February 2021

THE POWER OF NEW

EXIDE TECHNOLOGIES

INFORMATION FOR THE SAFE HANDLING OF LEAD-ACID BATTERIES (WET, NON SPILLABLE)

1. Identification of Product and Company

Trade Name: SONNENSCHEIN Gel-Block (GF-Y, GF-V), drysafe AGM-Block (AF, AS)

Manufacturer

Company: Exide Technologies GmbH

Address: Im Thiergarten, 63654 Büdingen, Germany

Phone: +49 (0) 6042 810

2. Hazards Identification

No hazards occur during the normal operation of a Lead Battery as it is described in the instructions for use that are provided with the Battery. Lead Batteries have three significant characteristics:

- They contain an electrolyte which contains diluted sulphuric acid. Sulphuric acid may cause severe chemical burns.
- During the charging process or during operation they might develop hydrogen gas and oxygen, which under certain circumstances may result in an explosive mixture.
- They can contain a considerable amount of energy, which may be a source of high electrical current and a severe electrical shock in the event of a short circuit.

The Batteries are labelled with the symbols listed under item 15.

3. Composition and Information on the main Ingredients[1)]

CAS no.	Description	Content [% of weight]	Hazards Category and Statement Code, GHS pictograms
7439-92-1	Lead Grid (metallic lead[2], lead alloys with possible traces of additives)	~ 32	 Dgr | Repr. 1A - H360Df | Lact– H362
n.a.	Active Mass [3] (Battery Oxide, inorganic lead compounds)	~ 32	 Dgs | Repr. 1A - H360Df | Acute Tox. 4 - H332 | Acute Tox. 4 - H302 | STOT RE 2 - H373 | Aquatic Acute 1 - H400 | Aquatic Chronic 1 H410
7664-93-9	Electrolyte [4] (diluted sulphuric acid with additives)	~ 29	 Dgs | SkinCorr.1A - H 314
n.a.	Plastic Container / Plastic Parts [5]	~ 7	

[1] Contents may vary due to performance data of the battery/cell
[2] Lead metal (CAS 7439-92-1) is classified as a substance of very high concern under REACH
[3] Composition of active mass depends on the state of charge
[4] Density of the electrolyte varies in accordance to the state of charge
[5] Composition of the plastic container may vary due to different customer requirements

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4. First Aid measures

This information is of relevance only if the battery is broken and this result in a direct contact with the ingredients of the battery.

Electrolyte (Sulphuric acid)

- after skin contact: rinse with water, remove and wash wetted clothing
- after inhalation of acid mist[5)]: inhale fresh air
- after contact with the eyes[5)]: rinse under running water for minimum 15 minutes
- after swallowing[5)]: drink lot of water immediately, don't induce vomiting

Lead compounds

- after skin contact: clean with water and soap
- after contact with the eyes: rinse under running water for minimum 15 minutes

[5)] Seek advice of a medical doctor

5. Firefighting measures

Suitable fire extinguishing agents:

CO_2 is the most effective firefighting agent. Water, foam and dry powder are suitable agents as well. Use of dry powder may cause collateral damages.

Unsuitable fire extinguishing agents:

Water, if the battery voltage is above 120 V

Special protective equipment:

Protective goggles, respiratory protective equipment, acid protective equipment, acid-proof clothing in case of larger stationary battery plants or where larger quantities are stored.

6. Measures to be taken in case of accidental release

This information is of relevance only if the battery is broken and the ingredients are released.

In the case of spillage, use a bonding agent (sand, lime, sodium carbonate) for neutralisation. Dispose the used bonding agent with due regard to local waste management regulations. Do not allow penetration of electrolyte into the sewage system, into earth or water bodies.

7. Handling and Storage

Store under a roof in cool ambient temperature range. For fully charged lead-acid batteries this range is from -40 up to +60ºC. If batteries have the possibility to remain discharged in cold conditions, a correction to the lower temperature limit is recommended to prevent freezing:

- -30ºC at 75% state of charge,
- -20ºC at 50% state of charge,
- and -10ºC at 25% state of charge.

This will help prevent short circuits and damage to the batteries.

Batteries contain electrolyte (diluted sulphuric acid), so batteries should be stored in an upright position. If larger quantities of batteries are stored, it is recommended to consult the regional authorities that are competent for groundwater protection.

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8. Exposure limits and personal protective equipment

8.1 Lead and Lead compounds

No exposure to lead and lead-containing battery paste during normal conditions of use.

8.2 Electrolyte (Sulphuric Acid)

Exposure to sulphuric acid and acid mist might occur during filling and charging. Occupational exposure limits for sulphuric acid mist are regulated national basis.

