VALEN

MATERIAL SAFETY AND DATA SHEET (MSDS)

VALEN
Powering Excellence

Material Safety Data Sheet

For

Sealed Maintenance Free Lead Acid Battery

Date: 27 April 2018

Model/Type Reference:

6 TP 1.3 / 6 TP 3.3 / 6 TP 5 / 6 TP 7 / 6 TP 12 / 6 TP 20 / 12 TP 1.3 / 12 TP 1.3 / 12 TP 2.2 / 12 TP 2.3 / 12 TP 3.3 / 12 TP 5 / 12 TP 5 F2 / 12 TP 7 / 12 TP 9 / 12 TP 12 / 12 TP 21 / 12 TP 26 / 12 TP 33 / 12 TP 40 / 12 TP 55 / 12 TP 65 / 12 TP 70 / 12 TP 90 / 12 TP 100 / 12 TP 120 / 12 TP 150 / 12 TP 200 12 VX 7 / 12 VX 9 / 12 VX 14 / 12 VX 21 / 12 VX 33 / 12 VX 40 / 12 VX 100 / 12 VX 260 / 6 VX 225 12 VG 21 / 12 VG 26 / 12 VG 33 / 12 VG 40 / 12 VG 55 / 12 VG 60 / 12 VG 70 / 12 VG 100 / 6 VG 225 / 6 VG 260 / 12 EG 50 / 12 EG 60 / 12 EG 80 / 12 EG 110 / 12 EG 170 / 12 EG 220 / 12 EG 300 / 6 EG 260 12 TPFT 55 / 12 TPFT 75 / 12 TPFT 100 / 12 TPFT 105 / 12 TPFT 155 / 12 TPFT 175 / 12 VXFT 55 / 12 VXFT 75 / 12 VXFT 100 / 12 VXFT 105 / 12 VXFT 155 / 12 VXFT 175 / 12 EXFT 55 / 12 EXFT 75 / 12 EXFT 100 / 12 EXFT 105 / 12 EXFT 125 / 12 EXFT 155 / 12 EXFT 175 / 12 EXFT 190 / 12 EXFT 200 / 12 VGFT 55 / 12 VGFT 75 / 12 VGFT 100 / 12 VGFT 155 / 12 VGFT 175 / 12 EGFT 100 / 12 EGFT 155 / 12 EGFT 175 2 TP 100 / 2 TP 150 / 2 TP 200 / 2 TP 300 / 2 TP 400 / 2 TP 500 / 2 TP 600 / 2 TP 800 / 2 TP 1000 / 2 TP 1500 / 2 TP 2000 / 2 TP 3000 / 2 VX 100 / 2 VX 150 / 2 VX 200 / 2 VX 300 / 2 VX 400 / 2 VX 500 / 2 VX 600 / 2 VX 800 / 2 VX 1000 / 2 VX 1500 / 2 VX 2000 / 2 VX 3000 / 2 EX 100 / 2 EX 150 / 2 EX 200 / 2 EX 300 / 2 EX 400 / 2 EX 500 / 2 EX 600 / 2 EX 800 / 2 EX 1000 / 2 EX 1500 / 2 EX 2000 / 2 EX 3000 / 2 VG 100 / 2 VG 150 / 2 VG 200 / 2 VG 300 / 2 VG 400 / 2 VG 500 / 2 VG 600 / 2 VG 800 / 2 VG 1000 / 2 VG 1500 / 2 VG 2000 / 2 VG 3000 / 2 EG 100 / 2 EG 150 / 2 EG 200 / 2 EG 300 / 2 EG 400 / 2 EG 500 / 2 EG 600 / 2 EG 800 / 2 EG 1000 / 2 EG 1500 / 2 EG 2000 / 2 EG 3000 / 2 VO 200 / 2 VO 250 / 2 VO 350 / 2 VO 420 / 2 VO 490 / 2 VO 600 / 2 VO 800 / 2 VO 1000 / 2 VO 1200 / 2 VO 1500 / 2 VO 2000 / 2 VO 2500 / 2 VO 3000

