Safety Data Sheet

for Lead-acid Accumulators (Lead-acid Batteries)

The REACH-regulation (1907/2006/EC) the setting up and updating of safety data sheets for substances and preparations. For articles – like lead-acid batteries – safety data sheets are not required.
The notes are meant to help to comply with legal requirements but do not replace them.

1 – Substances / formulation and company name

Trade Name	**Lead acid battery, wet, filled with acid**
Product Details	**QUALITY-BATTERIES – SEM, TTB, DC, OGi, OPzS, PzS, SMF, YB**
Usage / Applications	**SEM – Semitraktion:** Solar power, electric vehicles, sailing and electric boats, caravan, mobile homes, signal units, cleaning machines, wheelchairs, etc. **TTB – Tubular:** Cleaning machines, wheelchairs, mobile lifts, electric tractors, solar power, golf trolleys, transportation systems, etc. **DC – Deep Cycle:** Lifting devices, mobile lifts, cleaning machines, golf trolleys, commercial vehicles, wheelchairs, electric scooters, marine, caravan, regenerative energy, solar power, wind power, etc. **OGi:** Emergency lighting / safety lighting, railway and signal systems, starter batteries for diesel generators, DC power supply systems, UPS systems, Industry, etc. **OPzS:** Switching- and control units, emergency power supply, UPS und BFV units, solar energy storage, regenerative energy, etc. **PzS – forklift-batteries:** forklifts, pallet trucks, electric tractors, cleaning machines, scissor lifts, mobile lifts etc. **SMF:** automotiv battery-cars, delivery van, transporter, caravan / RV, **YB:** motorcycle batteries, lawn mowers, jet skies

2 – Hazardous substances

CAS-No.	Description	Content	Phrases
7439-92-1	Blue lead Lead alloys with traces of As, Sb	32 weight %	H360; H362; H332; H302; H372; H351
	Lead-containing battery paste	32 weight %	H360D; H302; H332; H361f; H412
7664-93-9	Sulphuric acid	34 weight %	H290, H314

3 – Potential hazards

No hazards in case of an intact battery and observation of the instructions for use.
Lead-acid batteries have significant characteristics:

- They contain diluted sulphuric acid, with may cause severe acid burns.
- During the charging process they develop hydrogen gas and oxygen, which under certain circumstances may turn into an explosive mixture.
- They have an internal voltage, which – depending on their level – can be dangerous to the human body when touched.

Standard EN 50272-2 includes safety requirements for batteries and battery installations and describes the basic precautions to protect against dangers caused by electric currents, leaking gasses or electrolytes.

Batteries are marked with the following hazard symbols:


No smoking, no naked flames, no sparks


Wear safety goggles


Battery acid


Note operating instructions


Explosive gas mixture


Keep away fram children's reach

4 – First-aid measures

General information:

Component		Measures
Sulphuric Acid		Acts corrosive and damages tissue
	After contact with skin	Rinse with water, remove and wash wetted clothing
	After inhalation of acid mist[1)]	Inhale fresh air
	with the eyes[1)]	Rinse under running water for several minutes
	after swallowing[1)]	Drink a lot of water immediately, and swallow activated carbon
Lead-containing Battery Paste		Classified as toxic for reproduction
	After contact with skin	Clean with water and soap

[1)] Consult a medical doctor!

5 – Fire-fighting measures

Suitable Extinguishing Agents	When electrical devices are set in fire in general water is the suitable extinguishing agent. For incipient fires CO_2 is the most effective agent. Fire brigades are trained to keep a distance of 1 m when extinguishing an electrical fire (up to 1 kV) with spray jet and a distance of 5 m with full jet. For electrical fires in electrical installations with voltages > 1 kV other distances are applicable depending on the respective voltage. For fires in photovoltaic installations other rules apply.
Unsuitable Extinguishing Agents	Powder fire extinguishers are not suitable, amongst others because of only minor efficiency, possible risks or collateral damages.
Special Protective Equipment	For larger stationary battery installations or larger stored quantities: protective goggles, respiratory and acid protective equipment, acid-proof clothing.

6 – Measures to be taken in case of unintentional release

Cleaning / take-up procedures:

- Use a bonding agent, such as sand, to absorb split acid
- Use lime / sodium carbonate for neutralisation, dispose with due regard to the official local regulations
- Do not permit penetration into the sewage system, the earth or water bodies

7 – Handling and storage

Storage

- Frost-free under roof
- Prevent short circuits
- Protect plastic housings against exposition to direct sun radiation
- 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

Working on Batteries

Wear protective goggles and electrostatic clothing and protective shoes

8 – Exposure limits and personal protective equipment

8.1 No exposure caused by lead and lead-containing battery paste
8.2 Possible exposure caused by sulphuric acid and acid mist during filling and charging

Substance	sulphuric acid
CAS-No.	7664-93-9
H-phrases	
H290	May be corrosive to metals
H314	Causes severe skin burns and eye Damage
P-phrases	
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
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing
Threshold value on workplace	0,1 mg/m³
Hazard symbol	 corrosive
Personal protective equipment	Rubber or PVC gloves, acid-proof goggles, acid-proof clothing, safety boots.

