

**Safety Data Sheet**

according to Regulation (EC) No 1907/2006

**Hardener GL 2**

Print date: 04.08.2017

Product code: 104100

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

Hardener GL 2

**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. 4

Acute toxicity: Acute Tox. 4

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:

Causes severe skin burns and 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-trimethylcyclohexylaminePolyoxypropylenediamine3-aminopropyltriethoxysilane

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

H314 Causes severe skin burns and eye damage.

H317 May cause an allergic skin reaction.

H412 Harmful to aquatic life with long lasting effects.

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**Precautionary statements**

P501	Dispose of waste according to applicable legislation.
P405	Store locked up.
P310	Immediately call a POISON CENTER/doctor.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P260	Do not breathe Do not breathe in dust..

**2.3. Other hazards**

No information available.

**SECTION 3: Composition/information on ingredients****3.2. Mixtures****Chemical characterization**

Epoxydharzhärter, Formulierung auf Basis aliphatischer Polyamine

**Hazardous components**

CAS No	Chemical name			Quantity
	EC No	Index No	REACH No	
	Classification according to Regulation (EC) No. 1272/2008 [CLP]			
9046-10-0	Polyoxyalkylenediamine			50 - 100 %
	618-561-0		01-2119557899-12	
	Skin Corr. 1B, Eye Dam. 1, Aquatic Chronic 2; H314 H318 H411			
2855-13-2	3-aminomethyl-3,5,5-trimethylcyclohexylamine			25 - 50 %
	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			
919-30-2	3-aminopropyltriethoxysilane			< 2,5 %
	213-048-4	612-108-00-0		
	Acute Tox. 4, Skin Corr. 1B; H302 H314			

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

**SECTION 4: First aid measures****4.1. Description of first aid measures****General information**

Remove contaminated clothing immediately. Move victim to fresh air. Instruct person to keep calm and warm.

**After inhalation**

consult a doctor.

**After contact with skin**

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. If skin irritation occurs.

**After contact with eyes**

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**

Drink plenty of water and fresh air. Call a doctor immediately

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

No information available.

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

Treat symptomatically.

## **SECTION 5: Firefighting measures**

### **5.1. Extinguishing media**

#### **Suitable extinguishing media**

Carbon dioxide (CO<sub>2</sub>), Extinguishing powder, Water spray jet.

#### **Unsuitable extinguishing media**

High power water jet.

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

When heating up or in the fire case formation of poisonous gasses possible.

### **5.3. Advice for firefighters**

Wear a self-contained breathing apparatus and chemical protective clothing. Full protection suit.

#### **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**

Use personal protection equipment.

### **6.2. Environmental precautions**

Do not allow to enter into surface water or drains.

Do not allow to enter the soil or subsoil.

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

Absorb with liquid-binding material (e.g. sand, diatomaceous earth, acid- or universal binding agents). Treat the recovered material as prescribed in the section on waste disposal.

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

Carefully cleaning scene of an accident.

## **SECTION 7: Handling and storage**

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

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

Provide adequate room ventilation, if necessary with vapour extraction at the workplace.

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

No special fire protection measures are necessary.

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

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

Keep/Store only in original container. Provide for retaining containers, eg. floor pan without outflow.

#### **Advice on storage compatibility**

Store separately from foodstuffs.

#### **Further information on storage conditions**

Keep receptacles tightly sealed.

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

No further relevant information

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### 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 recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

Recommended material: FKM (fluoro rubber), @0802.B008198

Thickness of glove material: > 0,5mm

#### Skin protection

Wear suitable protective clothing.

#### Respiratory protection

In case of inadequate ventilation wear respiratory protection. Combination filtering device (EN 14387) A-P2

### SECTION 9: Physical and chemical properties

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

Physical state: liquid  
 Colour: light yellow  
 Odour: Amines

#### Test method

pH-Value: not determined

#### Changes in the physical state

Melting point: not determined

Initial boiling point and boiling range: 247 °C

Flash point: > 100 °C

#### Flammability

Solid: not applicable

Gas: not applicable

Lower explosion limits: 0,7 vol. %

Upper explosion limits: 5 vol. %

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Ignition temperature:	240 °C
<b>Auto-ignition temperature</b>	
Solid:	not applicable
Gas:	not applicable
Decomposition temperature:	not determined
<b>Oxidizing properties</b>	
Not oxidizing.	
Vapour pressure:	0 hPa
(at 20 °C)	
Density (at 23 °C):	0,94 g/cm <sup>3</sup> ISO 2811
Water solubility:	Immiscible
<b>Solubility in other solvents</b>	
not determined	
Partition coefficient:	not determined
Viscosity / dynamic:	16 mPa·s ISO 3219
(at 25 °C)	
Vapour density:	not determined
Evaporation rate:	not determined
<b>9.2. Other information</b>	
Solid content:	not determined

**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**

No further relevant information

**10.5. Incompatible materials**

Oxidizing agents, strong.

