



Product

Partners

Support

PR Center

Company



Support

Home > Support > MSDS

Support

Technical Support

Environment

Download

FAQ

MSDS



Service Locations

MSDS

MSDS (Material safety Data Sheet)

Updated: 2012/08/15

SECTION 1: Chemical Product and Company Identification

Chemical/Trade Name (as used on label)

Sealed Lead Acid Battery

Chemical Family/Classification

Electric Storage Battery

Manufacturer's Name

CSB Battery Co., Ltd.

Address

11F, No. 150, Sec. 4, Chengde Rd., Shilin Dist., Taipei City 11167, Taiwan

Contact number

Taiwan : +886 2 2880 5600
 United States : +1 817 244 7777
 Netherlands : +31 0 180 418 140
 China : +86 755 8831 6488

Website

WWW.CSB-BATTERY.COM

SECTION 2: Composition, information or Ingredients ³⁾

CAS no.	Description	Content ¹⁾ [% of weight]	Hazard symbol
7439-92-1	Lead Grid (metallic lead, lead alloys with possible traces of additives)	~57	T ²⁾
1309-60-0	Active Mass (Battery Oxide, inorganic lead compounds)	~ 22	T ²⁾
7664-93-9	Electrolyte ⁴⁾ (Dilute sulphuric acid with additives)	~14	C
	Plastic Container / Plastic Parts ⁵⁾	~ 7	

1) Contents may vary due to performance data of the Battery

2) As result of the harm to unborn children Lead and Lead compounds are classified as toxic, Category 1. As this category is not described with a specific hazard symbol, Lead compounds have to be labeled with the "skull & crossbones" symbol. Lead and Lead compounds are not classified "toxic".

3) See section 12 -- Ecological Information

4) Density of the electrolyte varies in accordance to the state of charge

5) Composition of the plastic may vary due to different customer requirements

SECTION 3: Hazard Identification

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 diluted 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.

The Batteries have to be marked with the symbols listed under section 15.

SECTION 4: First Aid Measures

General:

1. Electrolyte (diluted sulphuric acid): sulphuric acid acts corrosively and damages skin

Skin/Eyes

- Rinse the affected area under running water for 15 minutes
- Remove contaminated clothing
- If irritation occurs, seek medical attention

Ingestion/Inhalation

- Do not induce vomiting
- Drink 8 oz. of water or milk
- If difficulty in breathing occurs, try moving under fresh air and have CPR when necessary
- Seek medical attention immediately

2. Lead compounds: lead compounds are classified as toxic for reproduction (if swallowed)

SECTION 5: Fire Fighting Measures

Hydrogen Flash point: -259°C Hydrogen Autoignition point: 580°C

Hydrogen Flammable Limits in Air (% by Volume):

Lower Explosion Limit (LEL) : 4.1 ; Upper Explosion Limit (UEL) : 74.2

Unusual Fire and Explosion Hazards: Hydrogen and Oxygen gases are produced in cells during normal battery operation and expel into air through vent caps.

Extinguishing Media: Foam, CO2 or dry powder extinguishing agents

Special Firefighter Procedures: Use Positive Pressure, self-contained breathing apparatus.

SECTION 6: Accidental Release Measures

The information is of relevance only if the battery is broken and the ingredients are released.

In the case of spillage, try neutralizing exposed battery parts with soda ash or sodium bicarbonate until fizzing stops; and using sand or bonding agent to absorb split acid. Provide adequate ventilation because heat, carbon dioxide and hydrogen gas may be given off during neutralization. Collect residue in a suitable container and place the broken battery in a heavy-duty plastic bag or other non-metallic container. Properly recycle all battery residue and parts based on official local regulations.

SECTION 7: Handling and Storage

Store batteries in a cool, dry area. Store batteries in a covered area that protects against adverse weather conditions. Protect batteries from coming into contact with conductive materials to prevent fire or battery failures. Don't store or charge batteries in temperatures under -40 F (-20o C). Keep away from fire, sparks and heat sources. Protect from damage to prevent possible leaks or spills. It is imperative that these instructions be followed if the batteries are being stored.

SECTION 8: Exposure Controls and Personal Protection

Engineering Controls

Store batteries with adequate ventilation. Room ventilation is also required for batteries utilized for standby power generation. Never recharge batteries in an unventilated, enclosed space.

