



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

### 1.1. Product identifier

Lead-acid battery filled with diluted sulphuric acid

### 1.2. Relevant identified uses of the substance or mixture and uses advised against

#### Use of the substance/mixture

Battery.

Note: This product is an "article" and is not an object that is required to issue Safety Data Sheets (SDS) by regulations concerning chemical substances. This SDS voluntarily offers helpful information for your safe handling and environmental care.

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

Company name: Robert Bosch GmbH  
Automotive Aftermarket  
Place: D-76227 Karlsruhe  
Telephone: +49 721-942-0  
Responsible Department: Responsible for the safety data sheet: sds@gbk-ingelheim.de

1.4. Emergency telephone number: +49 (0) 6132 / 84463 (GBK GmbH)

## SECTION 2: Hazards identification

### 2.1. Classification of the substance or mixture

#### Classification according to Directive 67/548/EEC or 1999/45/EC

This mixture is not classified as hazardous in accordance with Directive 1999/45/EC.

Note: This product is an "article" and is not an object that is required to issue Safety Data Sheets (SDS) by regulations concerning chemical substances. This SDS voluntarily offers helpful information for your safe handling and environmental care.

#### Classification according to Regulation (EC) No. 1272/2008 [CLP]

Hazard categories:

Acute toxicity: Acute Tox. 4

Acute toxicity: Acute Tox. 4

Skin corrosion/irritation: Skin Corr. 1A

Serious eye damage/eye irritation: Eye Dam. 1

Reproductive toxicity: Repr. 1A

Specific target organ toxicity - repeated exposure: STOT RE 2

Hazardous to the aquatic environment: Aquatic Chronic 3

Hazard Statements:

Harmful if swallowed.

Harmful if inhaled.

Causes severe skin burns and eye damage.

Causes serious eye damage.

May damage fertility. May damage the unborn child.

May cause damage to organs through prolonged or repeated exposure.

Harmful to aquatic life with long lasting effects.

### 2.2. Label elements

#### Hazard components for labelling

Lead

sulphuric acid ... %

Concentration of the absorbed, diluted sulphuric acid varies in accordance to the state of charge.

Signal word: Danger

Pictograms: GHS05-GHS07-GHS08



**Hazard statements**

- |           |  |
|-----------|--|
| H302+H332 | Harmful if swallowed or if inhaled.                                |
| H314      | Causes severe skin burns and eye damage.                           |
| H360      | May damage fertility or the unborn child.                          |
| H373      | May cause damage to organs through prolonged or repeated exposure. |
| H412      | Harmful to aquatic life with long lasting effects.                 |

**Precautionary statements**

- |                |  |
|----------------|--|
| P101           | If medical advice is needed, have product container or label at hand.  |
| P202           | Do not handle until all safety precautions have been read and understood.  |
| P260           | Do not breathe dust/fume/gas/mist/vapours/spray.   |
| P263           | Avoid contact during pregnancy/while nursing.  |
| P264           | Wash hands thoroughly after handling.  |
| P273           | Avoid release to the environment.  |
| P280           | Wear protective gloves/protective clothing/eye protection/face protection.   |
| P301+P330+P331 | IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.   |
| P303+P361+P353 | IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.                              |
| P363           | Wash contaminated clothing before reuse.   |
| 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.   |
| P405           | Store locked up.   |
| P501           | Dispose of contents/container to in accordance with local and national regulations.  |

**Additional advice on labelling**

There is no hazard when the measures for handling and storage are followed.

**2.3. Other hazards**

No hazards in case of an intact battery and observation of the instructions for use.

AGM (Absorbent Glas Material) batteries have two significant characteristics:

- They contain absorbed diluted sulphuric acid, which may cause severe acid burds, when the material is touched.
- During the charging process they develop hydrogen gas and oxygen, which under certain circumstances may turn into an explosive mixture.