**10.6. Hazardous decomposition products**

In case of fire may be liberated: toxic and caustic gases and vapours

**SECTION 11: Toxicological information****11.1. Information on toxicological effects**

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### Acute toxicity

CAS No	Chemical name				
	Exposure route	Dose		Species	Source
9046-10-0	Polyoxyalkylenediamine				
	oral	LD50	2885,3 mg/kg	Rat	OECD 401
	dermal	LD50	2979,7 mg/kg	Rabbit	OECD 402
2855-13-2	3-aminomethyl-3,5,5-trimethylcyclohexylamine				
	oral	LD50	1030 mg/kg	Rat	OECD 401
	dermal	LD50	1840 mg/kg	Rabbit	Manufacturer
	inhalative (4 h) aerosol	LC50	> 5,01 mg/l	Rat	OECD 403
919-30-2	3-aminopropyltriethoxysilane				
	oral	LD50	1780 mg/kg	Rat	RTECS
	dermal	LD50	3800 mg/kg	Rabbit	RTECS

### 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.

CAS No	Chemical name					
	Aquatic toxicity	Dose	[h]   [d]	Species	Source	
9046-10-0	Polyoxyalkylenediamine					
	Acute fish toxicity	LC50	> 15 mg/l	96 h	Oncorhynchus mykiss (Rainbow trout)	Oncorhynchus mykiss (Rainbow trout)
	Acute crustacea toxicity	EC50	418,34 mg/l	48 h	Acartia tonsa	ISO TC147/SC5/WG2
	Fish toxicity	NOEC	15 mg/l	4 d	Oncorhynchus mykiss (Rainbow trout)	Oncorhynchus mykiss (Rainbow trout)
	Algae toxicity	NOEC	0,32 mg/l	3 d	Pseudokirchneriella subcapitata	OECD 201
	Crustacea toxicity	NOEC	200 mg/l	2 d	Acartia tonsa	ISO TC147/SC5/WG2
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
919-30-2	3-aminopropyltriethoxysilane					
	Acute algae toxicity	ErC50	603 mg/l	72 h	Desmodesmus subspicatus	
	Acute crustacea toxicity	EC50	331 mg/l	48 h	Daphnia magna	

### 12.2. Persistence and degradability

The product has not been tested.

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CAS No	Chemical name			
	Method	Value	d	Source
	Evaluation			
9046-10-0	Polyoxyalkylenediamine			
	OECD 301B/ ISO 9439/ EEC 92/69/V, C.4-C	0%	28	
	Not readily biodegradable (according to OECD criteria)			
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
9046-10-0	Polyoxyalkylenediamine	1,34
2855-13-2	3-aminomethyl-3,5,5-trimethylcyclohexylamine	0,8
919-30-2	3-aminopropyltriethoxysilane	0,31

**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**

not applicable

**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****Advice on disposal**

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.

**Waste disposal number of waste from residues/unused products**

080409 WASTES FROM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS), ADHESIVES, SEALANTS AND PRINTING INKS; wastes from MFSU of adhesives and sealants (including waterproofing products); waste adhesives and sealants containing organic solvents or other hazardous substances  
Classified as hazardous waste.

**Waste disposal number of used product**

080299 WASTES FROM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS), ADHESIVES, SEALANTS AND PRINTING INKS; wastes from MFSU of other coatings (including ceramic materials); wastes not otherwise specified

**Waste disposal number of contaminated packaging**

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150110 WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED; packaging (including separately collected municipal packaging waste); packaging containing residues of or contaminated by hazardous substances  
Classified as hazardous waste.

### 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 2735  
**14.2. UN proper shipping name:** AMINES, LIQUID, CORROSIVE, N.O.S. (Polyoxypropylenediamine)  
**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  
 Excepted quantity: E1  
 Transport category: 3  
 Hazard No: 80  
 Tunnel restriction code: E

### Other applicable information (land transport)

Excepted quantity: E2

### Inland waterways transport (ADN)

**14.1. UN number:** UN 2735  
**14.2. UN proper shipping name:** AMINES, LIQUID, CORROSIVE, N.O.S. (Polyoxypropylenediamine)  
**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  
 Excepted quantity: E1

### Other applicable information (inland waterways transport)

Excepted quantity: E2

### Marine transport (IMDG)

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



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Hazard label: 8



Marine pollutant: Nein  
 Special Provisions: 223, 274  
 Limited quantity: 5 L  
 Excepted quantity: E1  
 EmS: F-A, S-B  
 Segregation group: alkalis

### Other applicable information (marine transport)

Excepted quantity: E2

### Air transport (ICAO)

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



Special Provisions: A3 A803  
 Limited quantity Passenger: 1 L  
 Passenger LQ: Y841  
 Excepted quantity: E1  
 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)

Excepted quantity: E2  
 Passenger-LQ: Y840

### 14.5. Environmental hazards

ENVIRONMENTALLY HAZARDOUS: no  
 Danger releasing substance: Polyoxyalkylenediamine

### 14.6. Special precautions for user

Warning: strongly corrosive.

### 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

2004/42/EC (VOC): 90 % (918 g/l)

#### Additional information

To follow: 850/2004/EC, 79/117/EEC, 689/2008/EC

#### National regulatory information

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Employment restrictions:	Observe restrictions to employment for juvenils according to the 'juvenile work protection guideline' (94/33/EC).
Water contaminating class (D):	2 - water contaminating
Skin resorption/Sensitization:	Causes allergic hypersensitivity reactions.

**Additional information**

BG Merkblatt:  
 Praxisleitfaden für den Umgang mit Epoxidharzen  
 (herausgegeben von der Berufsgenossenschaft der Bauwirtschaft)  
 www.bgbau.de oder www.gisbau.de

Epoxidharz-Systeme sicher handhaben  
 (herausgegeben von PlasticsEurope)  
 www.plasticseurope.org

BGR 227 "Tätigkeiten mit Epoxidharzen"  
 (herausgegeben vom Hauptverband der gewerblichen Berufsgenossenschaften)  
 www.dguv.de  
 BGR 190 - Regel für den Einsatz von Atemschutzgeräten  
 BGR 192 - Regeln für den Einsatz von Augen- und Gesichtsschutz

**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  
 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.
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.
H411	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.

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