

**Safety Data Sheet**

according to Regulation (EC) No 1907/2006

**Hardener 287**

Revision date: 19.01.2018

Product code: 110130

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

Hardener 287

CAS No: 6864-37-5  
 Index No: 612-110-00-1  
 EC No: 229-962-1

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

Hardener (Crosslinker )

**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-Informations-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. 3  
 Acute toxicity: Acute Tox. 3  
 Acute toxicity: Acute Tox. 4  
 Skin corrosion/irritation: Skin Corr. 1A  
 Hazardous to the aquatic environment: Aquatic Chronic 2  
 Hazard Statements:  
 Toxic if inhaled.  
 Toxic in contact with skin.  
 Harmful if swallowed.  
 Causes severe skin burns and eye damage.  
 Toxic to aquatic life with long lasting effects.

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

2,2'-dimethyl-4,4'-methylenebis(cyclohexylamine)  
 3-aminomethyl-3,5,5-trimethylcyclohexylamine  
 benzyl alcohol

**Signal word:** Danger**Pictograms:**

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**Hazard statements**

H311+H331	Toxic in contact with skin or if inhaled.
H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.
H317	May cause an allergic skin reaction.
H411	Toxic to aquatic life with long lasting effects.

**Precautionary statements**

P301+P312	IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.
P331	Do NOT induce vomiting.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
P312	Call a POISON CENTER/doctor if you feel unwell.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P405	Store locked up.

**2.3. Other hazards**

Results of PBT and vPvB assessment: No data available

**SECTION 3: Composition/information on ingredients****3.1. Substances****Hazardous components**

CAS No	Chemical name	Quantity
	EC No	
	Index No	
	REACH No	
	Classification according to Regulation (EC) No. 1272/2008 [CLP]	
6864-37-5	2,2'-dimethyl-4,4'-methylenebis(cyclohexylamine)	100 %
	229-962-1	612-110-00-1
	Acute Tox. 3, Acute Tox. 3, Acute Tox. 4, Skin Corr. 1A, Aquatic Chronic 2; H331 H311 H302 H314 H411	

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.

**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 Symptomen avoid

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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 drunk 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**

Co-ordinate fire-fighting measures to the fire surroundings.

**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 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.

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**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.

**Advice on storage compatibility**

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.

**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

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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: @0901.B0901  
 Odour: Amines

**Test method**

pH-Value: not determined

**Changes in the physical state**

Melting point: not determined

Initial boiling point and boiling range: 347 °C

Flash point: 173 °C

**Flammability**

Solid: not determined

Gas: not determined

**Explosive properties**

not determined

Lower explosion limits: not determined

Upper explosion limits: not determined

**Auto-ignition temperature**

Solid: not determined

Gas: not determined

Decomposition temperature: not determined

**Oxidizing properties**

not determined

Vapour pressure: not determined

Density: 0,98 g/cm<sup>3</sup>

Water solubility: insoluble

**Solubility in other solvents**

not determined

Partition coefficient: not determined

Viscosity / dynamic:  
(at 20 °C) 142 mPa·s ISO 9371

Viscosity / kinematic: not determined

Vapour density: not determined

Evaporation rate: not determined

**9.2. Other information**

Solid content: not determined

not applicable

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**SECTION 10: Stability and reactivity****10.1. Reactivity**

The product is stable under storage at normal ambient temperatures.

**10.2. Chemical stability**

The product is stable under storage at normal ambient temperatures.

**10.3. Possibility of hazardous reactions**

No hazardous reaction when handled and stored according to provisions.

**10.4. Conditions to avoid**

none

**10.5. Incompatible materials**

No data available

**10.6. Hazardous decomposition products**

The product is stable under storage at normal ambient temperatures. No known hazardous decomposition products.

**SECTION 11: Toxicological information****11.1. Information on toxicological effects****Toxicokinetics, metabolism and distribution**

Toxic by inhalation and in contact with skin. Harmful if swallowed. Causes severe burns. May cause sensitisation by skin contact.

**Acute toxicity**

No data available

CAS No	Chemical name				
	Exposure route	Dose	Species	Source	Method
6864-37-5	2,2'-dimethyl-4,4'-methylenebis(cyclohexylamine)				
	oral	LD50 320 - 460 mg/kg	Rat		
	dermal	LD50 > 200 - 400 mg/kg	Rabbit		
	inhalative vapour	ATE 3 mg/l			
	inhalative aerosol	ATE 0,5 mg/l			

**Irritation and corrosivity**

No data available

**Sensitising effects**

No data available

**Carcinogenic/mutagenic/toxic effects for reproduction**

No data available

**STOT-single exposure**

No data available

**STOT-repeated exposure**

No data available

**Aspiration hazard**

No data available

**Additional information on tests**

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

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**SECTION 12: Ecological information****12.1. Toxicity**