Hazard Class:	Skin corrosive 1A	
Protective equipment:	P280	Wear protective gloves/protective clothing and eye/face protection.
CAS-No:	7664-93-9	
Hazard Statement:	H314	Cause severe skin burns and eye damage
Precautionary Statements:	P102	Store away and keep out of reach of children
	P210	Keep away from heat/sparks/open flames. No smoking.
	P303+P361+P353	IF ON SKIN (or hair): remove immediately all clothing, rinse skin with water, take a shower and seek medical advice
	P305+P351+P338	IF IN EYES: rinse immediately with plenty of water, remove contact lenses and seek medical advice
	P301+P331	IF SWALLOWED: rinse mouth, don't induce vomiting and seek medical advice

9. Physical and Chemical properties

	Lead and Lead compounds	**Electrolyte** (diluted sulphuric acid, 30 to 38.5%)
Appearance		
form:	solid	liquid
colour:	grey	colourless
odour:	odourless	odourless
Safety-related data		
solidification point:	327 °C	-35 to -60 °C
boiling point:	1740 °C	
solubility in water:	very low	approx. 108 to 114 °C
density (20°C):	11.35 g/cm³	complete
vapour pressure (20°C):	N.A.	1.2 to 1.3 g/cm³
		14,6 mbar

Lead and Lead compounds used in Lead-Acid batteries are poorly soluble in water,

Lead can be dissolved in an acidic or alkaline environment only.

10. Stability and Reactivity (Electrolyte – diluted sulphuric acid, 30 - 38,5 %)

- Corrosive, non-flammable liquid
- Thermal decomposition at 338° C.
- Destroys organic materials such as cardboard, wood, textiles.
- Reacts with metals, producing hydrogen
- Vigorous reactions on contact with sodium hydroxide and alkalis.

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11. Toxicological Information

This information does not apply to the finished product “lead-acid battery”. This information only applies to its compounds in case of a broken product. Different exposure limits exist on a national level.

11.1 Electrolyte (diluted sulphuric acid):

Sulphuric Acid is intensely corrosive to skin and mucous membranes; the inhalation of mists may cause damage to the respiratory tract.

11.2 Lead and Lead compounds

Lead and its compounds used in a Lead Acid Battery may cause damage to the blood, nerves and kidneys when ingested. The lead contained in the active material is classified as toxic for reproduction.

12. Ecological Information

This information does not apply to the finished product “lead-acid battery”. This information only applies to its compounds in case of a broken product and the compounds are released to the environment.

12.1 Electrolyte (diluted sulphuric acid)[6]

In order to avoid damage to the sewage system, the acid has to be neutralised by means of lime or sodium carbonate before disposal. Ecological damage is possible by change of pH. The electrolyte solution reacts with water and organic substances, causing damage to flora and fauna. The electrolyte may also contain soluble components of lead that can be toxic to aquatic environments

12.2 Lead and Lead compounds[7]

Lead and Lead compounds 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 of in untreated condition.

13. Recycling Information

Spent lead-acid batteries are subject to regulation of the EU Battery Directive (2006/66/EU) and its adoptions into national legislation.

Spent Lead-Acid batteries (EWC 160601*) are recycled in lead refineries (secondary lead smelters). The components of a spent Lead-Acid battery are recycled or re-processed.

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

For safety reasons and to simplify the collection and recycling or re-processing process, spent Lead-Acid batteries must not be mixed with other batteries. Especially spent high energy batteries (such as Li-Ion batteries) have to be kept separate from spent Lead-Acid batteries.

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

[6] According to the UBA database, sulphuric acid holds the German Wassergefährdungsklasse (WGK) 1
[7] Lead and Lead Compounds are not classified in the UBA database; hence they hold a default classification WGK 3

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14. Transport Regulation

The listed transport rules apply to bloc batteries, batteries assembled in trays as well as to single battery cells that are classified as “Battery, wet, non-spillable. To benefit from that classification a specific manufactures declaration is necessary.

14.1 Rules applying to “Batteries, wet, non-spillable”[8]

14.2.1 Land transport according to ADR / RID

- Hazard class: 8
- UN-No.: 2800
- Proper shipping Name: BATTERIES, WET, NON-SPILLABLE
- Packaging group: none
- Packaging instruction: P 003, P801a
- Hazard label: 8

Special Provision 238 a)+b): no transport as dangerous goods (non-spill able batteries are not subject to other requirements of ADR/RID if they meet the requirements according to special provision 238. **To benefit from that special provision, a specific manufactures declaration is necessary.** Batteries which do not meet requirements according to Special Provision 238 have to be packed and carried as described under 14.1.1 Land transport - Special Provision 598.

14.2.2 Sea transport according to IMDG Code

- Hazard class: 8
- UN-No.: 2800
- Proper shipping Name: BATTERIES, WET, NON-SPILLABLE
- Packaging group: none
- Packaging instruction: P 003 and PP16
- Hazard label: 8
- EmS: F-A, S-B

Special Provision 238 1 + 2: no transport as dangerous goods (non-spill able batteries are not subject to other requirements of IMDG Code if they meet the requirements according to special provision 238. **To benefit from that special provision, a specific manufactures declaration is necessary.** Batteries which do not meet requirements according to Special Provision 238 have to be packed as described under 14.1.2 Sea transportation IMDG Code according (packaging instruction P901 and carried as dangerous goods according to UN 2794).