Nominal Voltage:	2VDC / 6VDC / 12VDC
Typical Capacity:	3000Ah Maximum
Weight:	Varies per Model mentioned above
Size:	Varies per Model mentioned above
Version Number:	2.0
Revision Date:	Annually; Last Reviewed April 2018
Company:	Regal Electro Pty Ltd
Address:	105 Loughnan Street, LAKE CARGELLIGO NSW 2672 AU
Compiled by (name & signature):	Philip Daries, **Managing Director**
Approved by (name & signature):	Philip Daries, **Managing Director**

Material Safety Data Sheet

Valen Batteries

Section 1 - CHEMICAL PRODUCT & COMPANY INFORMATION

Product Identification: Sealed Maintenance Free Lead Acid Battery

Model: See Page 2

Supplier Name: Regal Electro Pty Ltd

Address: 105 Loughnan Street LAKE CARGELLIGO NSW 2672 AUSTRALIA

Section 2 - INFORMATION ON INGREDIENTS

Ingredients	% by Weight	TLV	LD50 Oral	LC50 Inhalation	Hazardous Label
Lead (Pb, PbO_2, PbSo)	About 70%	N/A	(500)mg/kg	N/A	T
Sulphuric Acid	About 20%	1mg/m3	(2140)mg/kg	N/A	C
Fibreglass or Polypropylene Separator	About 5%	N/A	N/A	N/A	/
Styro R478 (polystyrene)	About 5%	N/A	N/A	N/A	/

Section 3 - HAZARDS IDENTIFICATION

Emergency Overview

In its manufactured and supplied state, this product is non-hazardous. Under normal conditions, exposure to the constituents is not expected. Casing should never be compromised or damaged. The safety instructions below refer mainly to the unexpected situation where the contents become exposed. No significant health effects are associated with the product in its uncompromised state. Due care should be taken not to short circuit the terminals (applying a metal, electrical conductor across terminals).

Hazards Identification

Hazards Rating (HMIS System) for Sealed Lead Acid Battery: Health, Flammability, Reactivity

Potential Health Effects: None expected for finished product under normal conditions of use.

Fire and Explosion: The sealed lead acid battery is not considered flammable, but it will burn if involved in a fire. Short circuiting can also result in fire. Evacuate area. Self-contained apparatus must be worn to prevent possible inhalation of acid mists, smoke and decomposition products in a fire. Remove all ignition sources. Cool battery to prevent rupture.

Section 4 - FIRST-AID MEASURES

Sulphuric Acid Precaution (ONLY A DANGER IF CASING IS COMPROMISED OR DAMAGED)

- *Skin Exposure:* If the internal battery materials of an opened battery cell come into contact with the skin, immediately flush with plenty of hand soap and water for at least 15 minutes. Seek medical attention if the contact area is larger or if blisters form.
- *Eye Contact:* Seek medical attention immediately. Flush thoroughly with copious amounts of water for at least 15 minutes or until medical attention arrives. Assure adequately flushing by separating the eyelid with fingers.

- *Ingestion:* Seek medical attention immediately. If patient is still conscious, flush mouth with water, have the patient drink milk or sodium bicarbonate solution. DO NOT GIVE ANYTHING TO AN UNCONSCIOUS PERSON.
- *Inhalation:* If potential for exposure to mist or dusts occur, remove immediately to fresh air and seek medical attention.
- *Oral Exposure:* If swallowed, DO NOT INDUCE VOMITING. Seek immediate medical attention.

Section 5 - FIRE FIGHTING MEASURES

- *Extinguishing Media:* Multi-purpose dry chemical or multi-purpose CO_2
- *Firefighting Procedures:* Evacuate area. Self-contained breathing apparatus must be worn to prevent possible inhalation of acid mists, smoke and decomposition products in a fire. Remove all ignition sources. Cool battery to prevent rupture.
- *Unusual Fire and Explosion Hazards:* Hydrogen gas may be produced and may explode if ignited. Remove all ignition sources. Ventilate area.