No data available

CAS No	Chemical name					
	Aquatic toxicity	Dose	[h]   [d]	Species	Source	Method
6864-37-5	2,2'-dimethyl-4,4'-methylenebis(cyclohexylamine)					
	Acute fish toxicity	LC50 mg/l	22 - 46	96 h	Leuciscus idus	
	Acute algae toxicity	ErC50	2,1 mg/l	72 h	Desmodesmus subspicatus	
	Acute crustacea toxicity	EC50 mg/l	15,2	48 h	Daphnia magna	

**12.2. Persistence and degradability**

No data available

**12.3. Bioaccumulative potential**

No data available

**Partition coefficient n-octanol/water**

CAS No	Chemical name	Log Pow
6864-37-5	2,2'-dimethyl-4,4'-methylenebis(cyclohexylamine)	2,51

**12.4. Mobility in soil**

No data available

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

The substances in the mixture do not meet the PBT/vPvB criteria according to REACH, annex XIII.

**12.6. Other adverse effects**

none Other adverse effects

**Further information**

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

**SECTION 13: Disposal considerations****13.1. Waste treatment methods****Advice on disposal**

Dispose of waste according to applicable legislation. Send to a hazardous waste incinerator facility under observation of official regulations.

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

**Contaminated packaging**

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

**SECTION 14: Transport information****Land transport (ADR/RID)****14.1. UN number:**

UN 2922

**14.2. UN proper shipping name:**CORROSIVE LIQUID, TOXIC, N.O.S.  
(3,3'-Dimethyl-4,4'-Diaminodicyclohexylmethan)**14.3. Transport hazard class(es):**

8

**14.4. Packing group:**

II

Hazard label:

8+6.1

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Classification code: CT1  
 Special Provisions: 274  
 Limited quantity: 1 L  
 Excepted quantity: E2  
 Transport category: 2  
 Hazard No: 86  
 Tunnel restriction code: E

**Other applicable information (land transport)**

E1

**Inland waterways transport (ADN)**

**14.1. UN number:** UN 2922  
**14.2. UN proper shipping name:** CORROSIVE LIQUID, TOXIC, N.O.S.  
 (3,3'-Dimethyl-4,4'-Diaminodicyclohexylmethan)  
**14.3. Transport hazard class(es):** 8  
**14.4. Packing group:** II  
 Hazard label: 8+6.1



Classification code: CT1  
 Special Provisions: 274 802  
 Limited quantity: 1 L  
 Excepted quantity: E2

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

E1

**Marine transport (IMDG)**

**14.1. UN number:** UN 2922  
**14.2. UN proper shipping name:** CORROSIVE LIQUID, TOXIC, N.O.S.  
 (3,3'-Dimethyl-4,4'-Diaminodicyclohexylmethan)  
**14.3. Transport hazard class(es):** 8  
**14.4. Packing group:** II  
 Hazard label: 8+6.1



Special Provisions: 274  
 Limited quantity: 1 L  
 Excepted quantity: E2  
 EmS: F-A, S-B

**Other applicable information (marine transport)**

E1

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

**14.1. UN number:** UN 2922  
**14.2. UN proper shipping name:** CORROSIVE LIQUID, TOXIC, N.O.S.(cyclohexylamine(Proprietary))  
**14.3. Transport hazard class(es):** 8



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**14.4. Packing group:**

II

Hazard label:

8+6.1



Special Provisions:

A3 A803

Limited quantity Passenger:

0.5 L

Passenger LQ:

Y840

Excepted quantity:

E2

IATA-packing instructions - Passenger:

851

IATA-max. quantity - Passenger:

1 L

IATA-packing instructions - Cargo:

855

IATA-max. quantity - Cargo:

30 L

**Other applicable information (air transport)**

E1

Passenger-LQ: Y841

**14.5. Environmental hazards**

ENVIRONMENTALLY HAZARDOUS: yes

**14.6. Special precautions for user**

not applicable

**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**

Restrictions on use (REACH, annex XVII):

Entry 3: 2,2'-dimethyl-4,4'-methylenebis(cyclohexylamine)

2004/42/EC (VOC):

35 - 50%

**National regulatory information**

Employment restrictions:

Observe restrictions to employment for juvenils according to the 'juvenile work protection guideline' (94/33/EC).

Water contaminating class (D):

3 - highly water contaminating

**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

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

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CAS: Chemical Abstracts Service

LC50: Lethal concentration, 50%

LD50: Lethal dose, 50%

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

H302	Harmful if swallowed.
H311	Toxic in contact with skin.
H311+H331	Toxic in contact with skin or if inhaled.
H314	Causes severe skin burns and eye damage.
H317	May cause an allergic skin reaction.
H331	Toxic if inhaled.
H411	Toxic 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.