Instructions for the safe use of lead-acid batteries

1 - PRODUCT AND COMPANY IDENTIFICATION	
Product description:	**Lead Acid Battery Wet, Filled With Acid**
Product use:	**Industrial/Commercial electrical storage-starter-traction batteries.**
Manufacturer Information:	**FIB srl , Production Sites:** Via Monti 13, Zona Industriale Monterubbiano (FM)-63825, Italy Località Macchia, Monte Sant'Angelo (FG),-71037, Italy Industrial Zone, Xushe Town ,Yixing Jiangsu (China)
Phone number:	+39 0734 25751
Emergency Phone Number:	+39 0734 25751
Additional information:	This document was prepared in collaboration with the Environmental Commission of EUROBAT (May 2003) and reviewed by members of EUROBAT TC (September 2003) and EMC (October-November 2003) Text revised and updated in 2015 Batteries are "articles" within the meaning of Regulation (EC) N.1907 / 2006 CE, are neither "substances" or "prepared", therefore there is no obligation to provide a safety data sheet in accordance with Regulation EC 1907 / 2006 and the CLP Regulation (EC 1272/2008) The safety information of the product is provided as a service to our customers This document, which meets that requirement, is commonly called "Data Sheet (MSDS), but in Europe it is more properly called" Instructions for the Safe Use of Lead Acid Batteries

2 – COMPOSITION / INFORMATION ON INGREDIENTS IN ACCORDANCE WITH (CE) 1272/2008 [CLP/GHS]REGULATION

Name:	Metallic Lead (Pb) and lead compounds
Weight %:	60-70'
Substance #EINECS#CAS#	082-001-00-6
Category of Danger	Acute Tox 4, Repr 1A, Specific effect STOT RE 2
Hazard	H302 H332 H360 H360Df H373
Name:	Solphuric acid in solution
Weight %:	20-30
Substance #EINECS#CAS#	016-020-00-8, 231-639-5, 7664-93-9
Category of Danger	Skin Corr 1A
Hazard	H314
Name:	Plastic
Weight %:	6-9
Substance #EINECS#CAS#	
Category of Danger	--
Hazard	

3 – HAZARDS: Under normal operating conditions, as described in the instructions for use provided with the battery, the lead-acid battery no have problems

GHS CLASSIFICATION: (Globally Harmonized System of Classification and Labelling of Chemistry)

Health	Environmental	Physical
Acute Toxicity – Not listed (NL) Eye Corrosion – Corrosive as sulphuric acid Skin Corrosion – Corrosive as sulphuric acid Skin Sensitization – NL Mutagenicity/Carcinogenicity – NL Reproductive/Developmental – NL Target Organ Toxicity (Repeated) – NL	Aquatic Toxicity – NL	NFPA – Flammable gas, hydrogen (during charging) CN -NL EU -NL

GHS LABEL under Regulation (EC) n.1272 / 2008: Lead Acid Battery, Wet

Symbols:

The batteries contain an electrolyte containing sulfuric acid. Sulphuric acid may cause severe chemical burns: (Hazard category Skin Corr 1A)

C: Corrosive with Sulphuric Acid

2 – COMPOSITION / INFORMATION ON INGREDIENTS IN ACCORDANCE WITH (CE) 1272/2008 [CLP/GHS]REGULATION

Batteries have to be marked with symbols of point 15

Hazard Statements	**Precautionary Statements**
Contact with internal components may cause irritation or severe burns. Irritating to eyes, respiratory system and skin.	Keep out of reach of children. Keep containers tightly closed. Avoid heat, sparks and open flam while charging batteries. Avoid contact with internal acid.

EMERGENCY OVERVIEW:

May form explosive air/gas mixture during charging. Contact with internal components may cause irritation or severe burns. Irritating to eyes, respiratory system, and skin. Prolonged inhalation or ingestion may result in serious damage to health. Pregnant women exposed to internal components may experience reproductive/developmental effects.

POTENTIAL HEALTH EFFECTS:

EYES:	Direct contact of internal electrolyte liquid with eyes may cause severe burns or blindness.
SKIN:	Direct contact of internal electrolyte liquid with the skin may cause skin irritation or damaging burns.
INGESTION:	Swallowing this product may cause severe burns to the esophagus and digestive tract and harmful or fatal lead poisoning. Lead ingestion may cause nausea, vomiting, weight loss, abdominal spasms, fatigue, and pain in the arms, legs and joints.
INHALATION:	Respiratory tract irritation and possible long term effects.

