



## VRLA Batteries

### Statement

#### EEC regulations

declares that all Valve Regulated Lead Acid (VRLA) batteries comply to the following European Directives:

- 2006/66/EC on batteries and accumulators and waste batteries and repealing Directive 91/157/EEC
- 2002/96/EC on waste electrical and electronic equipment (WEEE)
- 2002/95/EC on restriction of hazardous substances in electrical and electronic equipment (RoHS)

#### Transport

Maintenance free, Valve Regulated Lead Acid (VRLA) batteries are a separate group and do NOT fall under the category of starter batteries, open industrial batteries or traction batteries. Therefore they can be transported without special marking and instructions. However, these batteries need to be collected separately for waste disposal.

#### Markings

As of the 31<sup>st</sup> of December 1994, every Valve Regulated Lead Acid (VRLA) battery has to have the symbols present in conformance to EG-guideline 93/86/EEG: a "crossed out waste container" and the abbreviation "Pb" indicating the contents of lead.

#### Air Transport

Maintenance free, Valve Regulated Lead Acid (VRLA) batteries are recognised by the I.A.T.A. (International Air Transport Association) as "non-spillable".

#### Flame Retardant ABS casing

All VdS approved batteries, Long Life, Front Access as well as the Single Cell batteries are accomplished in Flame Retardant ABS casing. Their conformance is based on the UL94 V0.

#### REACH Statement

declares compliance with all obligations resulting from the REACH regulation.

September 2014

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### To: Users and transporters of batteries

Subject: Transportation requirements in accordance with the Department of Transportation (D.O.T./) International Air Transport Association (I.A.T.A.) dangerous goods regulations as applied to VRLA batteries.

We hereby certify that the batteries known as the valve regulated lead acid batteries are exempt from dangerous goods regulations under the ADR regulations (road transport), IMDG code (sea transport) and the IATA regulations (air transport).

Proper shipping name: Batteries, Wet, Non-spillable. Electric Storage

UN number : 2800

These batteries are exempt in the ADR regulations under special provision #238 (b) as can be found in chapter 3.3 of the ADR regulations.

These batteries are exempt in the IMDG code under special provision #238 (2) as can be found in chapter 3.3 of the IMDG code.

These batteries are exempt in the IATA Dangerous Goods Regulations 52nd edition under special provision #A67 as can be found in chapter 4.4 of the IATA Dangerous Goods Regulations 52nd edition.

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*For questions or in case of emergency, please contact:*

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## MATERIAL SAFETY DATA

### 1. Product Identification

Product name: Valve regulated lead acid battery  
Application: Rechargeable battery

### 2. Composition

Component	% weight	Oshapel(tlv)	Classification	Main Hazard
Lead Pb,PbO <sub>2</sub> , PbSO <sub>4</sub>	65-75%	0.050mg/m <sup>3</sup>	Toxic	
Sulphuric Acid	17-30%	1mg/m <sup>3</sup>	Corrosive	R35; cause severe burns
Fiberglass seperator	5%	n/a <sup>1</sup>	n/a	n/a
Container (ABS or PP)	5%	n/a <sup>1</sup>	n/a	n/a <sup>3</sup>

### 3. Hazards identification

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Container (ABS or PP)	5%	n/a <sup>1</sup>	n/a	n/a <sup>3</sup>

#### Emergency overview :

Do not open or disassemble.  
Do not expose to fire or open flame.  
Do not mix with batteries of varying sizes, chemistries or types.  
Do not puncture, deform incinerate or heat.

#### Potential health effects :

The materials contained in this battery may only represent a hazard if the integrity of the battery is compromised or if the battery is physically or electrically abused.

#### (1) Physical :

The Valve Regulated Lead Acid rechargeable batteries described in this Material Safety Data Sheet are closed units which are not hazardous when used according to the recommendations of the Manufacturer.

Under normal conditions of use, the solid electrode materials and liquid electrolyte they contain are nonreactive provided the battery integrity is maintained and seals remain intact.

Risk of exposure is only in case of abuse (mechanical, thermal, electrical) leading to the activation of safety valves and/or the rupture of the battery containers. Electrolyte leakage or battery vent may follow, depending upon the circumstances

### 4. First aid measures

#### 4.1. Lead

The toxic effects of lead are accumulative and slow to appear. It affects the kidneys, reproductive and central nervous systems. The symptoms of lead over exposure are anaemia, vomiting, headache, stomach pain (lead colic), dizziness, loss of appetite and muscles and joint-pains. Exposure to lead from a battery most often occurs during lead reclaim operation through the breathing or ingestion of lead dusts and fumes. This sheet must be passed to any scrap dealer or smelter when the battery is resold.

