



MATERIAL SAFETY DATA SHEET

Valve Regulated Lead Acid Battery

Product Identification

Manufacture's Name MSB Manufacturing Sdn.Bhd No.3,Jalan Sungai Kayu Ara 32/39 Seksyen 32, Berjaya Industrial Park, 40460 Shah Alam, Selangor Darul Ehsan, MALAYSIA.	Product Valve Regulated Lead Acid (VRLA)Battery
	Emergency Telephone No. +603 – 5740 6022 / +6012 – 2033269
	Date of Issue : 05th November 2008

Composition

<i>Component</i>	<i>Approx. Wt./Vol.</i>
Inorganic Lead/Lead Compounds	65 ~ 75%
Tin	<0.5%
Calcium	<0.1%
Aluminum	<0.01%
Electrolyte(dilute sulphuric acid)	14 ~ 20%
Fiber Glass Separator	5%
Container (ABS)	5 ~ 10%

Physical / Chemical Characteristics

<i>Component</i>	<i>Density</i>	<i>Appearance</i>
Lead	11.34	Silver-Gray
Lead Sulphate	6.20	White Powder
Lead Dioxide	9.40	Brown Powder
Sulphuric Acid	1.28~1.3	Clear Colorless
Fibre Glass Separator	N/A	White Fibrous
Container	480Kg/cm2	Solid

Flammability Data

<i>Component</i>	<i>Flashpoint</i>	<i>Explosive Limit</i>	<i>Comments</i>
Lead and Sulphuric Acid	None	None	None
Hydrogen		LEL = 4.1%	Sealed batteries can emit hydrogen if overcharged.
Fibre Glass Separator	N/A	N/A	May release toxic vapours if burnt.
Container	None	N/A	Temp. above 300°C may release combustible gases.

Stability and Reactivity

The battery is generally stable at all times up to temperature of 60°C. The rubber vent is designed to open at >4p.s.i.

Hazards Identification

<i>Component</i>	<i>Comments</i>
Sulphuric Acid	Severe IRRITATION and DAMAGE to internal tissues if ingested, causes IRRITATION to skin and eyes and possible BURNS.
Lead Compounds	TOXIC by ingestion or inhalation of fumes. Lead poisoning.
Glass Mat Separator	Fibres may cause IRRITATION to skin and eyes upon exposure and to internal tissues if inhaled or swallowed.

First Aid Measures

Inhalation

Sulphuric Acid	If acid vapours is inhaled, remove from exposure and to fresh air immediately. If breathing difficulty, proceed to HOSPITAL.
Lead Compounds	Remove from exposure, wash and rinse mouth thoroughly.
Glass Mat Separator	If inhaled, remove and proceed to fresh air. If there is still irritation, proceed to hospital.

Exposure to EYES

Sulphuric Acid	Wash out immediately with large amount of water continuously for 10~20 minutes holding eye open if necessary. Proceed to hospital.
Lead Compounds	Wash out immediately with large amount of water continuously for 10~20 minutes holding eye open if necessary. Proceed to hospital.

Exposure to SKIN

Sulphuric Acid	Wash off skin immediately. Remove contaminated clothing which must be re-washed thoroughly before re-use.
Lead Compounds	Wash off thoroughly with soap and water.

Fire Fighting Measures

Batteries on overcharge will may/emit hydrogen gas that is highly inflammable/combustible. This may be ignited by a spark from loose connections/arcing at the battery terminals or from an exposed fire source.

Batteries must be isolated/SWITCH OFF from power source before attempting to put out the fire.

Batteries in use form part of an electrical circuit therefore WATER MUST NEVER BE USED to put out a fire.

WEAR protective clothing and breathing apparatus.

Extinguish fire with CO₂, DRY POWDER.

Damaged batteries may expose plates which may ignite if allowed to dry out. These must be wetted down with water after the battery is removed from all electrical circuits.

Handling and Storage

Batteries must be stored in a cool, dry and well ventilated area and protected from direct sunlight which may cause battery to 'heat up' and lose capacity quickly besides 'discoloration' of containers.

DO NOT allow metal objects to be placed on the battery which may result in contact and may cause sparks and possible 'explosion'.

Under normal conditions where there is no damage or visual trace of 'injury', batteries must be handled with care. 'Static' clothing must be avoided and gloves and protection where required must be worn.

If 'acid traces' are present, a thorough check must be done to find the source and remove immediately. Area must be cleaned and neutralized using soda ash, sodium carbonate/bicarbonate or calcium carbonate and then wash with water.

Large batteries must be handled by mechanical means to prevent risk of injury.

Physical and Chemical Properties

The battery is a manufactured product in an inert plastic container which will burn if subjected to high temperatures.

Batteries on charge may emit hydrogen which is highly inflammable and combustible.

Electrolyte is clear and colourless and will 'attack' metals and other materials if exposed directly.

Ecological Information

Sulphuric Acid Toxic and harmful to marine life. Harmful to plants and animals besides rendering soil 'unfertile'.

Lead Compounds No available data.

Disposal

Lead Acid batteries are re-cyclable and must sent to secondary lead smelter for recycling. Care must be taken that 'leaking batteries' must be sealed in an inert container before sending to 'recycling plant'.

Transport

The batteries are protected against possible short circuits and securely packaged.

'Markings' on the cardboard box indicate safety precautions and measures.

The batteries are non-spillable and comply with vibration and pressure differential and 'crack' tests.

Transport information

LAND : Not Regulated for Land Transport.

SEA (IMDG) : Not Regulated for Sea Transport according IMDG-Code.

AIR (IATA) : Not Regulated for Air Transport.

Regulatory Information	UN number	Proper shipping memo	Class	Packing group	Lat rel	Additional Information
TDG classification	Not regulated	Not regulated	Not regulated	Not regulated	--	Not determined
IMDG classification	Not regulated	Not regulated	Not regulated	Not regulated	--	Not regulated
IATA classification	Not regulated	Not regulated	Not regulated	Not regulated	--	Not regulated