POTENTIAL HEALTH EFFECTS:

Repeated or prolonged contact may cause mild skin irritation.

CHRONIC HEALTH HAZARDS:

Lead poisoning if persons are exposed to internal components of the batteries. Lead absorption may cause nausea, vomiting, weight loss, abdominal spasms, fatigue, pain in the arms, legs and joints. Other effects may include central nervous system damage, kidney dysfunction, and potential reproductive effects. Chronic inhalation of sulphuric acid mist may increase the risk of lung cancer.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:

Respiratory and skin diseases may predispose one to acute and chronic effects of sulphuric acid and/or lead. Children and pregnant women must be protected from lead exposure. Persons with kidney disease may be at increased risk of kidney failure.

Additional Information

No health effects are expected related to normal use of this product as sold.

4 - FIRST AID

General measures:	Keep individuals far away from the exposure zone.
Inhalation:	Ensure adequate ventilation during charging. Avoid vapor. Remove individual(s) from exposure. Wash nose and mouth and obtain medical attention immediately. Keep warm and at rest. If there is difficulty with breathing, give oxygen. **Do not** use mouth-to-mouth resuscitation.
Eye Contact:	Immediately flood the eye with plenty of water for at least 15 minutes, keeping the eyelids open. Obtain medical attention urgently.
Skin Contact:	Remove contaminated clothing while immediately flooding the skin with large quantities of water, preferably under a shower. If individual had any contact with plates, wash with water and soap, then bandage contact area and call a doctor.
Ingestion:	Call an ambulance immediately. Do not induce vomiting. Wash out mouth with water. If conscious give copious amounts of cold water or milk of magnesia to sooth the affected parts (at least one cup every ten minutes). Ingested acid must be diluted by approximately x100 to render harmless to tissues. It is essential to intervene as quickly as possible.
Other information:	Keep an eyewash station close to the area where material is used.

5 - FIRE-FIGHTING MEASURES

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Extinguishing media:	Powders
Prohibited extinguishing media:	Halon
Unusual fire/explosion risks:	Sulphur Oxides may give rise to hazardous fumes in a fire. Violent reaction with water generates heat and may cause an explosion. See stability and reactivity point (Section 10).
Hazardous Thermal (de) composition:	Attacks many metals liberating hydrogen gas.
Products:	Combustion will generate oxides of sulphur.
Fire-fighter protection:	Wear full protective clothing (full face mask, neoprene gloves and anti-acid overalls) and self-contained breathing apparatus.

6 - ACCIDENTAL RELEASE MEASURES	
Personal Precautions:	Ventilate the area to dispel possible toxic decomposition fumes. Wear appropriate protective clothing. Avoid ignition. Avoid contact with eyes, skin and clothing. Avoid inhaling vapor and provide respiratory protection. Remove all powder from area.
Environmental Precautions and Clean Up Methods:	Keep product a safe distance from surface and subsoil water. Neutralize product and drain. Contain and absorb using earth, sand or other inert material. Transfer into suitable containers for recovery or disposal.
Gases/fumes released:	Not available
Additional Precautions:	Never use with water. Neutralize with calcium carbonate or with a 50/50 blend of calcium carbonate and calcium hydrate.

7 - HANDLING AND STORAGE	
Handling:	Use in well-ventilated area. Avoid inhaling vapor. Avoid contact with eyes, skin and clothing. Emergency shower and eye wash facilities should be readily available. Do not eat, drink or smoke while handling. The use of an open flame is prohibited.
Box Weight:	Minimum 8kg, Maximum 200kg, depending on type of cell.
Storage:	Storage area should be cool, under cover, and well-ventilated. Keep far away from organic substances such as food, wood, paper, straw and other reactive chemicals. Avoid water or steam from entering the container at all times-see conditions to avoid. Store in rubber-lined tanks for acid concentrations less than 70%. Suitable storage materials are: PTFE glass. Do not store in metal drums, nylon, plasticized PVC.
Packaging Materials:	Use original container.

8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS/SYSTEM DESIGN INFORMATION:

Charge in areas with adequate ventilation.

VENTILATION:

General dilution ventilation is acceptable.

RESPIRATORY PROTECTION:

Not required for normal conditions of use. See also special fire fighting procedures (Section 5).

