

**BOSCH**

Invented for life

SAFETY DATA SHEET**1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER****1.1 Product identifier**

Product name LEAD ACID BATTERY AUTOMOTIVE AND MARINE (MAINTENANCE FREE AND ACCESSIBLE)
Synonyms DEEP CYCLE; DEEP CYCLE MARINE; HIGH CYCLE MARINE; MINING HEAVY DUTY • MP DEEP CYCLE POWER - GOLF CART RANGE • SM MEGA POWER; SM MEGA POWER PLUS; SM MEGA POWER SILVER • SMT MEGA POWER; SMT MEGA POWER PLUS; SMT MEGA POWER SILVER • ST HIGHTEC AGM; ST HIGHTEC EFB; STT HIGHTEC EFB • T5 MEGA POWER DUTY

1.2 Uses and uses advised against

Uses AUTOMOTIVE APPLICATIONS • BATTERIES • COMMERCIAL APPLICATIONS • ELECTRIC UTILITY VEHICLES • GOLF CARTS • INDUSTRIAL APPLICATIONS • MARINE APPLICATIONS

1.3 Details of the supplier of the product

Supplier name ROBERT BOSCH AUSTRALIA PTY LTD
Address 1555 Centre Rd, Clayton, VIC, 3168, AUSTRALIA
Telephone (03) 9541 5555
Fax (03) 9541 5595
Website www.bosch.com.au

1.4 Emergency telephone numbers

Emergency 13 11 26 (24/7 Poisons Information Hotline)

2. HAZARDS IDENTIFICATION**2.1 Classification of the substance or mixture**

CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

Physical Hazards

Corrosive to Metals: Category 1
In use, may form flammable/explosive vapour-air mixture.

Health Hazards

Acute Toxicity: Oral: Category 4
Skin Corrosion/Irritation: Category 1A
Serious Eye Damage / Eye Irritation: Category 1
Acute Toxicity: Inhalation: Category 4
Germ Cell Mutagenicity: Category 2
Carcinogenicity: Category 1A
Toxic to Reproduction: Category 1A
Specific Target Organ Toxicity (Repeated Exposure): Category 2

Environmental Hazards

Aquatic Toxicity (Chronic): Category 1

2.2 GHS Label elements

Signal word DANGER

Pictograms

PRODUCT NAME LEAD ACID BATTERY AUTOMOTIVE AND MARINE (MAINTENANCE FREE AND ACCESSIBLE)

Hazard statements

AUH018	In use, may form flammable/explosive vapour-air mixture.
H290	May be corrosive to metals.
H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.
H318	Causes serious eye damage.
H332	Harmful if inhaled.
H341	Suspected of causing genetic defects.
H350	May cause cancer.
H360	May damage fertility or the unborn child.
H373	May cause damage to organs through prolonged or repeated exposure.
H410	Very toxic to aquatic life with long lasting effects.

Prevention statements

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P234	Keep only in original packaging.
P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P264	Wash thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.

Response statements

P301 + P330 + P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.
P310	Immediately call a POISON CENTRE or doctor/physician.
P321	Specific treatment is advised - see first aid instructions.
P363	Wash contaminated clothing before reuse.
P390	Absorb spillage to prevent material damage.
P391	Collect spillage.

Storage statements

P405	Store locked up.
P406	Store in corrosive resistant container with a resistant inner liner.

Disposal statements

P501	Dispose of contents/container in accordance with relevant regulations.
------	--

2.3 Other hazards

NOTE: Hazardous classification and hazard statements relate to battery contents. No hazards occur during the normal operation of a lead acid battery as it is described in the instructions for use that are provided with the battery. Lead-acid batteries have three significant characteristics:

- * They contain an electrolyte which contains dilute sulphuric acid. Sulphuric acid 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 shock in the event of a short circuit.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content
LEAD	7439-92-1	231-100-4	55 to 75%
SULPHURIC ACID	7664-93-9	231-639-5	20 to 35%
ANTIMONY	7440-36-0	231-146-5	<5%
ARSENIC	7440-38-2	231-148-6	<1%
TIN	7440-31-5	231-141-8	<0.3%

Ingredient Notes

NOTE: Hazard statement relates to battery contents. Potential for exposure should not exist unless the battery leaks, is exposed to high temperatures or is mechanically, physically or electrically abused.