Personal Protective Equipments

During installation under normal conditions there is no exposure to lead or sulphuric acid. In the event of battery breakage, exposure to sulphuric acid and lead may occur. During high rate charges or overcharging acid mist may occur.

Eye Protection = Chemical goggles, safety glasses with side shields and or a full-face shield.

Protective gloves = Rubber, PVC or neoprene

Respiratory Protection = NIOSH approved acid mist/organic vapor respirator, if OSHA PEL is exceeded.

Other Protective Equipment = Acid resistant apron or clothes.

Work Practices:

Use standard lead-acid battery practices. Do not wear metallic jewelry when working with batteries. Use non-conductive tools only. Discharge static electricity prior to working on a battery. Maintain eyewash, fire extinguisher and emergency communication device in the work area.

SECTION 9: Physical and Chemical Properties

	Lead and lead compounds	Electrolyte
Appearance	Form: Solid Color: Grey Odor: Odorless	Liquid Colorless
Safety related data		
Solidification point:	327°C [melting point]	-35 ~ -60°C
Boiling point:	1740°C	Approx. 108~114°C
Solubility in water:	Very low (0.15mg/l)	Fully soluble
Density (20°C):	11.35 g/cm ³	1.2~1.3 g/ cm ³
Vapor pressure (20°C):	N.A.	

Lead and Lead compounds used in Lead Acid batteries are poorly soluble in water; Lead can be dissolved in an acidic or alkaline environment only.

SECTION 10: Stability and Reactivity

Stability: The battery and contents are stable under normal conditions.

Conditions to avoid: Overheating or overcharging the battery may results in acid mist and hydrogen generation.

Incompatibility (materials to avoid): Strong alkaline materials, conductive metals, organic solvents, spark or open flame.

Hazardous byproducts: Hydrogen gas may be generated in an overcharged condition, in fire or at very high temperatures. In fire, may emit CO, CO₂ and Sulfur Oxides.

Hazardous polymerization will not occur

Reactivity: Broken batteries may result in small amounts of spilled electrolyte. Electrolyte is a corrosive, nonflammable liquid. Electrolyte can destroy organic materials such as cardboard, wood, textiles. Electrolyte may produce hydrogen as a reaction with some metals.

SECTION 11: Toxicological Information

CSB VRLA batteries are sealed, recombinant design that require no water replacement throughout their service life, thus no contact is made with the battery's internal components or chemical hazards. Under normal use and handling, these batteries do not emit regulated or hazardous substances.

	Administration Route	Dose	Test Animal
LD50	Oral	2140 mg/kg	Rat
LC50	Inhalation	510 mg/m ³	Rat

Carcinogenicity: The International Agency on Cancer (IARCC) has classified "strong inorganic acid mists containing sulfuric acid" as a category 1 carcinogen (inhalation), a substance that is carcinogenic to humans. This classification does not apply to the liquid forms of sulfuric acid contained within the battery. Misuse of the product, such as overcharging, may result in the generation of sulfuric acid mist at high levels.

SECTION 12: Ecological Information

This information is of relevance if the battery is broken and the ingredients are released to environment.

12.1 Electrolyte (diluted sulphuric acid)

In order to avoid damage to the sewage system, the acid has to be neutralized by means of time or sodium carbonate before disposal. Ecological damage is possible by change of pH. The electrolyte solution reacts with water and organic substances, causing damage to flora and fauna. The electrolyte may also contain soluble components of lead that can be toxic to aquatic environments.

12.2 Lead and Lead compounds

Chemical and physical treatment is required for the elimination from water. Waste water containing lead must not be disposed of in an untreated condition. The former classification of Lead compounds as toxic for the aquatic environment R50/53 had been triggered from test results generated in the 80's for soluble Lead compounds (Lead Acetate). The hardly soluble Lead compounds such as Battery Lead Oxide were not tested at this time. Tests on Battery Lead Oxide were carried out in 2001 and 2005. The respective test results conclude that Battery Lead Oxide is not toxic for the environment, neither R50 nor R50/53 nor R51/53. From this it follows that the general classification for Lead compounds (R50/53) does not apply to Battery Lead Oxide. As the result of this the Risk Phrase R52/53 (Harmful to aquatic organisms, may cause longterm adverse effects in the aquatic environment) applies to Battery Lead Oxide.