14.2.3 Air transport according to IATA-DGR

- Hazard class: 8
- UN-No.: 2800
- Proper shipping Name: BATTERIES, WET, NON-SPILLABLE
- Packaging group: none
- Packaging instruction: 872
- Hazard label: 8

Special Provision A67: no transport as dangerous goods (non-spill able batteries are not subject to other requirements of IATA-DGR if they meet the requirements according to special provision A67. Provided that battery terminals are protected against short-circuit. **To benefit from that special provision, a specific manufactures declaration is necessary.** Batteries which do not meet requirements according to Special Provision A67 have to be packed as described under 14.1.1 Air transport IATA-DGR (packaging instruction 870 and carried as dangerous goods according to UN 2794).

[8] Manufactures declaration for Batteries fulfilling the criteria below are posted at the BMS of Exide Technologies (Customer Supporting Documents).

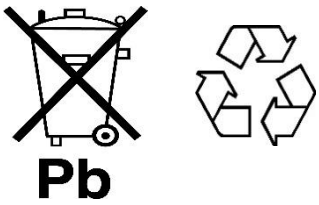
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14.2 Rules for “Batteries, damaged”

- Hazard class: 8
- UN-No.: 2794
- Proper shipping Name: BATTERIES, WET, FILLED WITH ACID
- Packaging group: none
- Packaging instruction: P 801a
  - Transport as dangerous goods (packing in “battery boxes”) or,
  - Special Provision VC2, AP8 (Transport as dangerous good in bulk)
- Hazard label: 8
- ADR Tunnel restriction code : E
- Note: applies to the transport of Lead Acid batteries under UN-No.: 2800 as well.

15. Regulatory Information

In accordance with EU Battery Directive and the respective national legislation, Lead-Acid batteries have to be marked by a crossed out dust bin with the chemical symbol for lead shown below, together with the ISO return/recycling symbol.



In addition Lead-Acid batteries have to be labelled with the hazard symbols described below:



No smoking, no naked flames, no sparks



Shield eyes



Keep way from children's reach



Corrosive (Battery acid)



Note operating instructions



Explosive gas

Labelling might vary due to application and dimension of the Battery. The manufacturer, respectively the importer of the batteries shall be responsible for placing the symbols (a minimum size is specified). In addition, consumer/user information on the significance of the symbols may be attached.

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16. Other Information

16.1 Safety Data Sheet

The European Directive 91/155/EEC which described the requirements for Material Safety Data Sheets had been repealed by the Regulation concerning the Registration, Evaluation, Authorization and Restriction of Chemicals on June 1st, 2007 (REACH-Regulation 1907/2006/EC, Art. 31). **The requirement to publish a Safety Data Sheet applies to all suppliers of substances and preparations.**

As already defined under the former Directive there is no requirement to develop and maintain a Safety Data Sheet for products such as Batteries.

16.2 Substances of Very High Concern (SVHC)

The publications of the European Chemicals Agency on **s**ubstances of **v**ery **h**igh **c**oncern are monitored by EXIDE. As defined by REACH, customers will receive the required information if an updated publication may add a substance relevant for our products to the list of SVHC's. On 19 December 2012, four Lead compounds used in the process of battery manufacturing – **Lead Monoxide, Lead Tetroxide, Tetralead Trioxide Sulphate** and **Pentalead Tetraoxide Sulphate** – were added to the list of **S**ubstances of **V**ery **H**igh **C**oncern. As of June 27 2018, **Lead Metal** was added to the SVHC list as well.

Irrespective of the battery design (flooded, MHF, Gel, AGM) all lead based batteries contain Lead Metal (CAS Nr.: 7439-92-1). The content varies but exceeds the notification threshold of 0,1% w/w.

Batteries ready for use do not contain Oxides our Sulphates that are classified SVHC.

Dry Batteries/dry cells (dry charged plates, delivered without electrolyte) **contain more than 0,1 % of Lead Monoxide**. Lead Monoxide (CAS Nr.: 1317-36-8) is listed as a substance of very high concern. Once the batteries / cells are filled with electrolyte all Lead Monoxide is transformed and the presence of Lead Monoxide has ended.

16.3 GHS labels

Among others the European GHS regulation describes classification and labelling of chemicals and preparations. GHS is not a regulation that describes labelling requirements for products such as Lead Acid Batteries.

The six pictograms on batteries target to provide safety information and are based on an international standard. These labels remain unaffected.

16.4 General

The information given above is provided in good faith based on existing knowledge and does not constitute an assurance of safety under all conditions. It is the user's responsibility to observe all laws and regulations applicable for storage, use, maintenance or disposal of the product. If there are any queries, the supplier should be consulted.

However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

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