/subsoil.

### SECTION 13: Disposal considerations

#### 13.1. Waste treatment methods

##### **Disposal recommendations**

Do not allow to enter into surface water or drains. Do not allow to enter into soil/subsoil. Dispose of waste according to applicable legislation.

##### **Contaminated packaging**

Non-contaminated packages may be recycled. Handle contaminated packages in the same way as the substance itself.

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#### SECTION 14: Transport information

##### Land transport (ADR/RID)

**14.1. UN number:** UN 2735  
**14.2. UN proper shipping name:** POLYAMINES, LIQUID, CORROSIVE, N.O.S. (ISOPHORONDIAMIN)  
**14.3. Transport hazard class(es):** 8  
**14.4. Packing group:** III  
 Hazard label: 8



Classification code: C7  
 Special Provisions: 274  
 Limited quantity: 5 L  
 Transport category: 3  
 Hazard No: 80  
 Tunnel restriction code: E

##### Other applicable information (land transport)

E1

##### Inland waterways transport (ADN)

**14.1. UN number:** UN 2735  
**14.2. UN proper shipping name:** POLYAMINES, LIQUID, CORROSIVE, N.O.S. (ISOPHORONDIAMIN)  
**14.3. Transport hazard class(es):** 8  
**14.4. Packing group:** III  
 Hazard label: 8



Classification code: C7  
 Special Provisions: 274  
 Limited quantity: 5 L

##### Other applicable information (inland waterways transport)

E1

##### Marine transport (IMDG)

**14.1. UN number:** UN 2735  
**14.2. UN proper shipping name:** POLYAMINES, LIQUID, CORROSIVE, N.O.S. (ISOPHORONDIAMIN)  
**14.3. Transport hazard class(es):** 8  
**14.4. Packing group:** III  
 Hazard label: 8



Special Provisions: 223, 274  
 Limited quantity: 5 L  
 EmS: F-A, S-B

##### Other applicable information (marine transport)

E1



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**Air transport (ICAO-TI/IATA-DGR)**

<b>14.1. UN number:</b>	UN 2735
<b>14.2. UN proper shipping name:</b>	POLYAMINES, LIQUID, CORROSIVE, N.O.S. (ISOPHORONDIAMIN)
<b>14.3. Transport hazard class(es):</b>	8
<b>14.4. Packing group:</b>	III
Hazard label:	8



Special Provisions:	A3 A803
Limited quantity Passenger:	1 L
IATA-packing instructions - Passenger:	852
IATA-max. quantity - Passenger:	5 L
IATA-packing instructions - Cargo:	856
IATA-max. quantity - Cargo:	60 L

**Other applicable information (air transport)**

E1  
Passenger-LQ: Y841

**14.5. Environmental hazards**

ENVIRONMENTALLY HAZARDOUS: no

**14.7. Transport in bulk according to Annex II of Marpol and the IBC Code**

not applicable

**SECTION 15: Regulatory information****15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture****EU regulatory information**

Authorisations (REACH, annex XIV):  
Substances of very high concern, SVHC (REACH, article 59):  
nonylphenol

Restrictions on use (REACH, annex XVII):

Entry 46: nonylphenol

2004/42/EC (VOC): 100 %

**National regulatory information**

Employment restrictions: Observe restrictions to employment for juveniles according to the 'juvenile work protection guideline' (94/33/EC). Observe employment restrictions under the Maternity Protection Directive (92/85/EEC) for expectant or nursing mothers.

Water hazard class (D): 2 - obviously hazardous to water

Skin resorption/Sensitization: Causes allergic hypersensitivity reactions.

**15.2. Chemical safety assessment**

Chemical safety assessments for substances in this mixture were not carried out.

**SECTION 16: Other information****Abbreviations and acronyms**

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

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IATA: International Air Transport Association  
GHS: Globally Harmonized System of Classification and Labelling of Chemicals  
EINECS: European Inventory of Existing Commercial Chemical Substances  
ELINCS: European List of Notified Chemical Substances  
CAS: Chemical Abstracts Service  
LC50: Lethal concentration, 50%  
LD50: Lethal dose, 50%

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**Relevant H and EUH statements (number and full text)**

H302	Harmful if swallowed.
H302+H312	Harmful if swallowed or 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.
H318	Causes serious eye damage.
H332	Harmful if inhaled.
H361fd	Suspected of damaging fertility. Suspected of damaging the unborn child.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.

**Further Information**

The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.

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*(The data for the hazardous ingredients were taken respectively from the last version of the sub-contractor's safety data sheet.)*