Effects of Battery Lead Oxide in the aquatic environment:

Toxicity for fish:	96 h LC 50 > 100 mg/l
Toxicity for daphnia:	48 h EC 50 > 100 mg/l
Toxicity for alga:	72 h IC 50 > 10 mg/l

The results demonstrate these Battery Lead Oxide compounds in a concentration of 100 mg/l have no adverse effect on fish and daphnia. A concentration of these Battery Lead Oxide of 10 mg/l has no adverse effect on the rate of growth and the biomass. For the classification according to Directive 67/548/EEC the most sensitive adverse effect has to be considered. As a result of the toxicity for alga at > 10 mg/l Battery Lead Oxide has to be classified according to the R-Phrases 52/53 (Harmful to aquatic organisms, may cause long term adverse effects in the aquatic environment).

SECTION 13: Disposal Considerations

Spent lead acid batteries (EWC 160601) are subject to regulation of the EU Battery Directive and its adoptions into national legislation on the composition and end of life management of batteries.

Spent Lead Acid batteries are recycled in lead refineries (secondary lead smelters). The components of a spent Lead Acid battery are recycled or reprocessed.

At the points of sale, the manufacturers and importers of batteries, respectively the metal dealers take back spent batteries, and render them to the secondary lead smelters for processing.

To simplify the collection and recycling or reprocessing process, spent Lead Acid batteries must not be mixed with other batteries. By no means may the electrolyte (diluted sulphuric acid) be emptied in an inexpert manner. This process is to be carried out by the processing companies only.

SECTION 14: Transport Information

All CSB batteries are identified as "Battery, Electric Storage, Wet, Nonspillable" when transported by air, sea or by land transportation. The battery(s) must be identified as above on the Bill of Lading and properly packaged with their terminals protected from short circuit. **NA or UN numbers do not apply.** CSB battery (s) warning label identifies each battery as **NONSPILLABLE**.

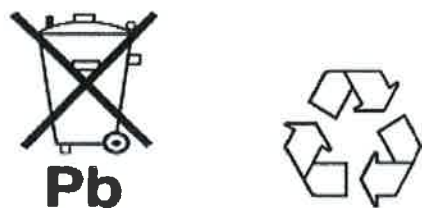
CSB seal lead-acid batteries are classified as "Nonspillable" for the purpose of transportation by DOT, and IATA/ICAO as result of passing the Vibration and Pressure Differential Test described in **DOT [49 CFR 173.159(f)] and IATA/ICAO [Special Provision A67]**. CSB seal lead-acid batteries can be safely transported on deck, or under deck stored on either a passenger or cargo vessel as result of passing the Vibration and Pressure Differential Tests as described in the IMDG regulations (Special Article 238).

To transport these batteries as "Nonspillable" they must be shipped in a condition that would protect them from short-circuits and be securely packaged so as to withstand conditions normal to transportation by a consumer, in or out of a device, they are unregulated thus requiring no additional special handling or packaging.

For all modes of transportation, each battery and outer package is labeled "NON-SPILLABLE" per **49 CFR 173.159(f)**. If you repackage our batteries either as batteries or as a component of another product you must label the outer package "NON-SPILLABLE" per **49 CFR 173.159(f)**.

SECTION 15: Regulatory Information

In accordance with EU Battery Directive and the respective national legislation, Lead Acid batteries have to be marked by a crossed out dust bin with the chemical symbol for lead shown below, together with the ISO return/recycling symbol. If other countries or the region have time in addition the stipulation must observe



SECTION 16: Other Information

Products such as Batteries are not in the scope of regulation which requires the publication of an EU Safety Data Sheet (91/155/EEC).

The information given above is provided in good faith based on existing knowledge and does not constitute an assurance of safety under all conditions. It is the user's responsibility to observe all laws and regulations applicable for storage, use, maintenance or disposal of the product. If there are any queries, the supplier should be consulted.