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**SECTION 3: Composition/information on ingredients**

**3.2. Mixtures**

**Chemical characterization**

Battery (Lead)

Concentration of the absorbed, diluted sulphuric acid varies in accordance to the state of charge. Composition of the plastic may vary due to different customer requirements .



**Hazardous components**

EC No	Chemical name	Quantity
CAS No	Classification according to Directive 67/548/EEC	
Index No	Classification according to Regulation (EC) No. 1272/2008 [CLP]	
REACH No		
231-100-4	Lead	~32 %
7439-92-1		
	Repr. 1A, Acute Tox. 4, Acute Tox. 4, STOT RE 2, Aquatic Chronic 3; H360 H302 H332 H373 H412	
231-100-4	Lead	~ 32 %
7439-92-1		
	Repr. 1A; H360D H361f	
01-2119513221-59		
231-639-5	sulphuric acid ... %	~29 %
7664-93-9	C - Corrosive R35	
016-020-00-8	Skin Corr. 1A; H314	
01-2119458838-20		
	Plastic container	~7 %

Full text of R, H and EUH phrases: see section 16.

**Further Information**

Because of the cell structure the dangerous ingredients will not be available if used properly.

**SECTION 4: First aid measures**

**4.1. Description of first aid measures**

**General information**

The following first aid measures are required only in case of exposure to interior battery components after damage of the external battery casing.

Undamaged, closed cells do not represent a danger to the health.

**After inhalation**

Absorbed, diluted sulphuric acid:

- Ensure of fresh air.
- Consult a physician.

Lead paste:

- Ensure of fresh air.
- Consult a physician.

**After contact with skin**

Absorbed, diluted sulphuric acid:

- Rinse with plenty of water.
- Remove contaminated soaked clothing immediately.
- Consult a physician.

Lead paste:

- Wash off immediately with plenty of water and soap.
- Consult a physician.

**After contact with eyes**

Absorbed, diluted sulphuric acid:

- Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
- Seek medical treatment by eye specialist.

Lead paste:

- Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.



- Seek medical treatment by eye specialist.

**After ingestion**

Absorbed, diluted sulphuric acid:

- Drink plenty of water.
- Do not induce vomiting.
- Administration of activated charcoal.
- Call a physician immediately.

Lead paste:

- Rinse mouth.
- Consult a physician.

**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 symptoms.

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**SECTION 5: Firefighting measures**

**5.1. Extinguishing media**

**Suitable extinguishing media**

water, carbon dioxide (CO<sub>2</sub>), Dry chemical.

**Unsuitable extinguishing media**

No information available.

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

No information available.

**5.3. Advice for firefighters**

Protective clothing: Tightly fitting goggles (EN 166). Wear respiratory protection. Acid-resistant protective clothing. (EN 368/9).

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**SECTION 6: Accidental release measures**

**6.1. Personal precautions, protective equipment and emergency procedures**

Use personal protective clothing.

Avoid contact with skin, eyes and clothing.

**6.2. Environmental precautions**

Do not discharge into the drains/surface waters/ground water.

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

Take up with absorbent material (e.g. sand).

Neutralize with: Sodium carbonate.

Take up mechanically and collect in suitable container for disposal.

Waste disposal according to local regulations.

**6.4. Reference to other sections**

Information for safe handling look up chapter 7.

Information for personal protective equipment look up chapter 8.

Information for disposal see section 13.

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**SECTION 7: Handling and storage**

**7.1. Precautions for safe handling**

**Advice on safe handling**

Avoid short circuiting the cell. Avoid mechanical damage of the cell. Do not open or disassemble.

Follow the directions.

**Further information on handling**

Do not clean batteries with dry wishers, use only wet wishers.

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

**Requirements for storage rooms and vessels**

Store in a cool, covered place.

Charged lead-acid batteries do not freeze up to -50 °C.

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Recommended storage temperature: room temperature.

**Further information on storage conditions**

Seek agreement with local water authorities in case of larger quantities.

If batteries have to be stored in storage rooms, it is imperative that the instructions for use are observed.