EYE PROTECTION:

Wear protective glasses with side shields or goggles.

SKIN PROTECTION:

Wear chemical resistant gloves as a standard procedure to prevent skin contact.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT:

Chemically-impervious apron and face shield recommended when adding water or electrolyte to batteries.
Wash Hands after handling.

EXPOSURE GUIDELINES & LIMITS:

OSHA	Permissible Exposure Limit (PEL/TWA)	Lead, inorganic (as Pb) Sulphuric acid Antimony	0.05 mg/m3 1 mg/m3 0.5 mg/m3
ACGIH	2007 Threshold Limit Value (TLV)	Lead, inorganic (as Pb) Sulphuric acid Antimony	0.05 mg/m3 0.2 mg/m3 0.5 mg/m3
Netherlands	Maximal Anvarde Concentrate (MAC)	Lead, inorganic (as Pb) Sulphuric acid	0.15 mg/m3 1 mg/m3
Germany	Maximale Arbeitsplatzkonzentrationen	Lead, inorganic (as Pb) Sulphuric acid	0.1 mg/m3 1 mg/m3 TWA

8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

	(MAK)	Antimony	2 mg/m3 STEL 0.5 mg/m3
UK	Occupational Exposure Standard (OES)	Lead Antimony	0.15 mg/m3 0.5 mg/m3

TWA – 8-Hour Time Weighted Average/ STE – Short Term Exposure / mg/m^3 – milligrams per cubic meter of air/ NE – Not Established

Additional Information

Batteries are housed in polypropylene cases which are regulated as total dust or respirable dust only when they are ground up during recycling. The OSHA PEL for dust is 15 mg/m^3 as total dust or 5 mg/m^3 as respirable dust.
May be required to meet Domestic Requirements for a Specific Destination(s).

9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Industrial/commercial lead acid battery
ODOR:	Odourless
ODOR THRESHOLD:	NA
PHYSICAL STATE:	Sulphuric Acid: Liquid; Lead: solid
pH:	<1
BOILING POINT:	235-240°F (as sulphuric acid)
MELTING POINT:	NA
FREEZING POINT:	NA
VAPOR PRESSURE:	10 mmHg
VAPOR DENSITY (AIR = 1):	>1
SPECIFIC GRAVITY (H2O = 1):	1.27–1.33
EVAPORATION RATE (n-BuAc=1):	<1
SOLUBILITY IN WATER:	100% (as sulphuric acid)
FLASH POINT:	Below room temperature (as hydrogen gas)
AUTO-IGNITION TEMPERATURE:	NA
LOWER EXPLOSIVE LIMIT (LEL):	4% (as hydrogen gas)
UPPER EXPLOSIVE LIMIT (UEL):	74% (as hydrogen gas)
PARTITION COEFFICIENT:	NA
VISCOSITY (poise @ 25°C):	NA
DECOMPOSITION TEMPERATURE:	NA

FLAMMABILITY/HMIS HAZARD CLASSIFICATIONS (US/CN/EU): As sulfuric acid
HEALTH: 3
FLAMMABILITY: 0
REACTIVITY: 2

10 - STABILITY AND REACTIVITY

STABILITY:	This product is stable under normal conditions at ambient temperature.
INCOMPATIBILITY (MATERIAL TO AVOID):	Strong bases, combustible organic materials, reducing agents, finely divided metals, strong oxidizers, and water.
HAZARDOUS DECOMPOSITION BY-PRODUCTS:	Thermal decomposition will produce sulfur dioxide, sulfur trioxide, carbon monoxide, sulphuric acid mist, and hydrogen.
HAZARDOUS POLYMERIZATION:	Will not occur
CONDITIONS TO AVOID:	Overcharging, sources of ignition

11 - TOXICOLOGICAL INFORMATION

ACUTE TOXICITY (Test Results Basis and Comments):

Sulphuric acid:	LD50, Rat: 2140 mg/kg LC50, Guinea pig: 510 mg/m^3
Lead:	No data available for elemental lead

SUBCHRONIC/CHRONIC TOXICITY (Test Results and Comments):

Repeated exposure to lead and lead compounds in the workplace may result in nervous system toxicity. Some toxicologists report that abnormal conduction velocities in person with blood lead levels of 50 µg/100 ml or higher. Heavy lead exposure may result in central nervous system damage, encephalopathy and damage to the blood-forming (hematopoietic) tissues.