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye	Exposure to contents: If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.
Inhalation	Exposure to contents: If inhaled, remove from contaminated area. To protect rescuer, use a Type B (Inorganic and acid gas) respirator where an inhalation risk exists. Apply artificial respiration if not breathing.
Skin	Exposure to contents: If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. Continue flushing with water until advised to stop by a Poisons Information Centre or a doctor.
Ingestion	For advice, contact a Poisons Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting. Rinse mouth out with water and give plenty of water to drink.
First aid facilities	Eye wash facilities and safety shower should be available.

4.2 Most important symptoms and effects, both acute and delayed

The electrolyte is corrosive and may cause irritation or severe chemicals burns. Lead is a cumulative poison and has the potential to cause chronic health effects. Chronic exposure may result in blood, kidney and central nervous system/brain damage. Lead is classified as possibly carcinogenic to humans (IARC Group 2B). May cause harm to the unborn child. Possible risk of impaired fertility.

4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Use an extinguishing agent suitable for the surrounding fire.

5.2 Special hazards arising from the substance or mixture

Non flammable. Liquid component may evolve flammable hydrogen gas upon contact with metals. The potential for fire - explosion does exist through short circuit of terminals. Thermal shock may cause battery case to crack open. May explode if exposed to high temperatures due to pressure build up in battery casing.

5.3 Advice for firefighters

Treat as per requirements for surrounding fires. Evacuate area and contact emergency services. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire. Use waterfog to cool intact containers and nearby storage areas.

5.4 Hazchem code

2R
2 Fine Water Spray.
R Wear liquid-tight chemical protective clothing and breathing apparatus. Dilute spill and run-off.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS. Contact emergency services where appropriate.

6.2 Environmental precautions

Prevent product from entering drains and waterways.

6.3 Methods of cleaning up

Contain spillage, then cover / absorb spill with non-combustible absorbent material (vermiculite, sand, or similar), collect and place in suitable containers for disposal.

6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

PRODUCT NAME LEAD ACID BATTERY AUTOMOTIVE AND MARINE (MAINTENANCE FREE AND ACCESSIBLE)

7.1 Precautions for safe handling

Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas. Batteries evolve flammable hydrogen gas during charging and may increase fire risk in poorly ventilated areas near sparks, excessive heat or open flames.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated area, removed from incompatible substances, heat or ignition sources and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use. Check regularly for leaks or spills. Large storage areas should have appropriate ventilation systems.

7.3 Specific end uses

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m ³	ppm	mg/m ³
Antimony & compounds (as Sb)	SWA [AUS]	--	0.5	--	--
Arsenic & soluble compounds	SWA [Proposed]	--	0.01	--	--
Arsenic & soluble compounds (as As)	SWA [AUS]	--	0.05	--	--
Lead, inorganic dusts & fumes (as Pb)	SWA [AUS]	--	0.05	--	--
Sulphuric acid	SWA [AUS]	--	1	--	3
Sulphuric acid	SWA [Proposed]	--	0.1	--	--
Tin, metal	SWA [AUS]	--	2	--	--

Biological limits

Ingredient	Determinant	Sampling Time	BEI
ARSENIC	Inorganic arsenic plus methylated metabolites in urine	End of workweek	35 µg As/L
LEAD	Lead in blood	Not critical	200 µg/L
	Lead in blood (women of child bearing potential)	Not critical	10 µg/100ml
	Lead in blood (women of child bearing potential)	Not critical	10 µg/dL
	Lead in blood	Not critical	30 µg/dL

Reference: ACGIH Biological Exposure Indices

8.2 Exposure controls

Engineering controls

Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended. Maintain vapour levels below the recommended exposure standard.

PPE

- Eye / Face** Wear safety glasses.
- Hands** Wear PVC or rubber gloves.
- Body** Wear safety boots.
- Respiratory** Where an inhalation risk exists, wear a Type B (acid gas and vapours) respirator.