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

Battery.

Note: This product is an "article".

**SECTION 8: Exposure controls/personal protection**

**8.1. Control parameters**

**Exposure limits (EH40)**

CAS No	Substance	ppm	mg/m <sup>3</sup>	fibres/ml	Category	Origin
7664-93-9	Sulphuric acid (mist)	-	0.05		TWA (8 h)	WEL
		-	-		STEL (15 min)	WEL

**Additional advice on limit values**

No exposure caused by lead and lead containing battery paste when handling properly.

**8.2. Exposure controls**

**Protective and hygiene measures**

In case of electrolyte leakage:

Provide sufficient air exchange and/or exhaust in work rooms.

Use personal protective clothing.

Avoid contact with skin, eyes and clothing.

Avoid breathing fume and gas.

**Eye/face protection**

In case of electrolyte leakage:

Tightly fitting goggles (EN 166). (are necessary during recharging also)

**Hand protection**

In case of electrolyte leakage:

Gloves made of nitrile. Recommended material thickness: 0,11 mm. Breakthrough time: > 480 minutes.

**Skin protection**

In case of electrolyte leakage:

Acid-resistant protective clothing. (EN 368/9)

**Respiratory protection**

In case of electrolyte leakage:

In case of insufficient ventilation, wear suitable respiratory equipment

**SECTION 9: Physical and chemical properties**

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

Physical state: Liquid (1), Solid (2)  
 Colour: Colourless (1), Grey (2)  
 Odour: Odourless (1), Odourless (2)

pH-Value (at 25 °C): 0,3 (1), 7-8 (2)

**Changes in the physical state**

Melting point: -35 - -60 (1), 327 (2) °C  
 Initial boiling point and boiling range: 108-144 (1), 1740 (2) °C  
 Flash point: Not combustible. (1)+(2) °C  
 Vapour pressure: 14,6(1), - (2) hPa  
 (at 20 °C)



Density (at 20 °C):	1,2-1,3 (1), 11,35 (2) g/cm <sup>3</sup>
Water solubility: (at 25 °C)	Mischbar (1), 0,15 mg/l (2) g/L
Explosive properties	Not explosive. (1)+(2)

**9.2. Other information**

(1) Sulphuric acid (30 - 38,5%)

(2) Lead

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**SECTION 10: Stability and reactivity**

**10.1. Reactivity**

Absorbed, diluted sulphuric acid:

Reactions with metals, with evolution of hydrogen.

Risk of formation of explosive hydrogen/air mixtures when stored in enclosed areas.

Destroys organic materials, such as cardboard, wood, textiles.

**10.2. Chemical stability**

Absorbed, diluted sulphuric acid:

Decomposition temperature: 338 °C.

**10.3. Possibility of hazardous reactions**

Absorbed, diluted sulphuric acid:

Gives off hydrogen by reaction with metals. Formation of explosive gas/air mixtures.

**10.4. Conditions to avoid**

No information available.

**10.5. Incompatible materials**

Absorbed, diluted sulphuric acid:

Vigorous reactions with alkalies.

**10.6. Hazardous decomposition products**

No decomposition if stored and applied as directed.

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**SECTION 11: Toxicological information**

**11.1. Information on toxicological effects**

**Toxicokinetics, metabolism and distribution**

Lead paste:

Inorganic lead compounds are slowly absorbed by ingestion and inhalation and poorly absorbed through the skin. If absorbed, lead will accumulate in the body with low rates of excretion, leading to long-term build up.

**Acute toxicity**

Harmful if swallowed or if inhaled.

Sulphuric acid:

Sulphuric acid immediately dissociates to the hydrogen and sulphate ions, with the hydrogen ion being responsible for the local toxicity (irritation and corrosivity) of sulphuric acid.

LD50/oral/rat: 2140 mg/kg (similar to OECD 401)

LC50/inhalation/rat: 375 mg/m<sup>3</sup> (OECD 403)

LD50/dermal: No data available.