#### 4.2. First aid measures when exposed to lead

- Eyes Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.
- Skin Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops.
- Inhalation If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
- Ingestion Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

#### 4.3. Sulphuric acid

Sulphuric acid is a strong corrosive. Contact with the acid can cause severe burns to the skin and eyes. Ingestion of sulphuric acid will cause gastro intestinal tract burns. Acid can be released only from batteries if the case is damaged or the battery is tampered.

#### 4.4. First aid measures when exposed to sulphuric acid

- Skin Remove affected clothing and wash all exposed skin area with mild soap and water, followed by warm water rinse. Seek medical advice, especially if contact area is large or when blisters are formed.
- Eye Rins immediately with plenty of water and seek medical advice.
- Ingestion Rinse mouth immediately and call a physician. Do not induce vomiting.
- Inhalation Allow the affected person to rest. Remove to fresh air and seek medical advice.  
! Do not give anything to an unconscious person.

### 5. Fire fighting measures

Component	Flashpoint	Explosive limits	Comments
Lead	none	none	Use "ABC" Type fire extinguisher for battery fires
Sulfuric acid	none	none	none
Hydrogen	<-18°C	4%-74.2%	batteries can emit hydrogen only if over charged (float voltage 2.40Vpc or greater). To avoid the chance of fire or explosion, keep sources of ignition far away from the battery. Extinguishing media: dry medical, foam, CO.
Fiberglass separator	n/a	n/a	Toxic vapors may release. In case of fire: wear self-containing breathing apparatus
ABS	none	n/a	Danger: vapors may cause flash fire. Harmful or fatal if swallowed.
PP	none	n/a	Temperatures over 300°C may release combustible gases. In case of fire: wear self-containing breathing apparatus.



## 6. Accidental release measures

### 6.1. Personal precautions

Do not wear metal rings, necklace, bracelets, watches, etc. to avoid incidental shorts of the poles. This will cause severe burns. Release of electrolyte, sulfuric acid, caused by damaged casing or tampered vents, are direct hazard for personal health. In case of released electrolyte use rubber gloves and protective goggles while cleaning up.

### 6.2. Environmental precautions

Release of electrolyte, sulfuric acid, caused by damaged casing or tampered vents, are direct hazard for the environment. Electrolyte is strong corrosive. Do not dispose spilled electrolyte in waste bin or sewerage. Dispose as chemical waste.

### 6.3. Methods for cleaning up

Electrolyte can be neutralized with sodium bicarbonate (baking powder), sodium carbonate (soda ash) or calcium oxide (lime). Flush the polluted area with water and discard to the sewer. Do not dispose unneutralized acid in the sewerage.

## 7. Handling and storage

### 7.1. Handling

Charge VRLA batteries in ventilated areas. Lead acid batteries may generate hydrogen gas (H<sub>2</sub>) during charging.

### 7.2. Storage

Store VRLA batteries on a dry place. Verify the floor load when storing large amounts of VRLA batteries.

### 7.3. Specific use

Do not short the poles. Shortcutting the poles will cause extreme heat and sparks.

## 8. Exposure control

### 8.1. Occupational exposure control

There are no special individual protection measures required while working with VRLA batteries. Individual protection is required when the battery is damaged or tampered.

### 8.2. Respiratory protection

In general there is no respiratory protection required in case of minor electrolyte spill. Use self contained breathing apparatus at major spills of electrolyte. Use rubber gloves when treating damaged or tampered VRLA batteries.

### 8.3. Hand protection

Use rubber gloves when treating damaged or tampered VRLA batteries.

### 8.4. Eye protection

Use safety goggles when treating damaged or tampered VRLA batteries.

### 8.5. Skin protection

Wear long sleeves and trousers when treating damaged or tampered VRLA batteries.

### 8.6. Environmental exposure control

Prevent sulfuric acid (electrolyte) and lead from ending in sewerage, trash bin, open water or environment. Treat components and disposed VRLA batteries as chemical waste. Treatment of wasted batteries is regulated by law within the European community in directive 2002/96/EC WEEE. Batteries comply to the directive 2002/96/EC.

## 9. Physical and chemical properties

Component	Density	Melting point	Solubility in water	Odor	Appearance
Lead	11.34gm/cm <sup>3</sup>	328°C	none	none	Silver-grey metal
Lead Sulphate	6.20gm/cm <sup>3</sup>	1167°C	0.43mg/l	none	White powder
Lead Dioxide	9.375gm/cm <sup>3</sup>	290°C	none	none	Brown powder
Sulphuric Acid	1.290gm/cm <sup>3</sup>	113°C	100%	none	Clear liquid

## 10. Stability and reactivity

### 10.1. Conditions to avoid

Do not short the poles of a VRLA battery. The battery may cause extreme heat and sparks. Do not use a VRLA battery in areas with a risk of flammable gases or substances. Connecting a VRLA battery to a load may cause sparks. Only charge VRLA batteries in ventilated areas. Overcharged (Ucharge > 2.4V/cell) Lead Acid batteries generate hydrogen (H<sub>2</sub>).