9. PHYSICAL AND CHEMICAL PROPERTIES

PRODUCT NAME LEAD ACID BATTERY AUTOMOTIVE AND MARINE (MAINTENANCE FREE AND ACCESSIBLE)

9.1 Information on basic physical and chemical properties

Appearance	LIQUID (BATTERY ENCLOSED)
Odour	ODOURLESS
Flammability	NON FLAMMABLE
Flash point	NOT RELEVANT
Boiling point	NOT AVAILABLE
Melting point	NOT AVAILABLE
Evaporation rate	NOT AVAILABLE
pH	< 4
Vapour density	NOT AVAILABLE
Relative density	NOT AVAILABLE
Solubility (water)	INSOLUBLE
Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	> 100°C
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

10. STABILITY AND REACTIVITY

10.1 Reactivity

If damaged, contents may be corrosive to metals.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Hazardous polymerisation is not expected to occur.

10.4 Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources. Avoid prolonged overcharging.

10.5 Incompatible materials

Incompatible with oxidising agents (e.g. hypochlorites), alkalis (e.g. sodium hydroxide), heat and ignition sources. Incompatible with acids (e.g. nitric acid), acid chlorides, acid anhydrides and chloroformates.

10.6 Hazardous decomposition products

May evolve toxic gases if heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity Exposure to battery contents may result in severe burns of the mouth and throat, as well as a danger of perforation of the oesophagus and the stomach. Lead compounds are expected to be harmful if swallowed, in contact with skin, and/or if inhaled.

Information available for the ingredients:

Ingredient	Oral LD50	Dermal LD50	Inhalation LC50
LEAD	50 mg/kg to 600 mg/kg (calf)	--	--
SULPHURIC ACID	2140 mg/kg (rat)	--	18 mg/m ³ (guinea pig); 510 mg/m ³ /2hrs (rat)
ARSENIC	145 mg/kg (mice)	--	--

Skin Due to product encapsulation, the potential for skin contact with contents is reduced. If the container is damaged, contact may result in irritation, redness, pain, rash, dermatitis and possible burns. Effects may be delayed.

PRODUCT NAME LEAD ACID BATTERY AUTOMOTIVE AND MARINE (MAINTENANCE FREE AND ACCESSIBLE)

Eye	Due to product encapsulation, the potential for eye contact with contents is reduced. If the container is damaged, direct contact may result in irritation, lacrimation and burns.
Sensitisation	Not classified as causing skin or respiratory sensitisation.
Mutagenicity	Due to product encapsulation, the potential for exposure to the contents is reduced. Lead and arsenic are suspected of causing genetic defects. However, the evidence for genotoxic effects of lead is contradictory, with numerous studies reporting both positive and negative effects. Responses appear to be induced by indirect mechanisms, mostly at very high concentrations that lack physiological relevance.
Carcinogenicity	Due to product encapsulation, the potential for exposure to the contents is reduced. Occupational exposure to strong inorganic acid mists containing sulphuric acid is classified as carcinogenic to humans (IARC Group 1). Lead compounds (inorganic) are classified as probably carcinogenic to humans (IARC Group 2A). Arsenic and inorganic arsenic compounds are classified as carcinogenic to humans (IARC Group 1).
Reproductive	Due to product encapsulation, the potential for exposure to the contents is reduced. Exposure to high levels of lead and its compounds may cause adverse effects on male and female fertility, including adverse effects on sperm quality. Prenatal exposure to lead and its compounds is also associated with adverse effects on neurobehavioral development in children.
STOT - single exposure	Due to product encapsulation, the potential for exposure is unlikely. If the container is damaged, inhalation may result in mucous membrane irritation of the respiratory tract, coughing and inflammation. High level exposure may result in ulceration of the respiratory tract and lung tissue damage.
STOT - repeated exposure	Due to product encapsulation, the potential for exposure to the contents is reduced. Lead is a cumulative poison and may be absorbed into the body through ingestion or inhalation. Lead has been documented in observational human studies to produce toxicity in multiple organ systems and body function including the haematopoietic (blood) system, kidney function, reproductive function and the central nervous system. Arsenic is a cumulative poison, and symptoms are often delayed. Repeated exposure may result in blood, liver and kidney damage.
Aspiration	Not classified as causing aspiration.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Lead is potentially toxic to all aquatic organisms, with organic lead compounds tending to be more toxic than inorganic lead compounds. Lead becomes more toxic to fish as dissolved oxygen levels decrease. Toxicity to aquatic organisms increases in acidic or soft water. Very toxic to aquatic life with long lasting effects.