Lead paste:

Sparingly soluble inorganic lead compounds have generally been found to be of relatively low acute toxicity by ingestion, in contact with skin, and by inhalation.

LD50/oral/rat: > 2000 mg/kg

LD50/dermal/rat: > 2000mg/kg

LC50/inhalation/rat: > 5 mg/m<sup>3</sup> (4h)

**Irritation and corrosivity**



Causes severe skin burns and eye damage.

Sulphuric acid:

Causes severe skin burns and eye damage.

List substance Directive 67/548/EEC Annex I

Lead paste:

Skin: Studies of similar sparingly soluble inorganic lead compounds have shown that they are not corrosive or irritating to the skin of rabbits.

Eyes: Studies of lead monoxide and similar sparingly soluble inorganic lead compounds have shown that they are not corrosive or irritating to the eye of the rabbit.

Respiratory system: No symptoms of respiratory irritation were noted during long-term inhalation studies involving lead monoxide.

#### **Sensitising effects**

Based on available data, the classification criteria are not met.

Sulphuric acid:

Not classified.

Lead paste:

There is no evidence that sparingly soluble inorganic lead compounds cause respiratory or skin sensitisation.

#### **STOT-single exposure**

Based on available data, the classification criteria are not met.

Sulphuric acid:

Not classified.

Lead paste:

Sparingly soluble inorganic lead compounds have generally been found to be of relatively low acute toxicity by ingestion, in contact with skin, and by inhalation.

#### **Severe effects after repeated or prolonged exposure**

May cause damage to organs through prolonged or repeated exposure. (Lead)

Sulphuric acid:

Inhalation, Rat, NOAEL: 0,3 mg/m<sup>3</sup> air (OECD 412); Not classified.

Lead paste:

Inorganic lead compounds are cumulative poisons and may be absorbed into the body through ingestion or inhalation.

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

May damage fertility or the unborn child. (Lead); (Lead)

Germ cell mutagenicity: Based on available data, the classification criteria are not met.

Carcinogenicity: Based on available data, the classification criteria are not met.

Sulphuric acid:

Carcinogenicity: Not classified.

Mutagenicity: Not classified.

Reproductive toxicity: Inhalation, Rabbit, mouse: NOAEL 19,3 mg/m<sup>3</sup> (OECD 414); Not classified.

Lead paste:

Carcinogenicity: Epidemiology studies of workers exposed to inorganic lead compounds have found a limited association with stomach cancer. This has led to the classification by IARC that inorganic lead compounds are probably carcinogenic to humans (Group 2A).

Mutagenicity: The evidence for genotoxic effects of highly soluble inorganic lead compounds is contradictory, with numerous studies reporting both positive and negative effects. Responses appear to be induced by indirect mechanisms, mostly at very high concentrations that lack physiological relevance.

Reproductive toxicity: Exposure to high levels of inorganic lead compounds may cause adverse effects on male and female fertility, including adverse effects on sperm quality. Prenatal exposure to inorganic lead compounds is also associated with adverse effects on neurobehavioral development in children.



**Aspiration hazard**

Based on available data, the classification criteria are not met.

Sulphuric acid:

Not classified.

Lead paste:

Not classified.

**Practical experience**

**Other observations**

If appropriately handled and if in accordance with the general hygienic rules, no damages to health have become known.

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**SECTION 12: Ecological information**

**12.1. Toxicity**

Sulphuric acid:

This substance is not classified as hazardous to the aquatic environment.

Aquatic toxicity

Fish, *Lepomis macrochirus*, LC50 (96h) > 16 - < 28 mg/l

Aquatic invertebrates, *Daphnia magna*, LC50 (48h) > 100 mg/l (OECD 202)

algae (Growth rate), *Desmodesmus subspicatus*, EC50 (72h) > 100 mg/l (OECD 201)

Fish, *Jordanella floridae*, NOEC (65d) 0,025 mg/l

Aquatic invertebrates, *Tanytarsus dissimilis*, NOEC 0,15 mg/l

Activated sludge, NOEC (37d) approx. 26 g/l

Lead paste:

This substance is classified as hazardous to the aquatic environment.