Section 6 - ACCIDENTAL RELEASE MEASURES

- *Leakage or Spill:* If sulphuric acid is spilled from a battery; flush the area with water, if safe to do so. Neutralise the acid with sodium bicarbonate (baking soda), sodium carbon (soda ash), or calcium oxide (lime). Do not allow un-neutralised acid into sewage system. If safe, washing with a dishwashing solution and water is a suitable alternative neutralisation method.
- *Waste Disposal:* Neutralised acid may be flushed down the sewer. Spent batteries must be treated as hazardous waste and disposed of according to local state and federal regulations. Exhausted batteries may be sent to the appropriate recycling company. A copy of this material safety data sheet must be supplied to any scrap dealer or secondary lead smelter with battery. Do not dispose of in regular garbage.
- *Suggested Procedure in Case of Accident:* a damaged battery may be confined by placing the battery in a strong plastic bag/container then handed to a recycling company.

Section 7 - HANDLING AND STORAGE

Handling

Do not carry the battery by the terminals. Do not drop the battery, puncture or attempt to open the battery case. In case of a battery unintentionally being crushed, acid resistant gloves must be used to handle all battery components. Avoid contact with eyes and skin; avoid inhalation. Keep away from ignition sources, heat and flame, during and immediately after charge. NO SMOKING AT WORKSITE. Avoid prolonged overcharges in confined areas. Batteries must be packed in inner packages in such a manner as to effectively prevent short circuits and to prevent movement which could lead to short circuits.

Storage

Store in a cool (ambient room temperature), well-ventilated area. Keep away from ignition sources, heat and flame. Such batteries must be packed in inner packages in such a manner as to effectively

prevent short circuits and to prevent movement which could lead to short circuits. Avoid conditions which could cause arcing between battery terminals.

Hygiene

Wash hands thoroughly before eating or smoking after handling batteries.

Section 8 - EXPOSURE CONTROL/PERSONAL PROTECTION EQUIPMENT (PPE)

Lead

The toxic effects of the lead are accumulative and slow to appear. It affects the kidneys and reproductive nerve system. The symptoms of lead from over exposure are anaemia, vomiting, headache, stomach pain (lead colic), dizziness, loss of appetite and muscle and joint pain. Exposure to lead from batteries most often occurs during lead reclaim operations through the breathing or ingestion of lead dust and fumes. See also http://www.mayoclinic.org/diseases-conditions/lead-poisoning/home/ovc-20275050

Lead compounds exposure limits is 0.05mg/m3.

Sulphuric Acid

Sulphuric acid is strong and corrosive. Contact with acid can cause severe burns on the skin and eyes. Ingestion of sulphuric acid will cause GI tract burns. Acid can be released if the battery case is damaged or if the vents are tampered with.

Sulphuric acid electrolyte exposure limits is mg/m3 OSHA.

Fibreglass Separators

Fibreglass is an irritant of the upper respiratory tract, skin and eyes. For exposure up to 10F/CC, MSA Comfoll with type H filter. Above 10F/CC up to 50F/CC use ultra/twin type H filter. This product is not considered carcinogenic by NTP or OSHA.

Personal Protection

- *Eye:* Not necessary under normal circumstances of use for finished product.
- *Skin:* Not necessary under normal circumstances of use for finished product.
- *Respiratory:* Not necessary under normal circumstances of use for finished product.
- *Ventilation:* Not necessary under normal circumstances of use for finished product.
- *Work Practices:* Not necessary under normal circumstances of use for finished product.

Section 9 - PHYSICAL/CHEMICAL PROPERTIES

Physical Data

Component	Density	Melting Points	Solubility (H_2O)	Odour	Appearance
Lead	11.34	327.4°C (boiling)	None	Odourless	Silver-grey Material
Lead Sulphate	6.2	107°C (boiling)	40mg/1 (15°C)	Odourless	White Powder
Lead Dioxide	9.4	290°C (boiling)	None	Odourless	Brown Powder
Sulphuric Acid	About 1.3	About 114°C (boiling)	100%	Acidic	Clear Colourless Liquid
Fibreglass Separator	N/A	N/A	Slight	Toxic	White Fibrous Glass
Polyethylene Separator	N/A	N/A	Slight	Toxic	Grey Corrugated Rubber
478 Polystyrene	N/A	N/A	None	Odourless	Solid

Flammability Data

Component	Flashpoint	Explosive Limits	Comments
Lead	None	None	
Sulphuric Acid	N/A	None	
Hydrogen		4% to 74.2%	Sealed batteries can emit hydrogen only if over charged (float voltage > 2.4VPC)
Fibreglass Separator	None	N/A	Toxic vapours may be released. In case of fire, wear self-contained breathing apparatus.
Polyethylene Separator	None	N/A	Toxic vapours may be released. In case of fire, wear self-contained breathing apparatus.
478 Polystyrene	None	N/A	Temperature over 300°C (572°F) may release combustible gases. In case of fire, wear positive pressure self-container breathing apparatus.