12.2 Persistence and degradability

Inorganic lead does not degrade.

12.3 Bioaccumulative potential

Lead bioconcentrates and bioaccumulates in both aquatic and terrestrial organisms.

12.4 Mobility in soil

Lead is sparingly soluble and is expected to be adsorbed onto soils and sediments. Mobility is expected to be low.

12.5 Other adverse effects

No information provided.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal This product is recyclable. Refer to your local government area website for lead acid battery recycling options nearby or contact the manufacturer/supplier for additional information.

Legislation Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE



PRODUCT NAME LEAD ACID BATTERY AUTOMOTIVE AND MARINE (MAINTENANCE FREE AND ACCESSIBLE)

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	2794	2794	2794
14.2 Proper Shipping Name	BATTERIES, WET, FILLED WITH ACID, electric storage	BATTERIES, WET, FILLED WITH ACID, electric storage	BATTERIES, WET, FILLED WITH ACID, electric storage
14.3 Transport hazard class	8	8	8
14.4 Packing Group	None allocated.	None allocated.	None allocated.

14.5 Environmental hazards

Marine Pollutant.

14.6 Special precautions for user

Hazchem code 2R
GTEPG 8A1
EmS F-A, S-B

Other information The environmentally hazardous substance mark is not required when transported in packages of less than 5 kg/L (UN Model Regulations: Special Provision 375; IATA: Special Provision A197; IMDG: Special Provision 969) or less than 500 kg/L by Australian Road and Rail.

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Poison schedule Classified as a Schedule 6 (S6) Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Classifications Safe Work Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals (GHS Revision 7).

Inventory listings **AUSTRALIA: AIIC (Australian Inventory of Industrial Chemicals)**
All components are listed on AIIC, or are exempt.

16. OTHER INFORMATION

Additional information RESPIRATORS: In general the use of respirators should be limited and engineering controls employed to avoid exposure. If respiratory equipment must be worn ensure correct respirator selection and training is undertaken. Remember that some respirators may be extremely uncomfortable when used for long periods. The use of air powered or air supplied respirators should be considered where prolonged or repeated use is necessary.

ACIDS: When mixing acids with water (diluting), caution must be taken as heat will be generated which causes violent spattering. Always add a small volume of acid to a large volume of water, NEVER the reverse.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:
The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as form of product, method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:
It should be noted that the effects from exposure to this product will depend on several factors including: form of product; frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

PRODUCT NAME LEAD ACID BATTERY AUTOMOTIVE AND MARINE (MAINTENANCE FREE AND ACCESSIBLE)

Abbreviations	ACGIH	American Conference of Governmental Industrial Hygienists
	CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
	CNS	Central Nervous System
	EC No.	EC No - European Community Number
	EMS	Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)
	GHS	Globally Harmonized System
	GTEPG	Group Text Emergency Procedure Guide
	IARC	International Agency for Research on Cancer
	LC50	Lethal Concentration, 50% / Median Lethal Concentration
	LD50	Lethal Dose, 50% / Median Lethal Dose
	mg/m ³	Milligrams per Cubic Metre
	OEL	Occupational Exposure Limit
	pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
	ppm	Parts Per Million
	STEL	Short-Term Exposure Limit
	STOT-RE	Specific target organ toxicity (repeated exposure)
	STOT-SE	Specific target organ toxicity (single exposure)
	SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
	SWA	Safe Work Australia
	TLV	Threshold Limit Value
	TWA	Time Weighted Average

Report status This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

Prepared by Risk Management Technologies
5 Ventnor Ave, West Perth
Western Australia 6005
Phone: +61 8 9322 1711
Fax: +61 8 9322 1794
Email: info@rmt.com.au
Web: www.rmtglobal.com

[End of SDS]