Aquatic toxicity

Toxicity to fish: LC50 (96h) > 100 mg/l

Toxicity for daphnia: EC50 (48h) > 100 mg/l

Toxicity to algae: IC50 (72h) > 10 mg/l

**12.2. Persistence and degradability**

Sulphuric acid:

Biodegradation

Not biodegradable. Sulphuric acid is a strong mineral acid (pKa= 1.92) that dissociates readily in water to hydrogen ions and sulphate ions (at environmentally relevant pH) and is totally miscible with water.

The hydrogen ions will react with and be neutralised by (OH) to form water. The sulphate ions are incorporated into the various mineral species present in the environment.

Chemical degradation

Hydrolysis

Sulphuric acid is a strong mineral acid (pKa= 1.92) that dissociates readily in water to hydrogen ions and sulphate ions (at environmentally relevant pH) and is totally miscible with water. At all environmentally relevant concentrations, the substance will therefore exist as the environmentally ubiquitous sulphate anion and hydronium cation, that reacts with hydroxyls to form water.

Phototransformation

Phototransformation will not occur.

Lead paste:

No information available.

**12.3. Bioaccumulative potential**

Sulphuric acid:

Sulphuric acid is a strong mineral acid (pKa= 1.92) that dissociates readily in water to hydrogen ions and sulphate ions (at environmentally relevant pH) and is totally miscible with water. The resulting hydrogen ions and sulphate ions are naturally present in water/sediment and no bioaccumulation of these ions is predicted.



Lead paste:

Inorganic lead is considered to be bioaccumulative in the environment, and may accumulate in aquatic and terrestrial plants and animals.

Bioconcentration factor (BCF), Fresh water: 4,553 l/kg (wet weight).

Bioconcentration factor (BCF), Soil : 0,39 kg/kg (dry weight).

**12.4. Mobility in soil**

Sulphuric acid:

Sulphuric acid is a strong mineral acid (pKa= 1.92) that dissociates readily in water to hydrogen ions and sulphate ions (at environmentally relevant pH) and is totally miscible with water. The resulting hydrogen ions and sulphate ions are naturally present in water/sediment. The hydrogen ions will contribute to local pH and are potentially mobile.

Lead paste:

This product contains inorganic lead compounds which are sparingly soluble and are expected to be adsorbed onto soils and sediments. Mobility is expected to be low.

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

Sulphuric acid:

Sulphuric acid is neither a PBT nor a vPvB substance.

Lead paste:

The PBT and vPvB criteria in Annex XIII of the REACH Regulation do not apply to inorganic substances.

**12.6. Other adverse effects**

No data available.

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**SECTION 13: Disposal considerations**

**13.1. Waste treatment methods**

**Advice on disposal**

The point of sale, the manufacturers and importers of batteries take back used batteries, and render them to the secondary lead smelters for processing.

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

160601 WASTES NOT OTHERWISE SPECIFIED IN THE LIST; batteries and accumulators; lead batteries  
Classified as hazardous waste.

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**SECTION 14: Transport information**

**Land transport (ADR/RID)**

<b>14.1. UN number:</b>	UN 2794
<b>14.2. UN proper shipping name:</b>	Batteries wet filled with acid
<b>14.3. Transport hazard class(es):</b>	8
<b>14.4. Packing group:</b>	-
Hazard label:	8



Classification code:	C11
Special Provisions:	295 598
Limited quantity:	1 L
Transport category:	3
Hazard No:	80
Tunnel restriction code:	E

**Other applicable information (land transport)**

Batteries are exempted from all ADR/RID regulations, if requirements of special provision 598 are met.  
New storage batteries when - they are secured in such a way that they cannot slip, fall or be damaged;  
- they are provided with carrying devices, unless they are suitably stacked, e.g. on pallets; - there aren't



any dangerous traces or acids on the outside; - they are protected against short circuits.