However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

[TOP](#)

Designed by **CREATOP**

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MATERIAL SAFETY DATA SHEET

N° DIL46E11

MSDS - Environmental Management System Form

Batterie Industriali - Almisano
Industrial Batteries - Almisano

Page 1 / 4

Title : **LEAD ACID BATTERY****1. PRODUCT AND COMPANY IDENTIFICATION**

Product Name & Use: Lead acid battery for stationary applications, free electrolyte.

Company Identification:

FIAMM S.p.A.

Viale Europa, 63 I - 36075 Montecchio Maggiore (Vicenza)

Telephone (I)-0444-709311; Telex 480295 FIAMM Fax (I)-0444-699237

Production Plant:

FIAMM S.p.A.

Via Dovaro, 8 I - 36045 Almisano di Lonigo (Vicenza)

Telephone (I)-0444-725511

Fax (I)-0444-833996

2. COMPOSITION / INFORMATION ON INGREDIENTS

Component	% Weight	EINECS# - CAS#	Danger - Symbol	R/S Phrases	EU Limits
Metallic lead and lead compounds	60-70	Lead 231-100-4/7439-92-1 Lead Monoxide 215-267-0/1317-36-8	Toxic - T	R20/22 R33 R61 R62 R50/53 S53 S45 S60 S61	Lead in Air: 0,15 mg/m ³ Lead in Blood: 60 µg/dl (Italy) 70 µg/dl (EU)
Sulphuric Acid solution	20-30	231-639-5 7664-93-9	Corrosive - C	R35 S2 S26 S30 S45	
Thermoplastic Polymer	6-9				

3. HAZARDS IDENTIFICATION**Danger of Explosion**

A mixture of explosive gases, containing hydrogen, can be produced inside the battery during charging. Naked flames, lit cigarettes, sparks or incandescent materials must be avoided in the immediate vicinity of the battery. Avoid short circuits between the terminals. Use antistatic materials when cleaning. Do not store the product in sealed container; maintain a fresh, well-ventilated environment protected from direct sunlight and away from heat sources.

Contact Danger

The dilute sulphuric acid solution, density 1.21 - 1.30 kg/l contained in the battery is corrosive and irritant to the eyes and skin.

Health Risks

Under normal conditions of use there is no danger, however, inside the battery are lead parts that could be harmful if ingested or breathed-in.

4. FIRST AID MEASURES

The first aid measures described below are concerned with sulphuric acid exposure; the other components are solid and do not present substantial risk under normal conditions of use.

a) inhalation

Inhalation is not considered to be likely for this product. Remove the patient from the contaminated zone, to an area of fresh air. In the case of breathing difficulties seek medical advice.

b) Skin contact

Wash the effected zone immediately with copious amounts of water. Remove contaminated clothing. If the irritation persists seek medical advice.

c) Eye Contact

Wash with copious amount of water, while keeping the eyelid open. Seek medical advice immediately

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Issue/Rev. DateIndice di Revisione: 4
Revision IndexData Ultima Revisione: **20/10/2005**
Last Revision Date

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MATERIAL SAFETY DATA SHEET

MSDS - Environmental Management System Form

Batterie Industriali - Almisano

Industrial Batteries - Almisano

N° DIL46E11

Page 2 / 4

Title : **LEAD ACID BATTERY**

d) Swallowing
Rinse the mouth with water. Give water to drink. Do not induce vomiting. Seek medical advice immediately.

■ First aid resources for specific treatment to keep available: Eye wash bottles or emergency eye wash fountains, Shower.

5. FIRE FIGHTING MEASURES PREVENTION

The lead batteries are weakly combustible due to their construction that includes polymeric thermoplastic comprising 6-9% of the total weight. In instances of fire wear adequate means of respiratory protection.

- a) APPROPRIATE EXTINGUISHING MEDIA.
Use dry powder, foam extinguisher, CO₂.
- b) INAPPROPRIATE EXTINGUISHING MEDIA
Water, which in contact with acid can develop heat.

6. ACCIDENTAL RELEASE MEASURES

- a) Personal Precautions
In the case of electrolyte leak prevent contact with skin and eyes by wearing appropriate protective equipment. Rubber gloves, rubber boots, safety goggles/face shield and acid resistant clothing.
- b) Environmental precautions
Keep the electrolyte and possible lead powder away from drains or surface water.
- c) Procedure for containment and collection
Neutralise with Caustic Soda or Calcium Carbonate
Contain the spill with sand, earth or other absorbent material.
Do not use Water (sulphuric acid solution can react exothermically with water).

