Date: 2014-04-04

1 Identification/Preparation/Company

1.1 Product name

Valve regulated lead acid battery

1.2 Application

Rechargeable battery

1.3 Company

Din forhandler
GACELL
The right battery
GACELL A/S - Sletten 17 - DK 7500 Holstebro - 961 02 961

2 Hazards identification

Component	Classification	Main Hazard
Lead (Pb, PbO_2, $PbSO_4$)	Toxic	
Sulfuric Acid (H_2SO_4)	Corrosive	R35; Cause severe burns
Fiberglass seperator	N/A	N/A
Container (ABS or PP)	N/A	N/A

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.

(1) – Nature of special risks :
R21 Harmful in contact with skin.
R25 Toxic is swallowed.
R41 Risk of serious damage to the eye.
R42/43 May cause sensitization by inhalation and skin contact.
R43 May cause sensitization by skin contact.

(2) – Safety advices :

S2 Keep out of reach from children.
S22 Do not breathe dust.
S24 Avoid contact with skin.
S26 In case of contact with eyes, rinse immediately with plenty of water and get medical advice / attention.
S36 Wear suitable protective clothing.
S37 Wear suitable gloves.

EU-GHS Classification:

Hazard statements:

H301 Toxic if swallowed.
H312 Harmful in contact with skin.
H315 Causes skin irritation.
H318 Causes serious eye damage.
H332 Harmful if inhaled.

Precautionary statements:

P102 Keep out of reach of children.
P260 Do not breathe dust/fume/gas/mist/vapors/spray.
P262 Do not get in eyes, on skin or on clothing.

P305+P351+P338 IF IN EYES Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P280 Wear protective gloves / protective clothing / eye protection / face protection.

3 Composition/ information on ingredients

Some components are considered to be hazardous.

Component	% Wt.	TLV
Lead (Pb, PbO_2, $PbSO_4$)	65%-75%	0.05mg/m^3
Sulfuric Acid ($H_2SO_{4)}$	17%-30%	1mg/m^3
Fiberglass seperator	5%	n/a
Container (ABS or PP)	5%	n/a

4 First aid measures

Component	Exposure	Measure
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.

Sulfuric Acid	Eyes	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
	Skin	Remove affected clothing and wash all exposed skin area with mild soap and water, followed by warm water rinse.
	Inhalation	Allow the affected person to rest. Remove to fresh air. Seek medical advice.
	Ingestion	Rinse mouth. Call a physician immediately.

5 Fire-fighting measures

Components	Flashpoint	Explosion limit	Comments
Pb	None	None	
H_2SO_4	None	None	
H_2	<-18°C	4% - 72.4%	Emit Hydrogen only if over charged (Voltage > 2.4V/cell To avoid the chance of fire or explosion, keep sources of ignition away from battery. Extinguishing media: Dry chemical, 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 flach fire. Harmful of fatal if swallowed. Vapor Harmful.
PP	None	N/A	Temperatures over 300°C may release combustable gases. In case of fire: wear self containing breathing apparatus.

5.1 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.

5.2 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.

5.3 Methods for cleaning up

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

6 Handling and storage

6.1 Handling

Charge VRLA batteries in ventilated areas only. Lead acid batteries may generate hydrogen gas (H_2) during charging.

6.2 Storage

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

6.3 Specific use

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

7 Exposure control/Personal protection

7.1 Exposure limit values

Component	% Wt.	TLV
Lead (Pb, PbO_2, $PbSO_4$)	65%-75%	0.05mg/m^3
H_2SO_4	17%-30%	1mg/m^3
Fiberglass separator	5%	n/a
Container (ABS or PP)	5%	n/a

7.2 Exposure control

7.2.1 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.

7.2.2 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

7.2.3 Hand protection

Use rubber gloves when treating damaged or tampered VRLA batteries.

7.2.4 Eye protection

Use safety goggles when treating damaged or tampered VRLA batteries.

7.2.5 Skin protection

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

7.2.6 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. pbq batteries comply to the directive 2002/96/EC.

8 Physical and chemical properties

Components	Density	Melting Point (°C)	Solubility in H_2O	Odor	Appearance
Pb	11.34	327.4	none	None	Silver grey metal
$PbSO_4$	6.2	1170	40mg/l	None	White powder
PbO_2	9.4	290	none	None	Brown powder
H_2SO_4	App. 1.3	114 (Boiling)	100%	Acidic	Clear colorless liquid
Fiberglass separator	n/a	n/a	slight	Toxic	White fibrous glass membrane
Container (ABS or PP)	n/a	n/a	none	No odor	Solid plastic

9 Stability and reactivity

9.1 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 gasses or substances.
Connecting a VRLA battery to a load may cause sparks.
Charge VRLA batteries in ventilated areas only. Overcharged (U_{charge} > 2.4V/cell) Lead Acid batteries generate hydrogen (H_2).

9.2 Materials to avoid

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

9.3 Hazardous decomposition products

When Lead acid batteries are charged with a charge voltage higher than 2.4V cell, it will generate hydrogen (H_2) and oxygen (O_2). These two gasses are extremely explosive. Follow the technical data sheet of the corresponding product in order to avoid dangerous situations.

10 Toxicological information

10.1 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.
DO NOT GIVE ANYTHING TO AN UNCONSCIOUS PERSON!

10.2 Toxicological info regarding Lead

Effect by inhalation: May cause respiratory tract irritation. Inhalation of fumes may cause metal fume fever, which is characterized by flu-like symptoms with metallic 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.

11 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.

12 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.
pbq batteries comply with the European Directives 2006/66/EC.

13 Transport information

pbq 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 55th edition under special provision #A67 as can be found in chapter 4.4 of the IATA Dangerous Goods Regulations 55th edition.

14 Regulatory information

Signal word:
Danger

Hazard statements:

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P280 Wear protective gloves / protective clothing / eye protection / face protection.

According to the European directive 2006/66/EC every single pbq 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.

15 Other information

None