Additional Information

- Very little chronic toxicity data available for elemental lead.
- Lead is listed by IARC as a 2B carcinogen: possible carcinogen in humans. Arsenic is listed by IARC, ACGIH, and NTP as a carcinogen, based on studies with high doses overlong periods of time. The other ingredients in this product, present at equal to

11 - TOXICOLOGICAL INFORMATION

or greater than 0.1% of the product, are not listed by OSHA, NTP, or IARC as suspect carcinogens.

- The 19th Amendment to EC Directive 67/548/EEC classified lead compounds, but not lead in metal form, as possibly toxic to reproduction. Risk phrase 61: May cause harm to the unborn child, applies to lead compounds, especially soluble forms.

12 - ECOLOGICAL INFORMATION

PERSISTENCE & DEGRADABILITY:	Lead is very persistent in soils and sediments. No data available on biodegradation.
BIO-ACCUMULATIVE POTENTIAL (Including Mobility):	Mobility of metallic lead between ecological compartments is low. Bioaccumulation of lead occurs in aquatic and terrestrial animals and plants, but very little bioaccumulation occurs through the food chain. Most studies have included lead compounds, not solid inorganic lead.

AQUATIC TOXICITY (Test Results & Comments):

Sulphuric acid:	24-hour LC50, fresh water fish (*Brachydanio rerio*): 82 mg/l 96-hour LOEC, fresh water fish (*Cyprinus carpio)*: 22 mg/l (lowest observable effect concentration)
Lead (metal):	No data available

Additional Information

- No known effects on stratospheric ozone depletion.
- Volatile organic compounds: 0% (by Volume)
- Water Endangering Class (WGK): NA

13 - DISPOSAL CONSIDERATIONS

Waste Classification:	Toxic and hazardous refuse. Toxic and hazardous residues.
Methods of disposal, Waste of residues and Contaminated packaging:	Dispose of in accordance with all applicable local and national regulations.

14 – TRANSPORT INFORMATION

Wet Batteries filled with Liquid Acid electrolyte

Road Transport (ADR/RID):

UN N° : UN2794
Classification: Class 8
Denomination: Wet Batteries filled with Liquid Acid electrolyte
Packing Group: Not assigned
Label : Corrosive
ADR/RID: Application of 598 special provision

Maritime Transport (IMDG Code)

UN N° : UN2794
Classification: Class 8
Denomination: Wet Batteries filled with Liquid Acid electrolyte
Packing Group: Not assigned
EmS-FIRE &SPILL: F-A, S-B
Label : Corrosive
Marine pollutant: No

Air Transport IATA-DGR)

UN N° : UN2794
Classification: Class 8
Denomination: Wet Batteries filled with Liquid Acid electrolyte
Packing Group: Not assigned
Label : Corrosive

15 - REGULATORY INFORMATION

Please thoroughly read and understand everything written in this Safety Data Sheet and use the utmost care and prudence when dealing with the product.

It is obligatory to place a sign on the pallet according to D.M. 16/2/93 (Italian Ministerial Decree) regarding Packaging, labelling and material safety data sheets for substances and preparations. The Corrosion symbol is absolutely necessary

15 - REGULATORY INFORMATION

C(corrosive)

In accordance with the EU Battery Directive and the respective national laws, the lead-acid batteries must be marked with a crossed bin with the chemical symbol for lead, as shown below, together with the recycling symbol ISO

16 – OTHER INFORMATION

The information contained herein relates only to the specific product and may not be valid if the product is used in combination with each other or in the works. Such information is to the best of our knowledge the making.
The information contained herein is based on the present state of knowledge. It characterizes the product with regard to the appropriate safety precautions.

Interpreting the warning:

H302- Harmful if swallowed
H332- Harmful if inhaled
H360- It may damage fertility and the fetus
H360Df- It can damage the unborn child. Suspected of damaging fertility
H373- May cause damage to organs in the event of prolonged or repeated exposure
H314- It causes severe skin burns and eye damage

The information above is provided in good faith based on existing knowledge and are no guarantee of safety in all conditions. It 'responsibility to the final customer to comply with all laws and regulations applicable for storage, maintenance and disposal of products.

MSDS INFORMATION:	
DATE OF ISSUE :	18.10.2008
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