### 10.2. Materials to avoid

Do not use electrical conducting materials and liquids near batteries. Do not work on electrical conducting surfaces with batteries.

### 10.3. Hazardous decomposition products

When Lead acid batteries are charged with a charge voltage higher than 2.4V/cell, it will generate hydrogen (H<sub>2</sub>) and oxygen (O<sub>2</sub>). These two gases are extremely explosive. Follow the technical data sheet of the corresponding product in order to avoid dangerous situations.



## 11. Toxicological information

**11.1. Toxicological info regarding Electrolyte (sulfuric acid) Effect by inhalation:** Acid mist from formation process may cause respiratory irritation, remove from exposure and apply oxygen is breathing is difficult

**Effect on skin contact:** Acid may cause irritation, burns and ulceration. Flush with plenty of soap and water, remove contaminated clothing, and visit physician if contact area is large or if blisters form.

**Effect on eye contact:** Acid may cause severe irritation, burns cornea damage and blindness. Call Physician and flush with water until physician arrives. **Effect by**

**ingestion:** Acid may cause irritation of mouth, throat, esophagus and stomach. Call physician. If patient is conscious, flush mouth with water, have the patient drink milk or sodium bicarbonate solution.

**11.2. Toxicological info regarding Electrolyte (sulfuric acid)Effect by inhalation:**

Maycauserespiratorytractirritation.Inhalationoffumesmaycausemetalfume fever,whichischaracterizedbyflu-likesymptomswithmetallic

taste, fever, chills, cough, weakness, chest pain, muscle pain and increased white blood cell count. May cause effects similar to those described for ingestion. **Effect on**

**skin contact:** Causes skin irritation. May be absorbed through the skin. **Effect on eye contact:** Causes eye irritation **Effect by ingestion:** Causes gastrointestinal

irritation with nausea, vomiting and diarrhea. Ingestion of lead compounds can cause toxic effects in the blood-forming organs, kidneys and central nervous system.

Symptoms of lead poisoning or plumbism include weakness, weight loss, lassitude, insomnia, and hypotension. It also includes constipation, anorexia, abdominal

discomfort and colic. **Chronic:** Chronic exposure may cause reproductive disorders and teratogenic effects. Chronic exposure to lead may result in plumbism which is

characterized by lead line in gum, headache, muscle weakness, mental changes.

## 12. Ecological information

In most surface water and groundwater, lead forms compounds with anions such as hydroxides, carbonates, sulfates, and phosphates, and precipitates out of the water column. Lead may occur as sorbed ions or surface coating on sediment mineral particles or may be carried in colloidal particles in surface water. Most lead is strongly retained in soil, resulting in little mobility. Lead may be immobilized by ion exchange with hydrous oxides or clays or by chelation with humic or fulvic acid in the soil. Lead (dissolved phase) is bio accumulated by plants and animals, both aquatic and terrestrial.

## 13. Disposal considerations

Lead-acid batteries are completely recyclable. Return whole scrap batteries to distributor, manufacturer or lead smelter for recycling. For neutralized spills, place residue in acid-resistant containers with sorbent material, sand or earth and dispose of in accordance with local, state and federal regulations for acid and lead compounds. Contact local and/or state environmental officials regarding disposal information. batteries comply with the European Directives 2006/66/EC.

## 14. Transport information

Valve regulated lead acid batteries are exempt from dangerous goods regulations under the ADR regulations (road transport), IMDG code (sea transport) and the IATA regulations (air transport).

Proper shipping name: Batteries, Wet, Non-spillable. Electric Storage - UN number: 2800

These batteries are exempt in the ADR regulations under special provision #238 (b) as can be found in chapter 3.3 of the ADR regulations.

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These batteries are exempt in the IATA Dangerous Goods Regulations 52nd edition under special provision #A67 as can be found in chapter 4.4 of the IATA Dangerous Goods Regulations 52nd edition.

## 15. Regulatory information

According to the European directive 2006/66/EC every single battery is provided with a disposal sign and the text "Pb". Pb Additional each battery is labeled with the text "RoHS", indicating that it complies to the 2002/95/EC and 2002/96/EC directives.

## 16. Other information

### RELEVANT RISK PHRASES

- R20/22 Harmful by inhalation and if swallowed.
- R33 Danger of cumulative effects.
- R35 Causes severe burns.
- R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
- R61 May cause harm to the unborn child.
- R62 Possible risk of impaired fertility.

### CONTACT / INFORMATION OFFICES

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