9 – Physical and chemical properties

Component	Appearance		Safety-related data	
Lead	Form	solid	Solidification point	327 °C
	Colour	grey	Boiling point	1740 °C
	Odour	odourless	Solubility in water (25 °C)	low (0.15 mg/l)
			Density (at 20 °C)	11,35 g/cm³
Sulphuric Acid (30 – 38,5 %)	Form	liquid	Solidification point	-35 to -60 °C
	Colour	Colourless	Boiling point	ca. 108 to 114 °C
	Odour	odourless	Solubility in water (25 °C)	complete
			Density (at 20 °C)	1,2 to 1,3 g/cm³

10 – Stability and reactivity

Component	
Sulphuric Acid (30 – 38,5%)	Corrosive, inflammable liquid • Thermal decomposition at 338 °C • Destroys organic materials such as cardboard, wood, textiles • Reacts with metals producing hydrogen • Vigorous reaction with lyes and alkalis

11 – Data on toxicology of the constituents

Component	
Sulphuric Acid (30 – 38,5%)	• Acts intensely corrosive on skin and mucous membranes • The inhalation of mists may cause damage to the respiratory tract
Lead-containing Battery Paste	• May cause damage to the blood, nerves, and kidneys when taken in • Lead-containing battery paste is classified as toxic for reproduction

12 – Data on the ecology of the constituents

Preliminary remark:
Relevant only if release is caused by destruction of the battery

Component	
Sulphuric Acid (30 – 38,5%)	• Water-polluting liquid within the meaning of the German Water Resources Act (WHG). Water pollution class: 1 (slightly water polluting) • As described in section 6 use a bonding agent, such as sand, to absorb spilled acid or neutralise using lime /sodium carbonate • Dispose with due regard to official local regulations • Do not allow progression into the sewage system, soil or water bodies
Lead-containing Battery Paste	• Are hardly soluble in water • Lead can be dissolved in an acidic or alkaline environment • Chemical and physical treatment is required for elimination from water • Waste water containing lead must not be disposed in untreated conditions

13 – Recycling information

The points of sale, the manufacturers and importers of batteries, respectively the metal dealers take back dead batteries, and render them to the secondary lead smelters for processing.

Spent lead-acid batteries are not subject to accountability of the German Waste Prove Ordinance. They are marked with the recycling / return symbol and the WEEE symbol. (Refer to chapter 15. “Marking”)

Spent lead-acid batteries are not allowed to be mixed with other batteries in order not to complicate the processing.

By no means may the electrolyte, the diluted sulphuric acid, be emptied in an inexpert manner. This process is to be carried out by the processing companies.

14 – Transport instructions

14.1 Batteries, wet, filled with acid

Land Transport (ADR / RID)

Special provision 598: **no transport as dangerous goods**
New and spent non-spillable batteries are not subject to other requirements of ADR/RID when complying to the requirements according to special provision 598. An appropriate manufacturer's declaration is necessary.
When the requirements of Special provision 598 are not fulfilled the transport of new and spent batteries has **to be declared as dangerous goods** as follows:

- Class 8
- UN No: 2794
- Proper shipping name: BATTERIES, WET, FILLED WITH ACID
- Packing group: none
- Hazard label: 8
- ADR tunnel restriction code: E

Sea Transport (IMDG Code)

- Class 8
- UN No: 2794
- Proper shipping name: BATTERIES, WET, FILLED WITH ACID
- Packing group: none
- Packing instruction: P 801
- Hazard label: 8
- EmS: F-A, S-B

Air Transport (IATA-DGR)

- Class 8
- UN No: 2794
- Proper shipping name: BATTERIES, WET, FILLED WITH ACID
- Packing group: none
- Packing instruction: 870
- Hazard label: 8

14.2 Damaged batteries:

Land Transport (ADR / RID)

- Class 8
- UN No: 2794
- Proper shipping name: BATTERIES, WET, FILLED WITH ACID
- Packing group: none
- Packing instruction P 801a: **transport as dangerous goods** (packing in accu boxes) or Special provision VV 14: **transport as dangerous goods** (in bulk)
- Hazard label: 8
- ADR tunnel restriction code: E
- Note: these references can be applied by transportation of lead-acid batteries of UN No: 2800 as well

15 – Marking

In accordance with the German law governing the sale, return and environmentally sound disposal of batteries (Batteries Act – Batteriegesetz, BattG) from 25 June 2009 (National transposition of the directive 2006/66/EC (battery directive) lead-acid batteries have to be marked with the WEEE symbol with the chemical symbol „Pb".

In addition, the ISO-return / recycling symbol is rendered.

The manufacturer, respectively the importer of the batteries shall be responsible for the attachment of the symbols. In addition, a consumer / user information on the significance of the symbols has to be attached, which is required by the Germany Battery Ordinance quoted above as well as by the voluntary agreement of the battery manufacturers concluded with the German Federal Minister of Environment in September 1988.

The manufacturers and sellers of the batteries subject to identification requirements (packaging, technical instructions, leaflets) shall be responsible for this information.

16 – Other information

The data rendered above are based on a today's knowledge, and do not constitute an assurance on properties. Existing laws and regulations have to be observed by the recipient of the product in own responsibility.