

## INFORMATION FOR THE SAFE HANDLING OF LEAD-ACID BATTERIES

### 1 Identification of Product and Company

**1.1 Product**                      **Lead - acid battery** filled with dilute sulphuric acid for Stand by and Motive Power applications (single cell or battery).  
This information applies to the flooded lead-acid batteries or jellied electrolyte and not in conformity with non spillable test, prescribed in the ADR, RID, IMDG Code and IATA-DGR dangerous goods transport regulations

**1.2 Manufacturer**

**Company**                      EXIDE Technologies , S.L.U.  
**Address**                      Ctra. Nacional A2, Km 41,8 – 19200 Azuqueca de Henares - Guadalajara (Spain)  
**Phone**                        +34 976 700 300  
**FAX**                            +34 976 700 307

**Emergency contact**        See the information in the item 16.1

### 2 Composition and Information on the main Ingredients 3)

CAS nº.	Description	Content <sup>1)</sup> [% of weight]	Hazard symbol / Risk Phrase
7439-92-1	Lead Grid (metallic lead, lead alloys with possible traces of additives)	~ 32	T <sup>2)</sup>
68411-78-9	Active Mass (Battery oxide, inorganic lead compounds)	~ 32	T <sup>2)</sup>
7664-93-9	Electrolyte <sup>4)</sup> (diluted sulphuric acid with additives)	~ 29	C
	Plastic container / Plastic parts <sup>5)</sup>	~ 7	

<sup>1)</sup> Contents may vary due to performance data of the Battery

<sup>2)</sup> As result of the harm to the unborn children, Leads compounds are classified as toxic for reproduction, Category 1. As this category is not described with a specific hazard symbol, Leads compounds have to be labelled with the "skull" symbol. Lead compounds are not classified "toxic".

<sup>3)</sup> See chapter 12 – Ecological information

<sup>4)</sup> Density of the electrolyte varies in accordance to the state of charge

<sup>5)</sup> Composition of the plastic may vary due to different customer requirements




### 3 Hazards Identification

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

Lead-acid batteries have three significant characteristics.

- They contain dilute sulphuric acid, which 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 sock in the event of a short circuit

For this reason, the batteries have to be marked with the following hazard symbols:

Symbol 1		No smoking, no open flames, no sparks
Symbol 2		Wear safety goggles
Symbol 3		Keep away from children
Symbol 4		Corrosive
Symbol 5		Observe operating instructions
Symbol 6		Explosive gas mixture

#### 4 First Aid measures

This information is of relevance only if the battery is broken and it results in a direct contact with the ingredients

##### 4.1 General information:

Electrolyte (diluted sulphuric acid)	acts corrosively and damages skin and tissue.
Lead compounds	they are classified as toxic for reproduction (if swallowed)

##### 4.2 First - Aid measures

Electrolyte (Sulphuric acid)	
<i>after skin contact</i>	rinse with water; remove and wash wetted clothing
<i>after inhalation of acid - mist</i>	inhale fresh air and seek advice of a medical doctor
<i>after contact with eyes</i>	rinse immediately under running water for several minutes and seek advice of a doctor
<i>after swallowing</i>	drink a lot of water immediately and swallow activated carbon; do not induce vomiting and seek advice of a doctor
Lead compounds	
<i>after skin contact</i>	clean with water and soap
<i>after inhalation</i>	inhale fresh air and seek advice of a medical doctor
<i>after contact with eyes</i>	rinse immediately under running water for several minutes and seek advice of a doctor
<i>after swallowing</i>	drink a lot of water immediately; seeks advice of a doctor

#### 5 Fire fighting measures

<b>Suitable fire extinguishing agents</b>	CO <sub>2</sub> or dry powder extinguishing agents
<b>Unsuitable fire extinguishing agents</b>	Water in case of battery voltage of over 120 V
<b>Special protective equipment</b>	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.

##### Cleaning / take up procedures:

Use a bonding agent, such as sand, to absorb spilt acid; use lime / sodium carbonate for neutralisation; dispose of with due regard to the official local regulations; do not allow penetration into the sewage system, the earth or water bodies.

## 7 Handling and Storage

Store frost-free under roof; prevent short circuits. Seek agreement with local water authorities in case of larger quantities of batteries to be stored. If batteries have to be stored, it is imperative that the instructions for use are observed

## 8 Exposure limits and personal protective equipment

### 8.1 Lead and lead compounds

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

### 8.2 Electrolyte (Sulphuric acid)

Possible exposure to sulphuric acid and acid mist during filling and charging

Threshold value on workplace:	occupational exposure limits for sulphuric acid mist are regulated on a national basis
<b>Hazard symbol:</b>	C, corrosive
Personal protective equipment:	Rubber or PVC gloves, acid-proof goggles, acid-resistant clothing and safety boots
CAS - No.:	7664 - 93 - 9
<b>R - Phrases:</b>	R - 35 Causes severe chemical burns
<b>S - Phrases:</b>	S - 2 Keep out of reach of children S - 16 Keep away from sparks or naked flame. No smoking. S - 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S - 45 In case of an accident or if you feel unwell, seek medical advice immediately (show the label where possible)

## 9 Physical and Chemical properties

	Lead and Lead compounds	Electrolyte (diluted sulphuric acid, 30 - 38,5 %)
<b>Appearance</b>	solid grey odourless	liquid colourless odourless
<b>Safety related data</b>		
solidification point [°C]	327	-35 to -60
boiling point [°C]	1.740	approx. 108 to 114
solubility in water [25°C]	very low (0,15 mg/l)	complete
density [20°C]	11,35 g/cm <sup>3</sup>	1,2 to 1,3 g/cm <sup>3</sup>
vapour pressure [20°C]	N.A.	N.A.