7. HANDLING AND STORAGE

Keep away from heat sources, sparks and open flames.
Do not store the product in sealed containers; maintain a in a well ventilated area away from direct sunlight and well away from sources of heat.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

With the exception of safety shoes, the other means of personal protection are all related to preventing contact with electrolyte. The solid components do not represent an appreciable risk factor (apart from voluntary or accidental ingestion of lead components).

Personal Protection:

Rubber gloves resistant to sulphuric acid. Safety Glasses (mask or visor), acid resistant clothing, rubber boots.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Solid state prismatic type

Electrolyte: Sulphuric Acid in aqueous Solution

Corrosive

Density 1.21 - 1.30 kg/l

Odourless

Non-flammable.

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MATERIAL SAFETY DATA SHEET

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Batterie Industriali - Almisano

Industrial Batteries - Almisano

N° DIL46E11

Page 3 / 4

Title : **LEAD ACID BATTERY**

10. STABILITY AND REACTIVITY

The product is normally stable and inert.

A minute quantity of hydrogen and oxygen gas are produced when the units are left in a stable environment, avoid open flame sources and sparks in the proximity of the product.

11. TOXICOLOGICAL INFORMATION

Inapplicable to the finished product 'lead acid battery', applicable to its constituents:

Sulphuric Acid:

Acute toxicity data:

- LD50(oral, rat) 2140 mg/Kg
- LC50 (inhalation, rat) 510 mg/mc/2h

Acts intensely corrosive on skin and mucous membranes. The inhalation of mists may cause damage to the respiratory tract.

Lead and its inorganic compounds:

Exposure to lead and its compounds may cause damage to blood, nerves (central nervous system) and kidneys. Lead compounds are considered hazardous to reproduction (pregnant women should be protected from excessive exposure).

12. ECOLOGICAL INFORMATION

The electrolyte solution reacts with water and organic substances causing damage to flora and fauna. The Batteries also contain soluble components of lead than can be toxic to aquatic environments.

13. DISPOSAL CONSIDERATIONS

Lead batteries are classified "dangerous waste" and the user is obliged by law to arrange for their disposal or recycling. It is prohibited to abandon this type of refuse to the environment. For additional information and to locate your nearest collection centre contact the local consortium for the disposal of used and scrap lead containing batteries. FIAMM Batteries are 100% recyclable.

14. TRANSPORT INFORMATION

Land Transport (ADR/RID, U.S. DOT)

UN N°: UN2794
Classification ADR/RID: Class 8
Proper Shipping Name: BATTERIES, WET, FILLED WITH ACID electric storage
Packing Group ADR: not assigned
Label required: Corrosive
ADR/RID: New batteries are excepted from all ADR/RID (special provision 598 ADR).

Sea Transport (IMDG Code)

Classification: Class 8
UN N°: UN2794
Proper Shipping Name: BATTERIES, WET, FILLED WITH ACID electric storage
Packing Group: III
EmS-FIRE & SPILL: F-A, S-B
Label required: Corrosive

Air Transport (IATA-DGR)

Classification: Class 8
UN N°: UN2794
Proper Shipping Name: BATTERIES, WET, FILLED WITH ACID electric storage
Packing Group: n.a.
Label required: Corrosive

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Title : **LEAD ACID BATTERY****15. REGULATORY INFORMATION**

Symbols



Explosive Gas

16. OTHER INFORMATION

R/S Phrases (indicative since this is not directly applicable to the product, but the electrolyte contained therein which represents the major risk of the product):

R35 Can produce severe chemical burns.

S2 Keep out of reach of Children.

S16 Keep away from sparks or naked flame - No smoking.

S26 In case of contact with eyes wash immediately with abundant quantity of water and seek medical advice.

S30 Do not put water on the product.

S45 In case of accident or if you feel unwell, seek medical advice immediately.

Read the instructions for use contained in the guarantee/warranty certificate.



The information contained herein is accurate to the best of our knowledge as of the date of writing given above. The references refer only to the product indicated and do not constitute a guarantee of quality. The user is held responsible and must ensure the maintenance and completeness of such information with respect to the products specific final application.

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