Section 10 - STABILITY AND REACTIVITY

Stability: Stable under normal temperatures and pressures

Conditions to Avoid: Shorting; use only approved charging methods. Do not puncture battery case. Strong oxidant, corrosives.

Hazardous Reactions: N/A

Decomposition: N/A

Hazardous Polymerisation: Will not occur

Section 11 – TOXICOLOGICAL INFORMATION

- *Threshold Limit Value:* Not applicable for finished product.
- *Route of Energy:* Not applicable for finished product under normal conditions of use.
- *Signs and Symptoms of Acute Exposure:* Not applicable for finished product under normal conditions of use.
- *Chronic Exposure:* Not applicable for finished product under normal conditions of use.
- *Medical Conditions Aggravated by Exposure:* None expected for finished product. However, do not puncture or open battery case, acid electrolyte may be released. Use only standard charging methods. If overcharged, battery may release gases (Hydrogen and Oxygen).
- *Carcinogen Listing:* NTS: no, IARC: no, OSHA regulated: N/A for finished product under normal conditions of use. The International Agency on Cancer (IARC) has classified 'strong inorganic acid mists containing sulphuric acid' as a category 1 carcinogen (inhalation), a substance that is carcinogenic to humans. This classification does NOT apply to the sulphuric acid contained within the battery.

Section 12 - ECOLOGICAL INFORMATION

Lead and its compounds can result in a threat if released into the environment. Lead may occur as absorbed ions or surface coatings 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 immobilised by ion exchange with hydrous oxides or by chelation with humic or fluvic acids in the soil. Lead (dissolved phase) is bio accumulated by plants and animals, both aquatic and terrestrial.

Section 13 - DISPOSAL CONSIDERATIONS

Appropriate Method of Disposal

Valen Batteries are 100% recyclable by any licensed reclamation operation.

Send to a lead recycling facility that follows applicable Federal, State and Local regulations for routine disposal of spent or damaged batteries. The distributor/user is responsible to know that 'spent' and/or 'damaged' batteries (scrap batteries) are disposed of in an environmentally sound way in accordance with all applicable Federal, State and Local Environmental regulations.

DO NOT PLACE BATTERIES IN GENERAL GARBAGE

Section 14 - REGULATORY AND TRANSPORTATION INFORMATION

According to the OSHA Hazard Communication Standard, Sealed Lead Acid battery's in their manufactured and supplied state are considered non-hazardous.

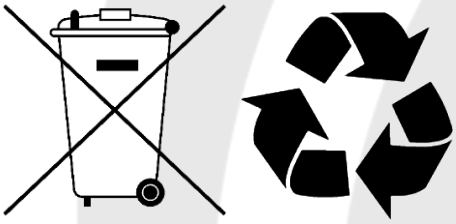
SEALED LEAD ACID BATTERIES ARE NON-HAZARDOUS!

We certify that the Valve Regulated Lead Acid rechargeable batteries conform to the UN2800 classification as 'Batteries, wet, non-spillable, and electric storage' as a result of passing the Vibration and Pressure Differential test.

The non-spillable lead acid battery complies with the provisions listed in 49CFR173.159 (d) therefore must not be marked with an identification number, such as UN2800, or a hazard label, such as corrosive.

For all modes of transportation, each battery outer package is labelled 'NON-SPILLABLE'. All of the batteries are marked non-spillable.

In accordance with EU2006/66/EC Battery Directive, VRLA Batteries should present the crossed out wheeled bin of lead together with the ISO recycling symbol.



Section 15 - SUPPLEMENTAL INFORMATION

Valen Batteries comply with the regulations for dangerous goods. As per IATA Dangerous Good Regulations, Special Provision A67.

Non-spillable batteries are considered to be non-circuit when packed for transportation.

VALEN BATTERIES MEET ALL THE ABOVE CRITERIA