**Lead and lead-containing battery paste** are poorly soluble in water.

- Lead can be dissolved in an acidic or alkaline environment only.
- Chemical and physical treatment is required for elimination from water.
- Wastewater containing lead must not be disposed of in untreated condition.

## 10 Stability and reactivity (sulphuric acid, 30 to 38,5 %)

- Corrosive, no flammable liquid
- Thermal decomposition at 388 °C
- Destroys organic materials, such as cardboard, wood, textiles
- Reacts with metals by producing hydrogen
- Vigorous reaction on contact with alkalis

## 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.

### 11.1 Electrolyte (diluted sulphuric acid)

Is intensely corrosive to the skin and mucous membranes. The inhalation of mists may cause damage to the respiratory tract.

Acute toxicity data:

- LD<sub>50</sub> (oral, rat) = 2.140 mg/kg
- LC<sub>50</sub> (inhalation, rat) = 510 mg/m<sup>3</sup>/2h

### 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 is of relevance if the battery is broken and the ingredients are released to the environment.

### 12.1 Electrolyte (diluted sulphuric acid)

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 damages 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

Chemical and physical treatment is required for the elimination from water. Wastewater containing lead must not be disposed of in an untreated condition.

The former classification of Lead compounds as toxic for the aquatic environment R50/53 has been triggered from test results generated in the 80's for soluble Lead compounds (Lead Acetate). The hardly soluble Lead compounds such as Battery Lead Oxide were not tested at this time. Tests on battery Lead Oxide were carried out in 2001 and 2005. The respective tests results conclude that Battery Lead Oxide is not toxic for the environment, neither R50 nor R50/53 nor R51/53. From this it follows that the general classification for Lead compounds (R50/53) does not apply to Battery Lead Oxide. As the result on this the Risk Phrase R52/53 (Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment) applies to Battery Lead Oxide

Effects of Battery Lead Oxide in the aquatic environment:

- Toxicity for fish: 96 h LC 50 > 100 mg/l
- Toxicity for daphnia: 48 h EC 50 > 100 mg/l
- Toxicity for alga: 72 h IC 50 > 10 mg/l

The results demonstrate that Battery Lead Oxide in a concentration of 100 mg/l has no adverse effect on fish and daphnia. A concentration of Battery Lead Oxide of 10 mg/l has no adverse effect on the rate of growth and the biomass. For the classification according to Directive 67/548/EEC the most sensitive adverse effect has to be considered. As a result of the toxicity for alga at >10 mg/l, Battery Lead Oxide has to be classified according to the R-Phrases 52/53 (harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment).

### 13 Disposal Considerations

Spent lead-acid batteries (EWC 160601) are subject to regulation of the 91/157/EC and its adoptions into national legislation on the composition and end-of-life management of batteries.

Spent Lead-Acid batteries 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.

To simplify the collection and recycling or re-processing process, spent Lead-Acid batteries must not be mixed with other batteries.

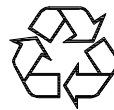
By no means may the electrolyte (diluted sulphuric acid) be emptied in an inexpert manner. This process is to be carried out by the processing companies only.

### 14 Transport Regulation

Land Transport	Land Transport (ADR/RID) - UN N° : UN 2794 - Classification ADR/RID: Class 8 - Proper Shipping Name: BATTERIES, WET, FILLED WITH ACID electric storage - Packing Group ADR: not assigned - Label required: Corrosive - ADR/RID: New and spent batteries are exempt from all ADR/RID (special provision 598)
Sea Transport (on account of the differences between products supplied by various manufacturers, the supplier should be consulted)	Sea Transport (IMDG Code) - UN N° : UN 2794 - Classification: Class 8 - Proper Shipping Name: BATTERIES, WET, FILLED WITH ACID electric storage - Packing Group : not assigned - EmS: F-A, S-B - Label required: Corrosive
Air Transport	Air Transport (IATA-DGR) - UN N° : UN 2794 - Classification: Class 8 - Proper Shipping Name: BATTERIES, WET, FILLED WITH ACID electric storage - Packing Group : not assigned - Label required: Corrosive

### 15 Regulatory Information / Labelling

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



Symbol 7 Crossed out rubbish bin

Symbol 8 Pb

Symbol 9 Recycling

In addition Lead-Acid batteries have to be labelled with the hazard symbols described in the chapter 3

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. In addition, consumer/user information on the significance of the symbols may be attached.

### 16 Other information

Products such as Batteries are not in the scope of regulation which requires the publication of an EU Safety Data Sheet (91/155/EEC).

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.

### 16.1 Emergency contact (24 hours)

<b>Emergency Contact</b>	DGM Spain – (Dangerous Goods Management Spain) – (Dangerous Goods Safety Adviser EXIDE )
<b>Phone</b>	1º Number: +34 91 676 26 60 (08:00 AM – 18:00 PM Spain). "Priority" 2º Number: +34 647 502 449 (24 H). "Priority" 3º Number: +34 610 799 808 (18:00 PM – 8:00 AM)
<b>E-mail &amp; Fax</b>	e-mail: <a href="mailto:infomadrid@dgm-spain.com">infomadrid@dgm-spain.com</a> Fax: +34 91 656 28 00