**Marine transport (IMDG)**

**14.1. UN number:** UN 2794  
**14.2. UN proper shipping name:** Batteries wet filled with acid  
**14.3. Transport hazard class(es):** 8  
**14.4. Packing group:** -  
 Hazard label: 8



Special Provisions: 295  
 Limited quantity: 1 L  
 EmS: F-A, S-B

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

**14.1. UN number:** UN 2794  
**14.2. UN proper shipping name:** Batteries wet filled with acid  
**14.3. Transport hazard class(es):** 8  
**14.4. Packing group:** -  
 Hazard label: 8



Special Provisions: A51 A164 A183 A802  
 Limited quantity Passenger: Forbidden  
 IATA-packing instructions - Passenger: 870  
 IATA-max. quantity - Passenger: 30 kg  
 IATA-packing instructions - Cargo: 870  
 IATA-max. quantity - Cargo: No limit

**14.5. Environmental hazards**

ENVIRONMENTALLY HAZARDOUS: no

**14.6. Special precautions for user**

To avoid risks to human health and the environment, comply with the instructions for use.

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

The transport takes place only in approved and appropriate packaging.

**Other applicable information**

No hazardous material as defined by the transport regulations.

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

In accordance with the Battery Directive and national laws lead-acid batteries have to be marked by a crossed out refuse bin with the chemical symbol for lead Pb, together with the ISO return / recycling symbol.

**National regulatory information****Additional information**

Note: This product is an "article" and is not an object that is required to issue Safety Data Sheets (SDS) by regulations concerning chemical substances. This SDS voluntarily offers helpful information for your safe handling and environmental care.

**15.2. Chemical safety assessment**

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



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## SECTION 16: Other information

### Changes

Changes in chapter: -

### Abbreviations and acronyms

ADR = Accord européen relatif au transport international des marchandises Dangereuses par Route

RID = Règlement concernant le transport international ferroviaire de marchandises dangereuses

ADN = Accord européen relatif au transport international des marchandises dangereuses par voie de navigation intérieure

IMDG = International Maritime Code for Dangerous Goods

IATA/ICAO = International Air Transport Association / International Civil Aviation Organization

MARPOL = International Convention for the Prevention of Pollution from Ships

DOT = Department of Transportation

TDG = Transport of Dangerous Goods

GHS = Globally Harmonized System of Classification and Labelling of Chemicals

REACH = Registration, Evaluation, Authorization and Restriction of Chemicals

CAS = Chemical Abstract Service

EN = European norm

ISO = International Organization for Standardization

DIN = Deutsche Industrie Norm

PBT = Persistent Bioaccumulative and Toxic

vPvB = Very Persistent and very Bio-accumulative

LD = Lethal dose

LC = Lethal concentration

EC = Effect concentration

IC = Median immobilisation concentration or median inhibitory concentration

### Relevant R phrases (number and full text)

35 Causes severe burns.

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

H302 Harmful if swallowed.

H302+H332 Harmful if swallowed or if inhaled.

H314 Causes severe skin burns and eye damage.

H332 Harmful if inhaled.

H360 May damage fertility or the unborn child.

H360D May damage the unborn child.

H361f Suspected of damaging fertility.

H373 May cause damage to organs through prolonged or repeated exposure.

H412 Harmful to aquatic life with long lasting effects.

### Further Information

Data of items 4 to 8, as well as 10 to 12, do partly not refer to the use and the regular employing of the product (in this sense consult information on use and on product), but to liberation of major amounts in case of accidents and irregularities. The information describes exclusively the safety requirements for the product(s) and is based on the present level of our knowledge. This data does not constitute a guarantee for the characteristics of the product(s) as defined by the legal warranty regulations. (n.a. = not applicable; n.d. = not determined)

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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.)*