

# MSDS

## MATERIAL SAFETY DATA SHEET

VALVE REGULATED LEAD-CRYSTAL BATTERY  
NON-SPILLABLE, AGM

(US, CN, EU version for International Trade)

### SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NAME** : Valve Regulated Sealed Lead Crystal Battery  
**OTHER PRODUCT NAMES** : Lead Crystal: Absorbed Electrolyte Sealed; Valve-Regulated Non-Spillable Battery; Battery Non-Spillable 49 CFR 173.159a  
**MANUFACTURER** : XXX Battery Manufacturing Co. Ltd.  
**DIVISION** : Spark Batteries.  
**ADDRESS** : Zhejiang Province, P. R. China

**NON-EMERGENCY HEALTH INFORMATION** : +86 572 3827978

**CHEMICAL FAMILY** : This product is an absorbed electrolyte type lead crystal storage battery.

**PRODUCT USE** : Industrial/Commercial electrical storage batteries.

This product has passed the vibration test, pressure differential test and leakage test at 55 °C according to Recommendations on the TRANSPORT OF DANGEROUS GOODS Model Regulations SPECIAL PROVISION 238. It is not restricted to IATA DGR according to special provision A67 and is not restricted to IMDG CODE according to special provision 238

#### Additional Information

This product may not be compatible with all environments, such as those containing liquid solvents or extreme temperature or pressure. Please request information if considering use under extreme conditions or use beyond current product labeling.

Health	Environmental	Physical
Acute Toxicity – Not listed (NL) Eye Corrosion Corrosive* Skin Corrosion Corrosive* 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

### SECTION 2: HAZARDS IDENTIFICATION

#### GHS Classification:

<b>Hazard Statements</b> Contact with internal components may cause irritation or burns. Irritating to eyes, respiratory system, and skin.	<b>Precautionary Statements</b> Keep out of reach of children. Keep containers tightly closed. Avoid heat, sparks, and open flame while charging batteries. Avoid contact with internal electrolyte.
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\*as diluted sulfuric acid: Valve Regulated Lead crystal Battery, Non-Spillable, AGM Battery.

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### Additional Information

May form explosive air/gas mixture during charging. Contact with internal components may cause irritation or burns. Irritating to eyes and skin. Prolonged inhalation or ingestion may result in serious damage to health

### POTENTIAL HEALTH EFFECTS:

**EYES:** Prolonged direct contact of internal electrolyte with eyes may cause burns or blindness.

**SKIN:** Prolonged direct contact of internal electrolyte with the skin may cause skin irritation or burns to sensitive skin.

**INGESTION:** Swallowing this product may cause burns to the esophagus and digestive tract and harmful lead poisoning. Lead ingestion may cause nausea, vomiting, weight loss, abdominal spasms, fatigue, and pain in the arms, legs and joints.

**INHALATION:** Prolonged inhalation can cause respiratory tract irritation and possible long-term effects.

**ACUTE HEALTH HAZARDS:** Repeated or prolonged contact may cause mild skin irritation.

### CHRONIC HEALTH HAZARDS:

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

### MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:

Respiratory and skin diseases may predispose the user to acute and chronic effects of sulfuric 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

### SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENTS (Chemical Names):	CAS No.:	% by Wt:	EC No.:
Lead, inorganic	7439-92-1	60–75 (average: 67)	231-100-4
Lead dioxide	1309-60-0	25-30% (average: 27)	215-174-5
Sulfuric acid	7664-93-9	1.75–3% (average: 2)	231-639-5
Water	7732-18-5	2.8-4.5% (average 3)	231-791-2
Silicone dioxide	7631-86-9	1.4-3% (average 2)	231-545-4
Chemical additives	/NA	0.07-0.165%(average: <0.1)	/NA
ABS Shell	9003-56-9	10-24% (average: 15)	/NA

NA: Not applicable; ND: Not determined

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### Additional Information

These ingredients reflect components of the finished product related to performance of the product as distributed into commerce.

### SECTION 4: FIRST AID MEASURES

**EYE CONTACT:** Flush eyes with large amounts of water for at least 10-15 minutes. Seek immediate medical attention if eyes have been exposed directly to acidic electrolyte.

**SKIN CONTACT:** Flush affected area(s) with large amounts of water using a deluge emergency shower, if available, shower for at least 10-15 minutes. Remove contaminated clothing. If symptoms persist, seek medical attention.

**INGESTION:** If swallowed, give large amounts of water. Do NOT induce vomiting or aspiration into the lungs may occur and can cause permanent injury or death.

**INHALATION:** If breathing difficulties develop, remove person to fresh air. If symptoms persist, seek medical attention

### SECTION 5: FIRE-FIGHTING MEASURES

Dry chemical, carbon dioxide, water, foam. Do not use water on live electrical circuits.

#### SPECIAL FIREFIGHTING PROCEDURES & PROTECTIVE EQUIPMENT:

Use appropriate media for surrounding fire. Do not use carbon dioxide directly on cells. Avoid breathing vapors. Use full protective equipment (bunker gear) and self-contained breathing apparatus.

#### UNUSUAL FIRE AND EXPLOSION HAZARDS:

Batteries evolve flammable hydrogen gas during charging and may increase fire risk in poorly ventilated areas near sparks, excessive heat or open flames.

#### SPECIFIC HAZARDS IN CASE OF FIRE:

Thermal shock may cause battery case to crack open. Containers may explode when heated.

### Additional Information

Firefighting water runoff and dilution water may be toxic and may cause environmental impact.

### SECTION 6: ACCIDENTAL RELEASE MEASURES

#### PERSONAL PRECAUTIONS:

Avoid Contact with Skin. Neutralize any spilled electrolyte with neutralizing agents, such as soda ash, sodium bicarbonate, or very dilute sodium hydroxide solutions.

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### ENVIRONMENTAL PRECAUTIONS:

Prevent spilled material from entering sewers and waterways.

### SPILL CONTAINMENT & CLEANUP METHODS/MATERIALS:

Add neutralizer/absorbent to spill area. Sweep or shovel spilled material and absorbent and place in approved container. Dispose of any non-recyclable materials in accordance with local, state, provincial or federal regulations

### Additional Information

**Lead Crystal batteries and their plastic cases are recyclable.** Contact your Spark Batteries or authorized distributors for recycling information.

## SECTION 7: HANDLING AND STORAGE

### PRECAUTIONS FOR SAFE HANDLING AND STORAGE:

- ? Keep containers tightly closed when not in use.
- ? If battery case is broken, avoid contact with internal components.
- ? Do not handle near heat, sparks, or open flames.
- ? Protect containers from physical damage to avoid leaks and spills.
- ? Place cardboard between layers of stacked batteries to avoid damage and short circuits.
- ? Do not allow conductive material to touch the battery terminals. A dangerous short-circuit may occur and cause battery failure or fire.

**OTHER PRECAUTIONS** (e.g.; Incompatibilities): Keep away from combustible materials, organic chemicals, reducing substances, metals, strong oxidizers and water.

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### ENGINEERING CONTROLS/SYSTEM DESIGN INFORMATION:

Charge in ventilated area.

### VENTILATION:

General ventilation is acceptable.

### RESPIRATORY PROTECTION:

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

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### EYE PROTECTION:

Wear protective glasses with side shields or goggles.

### SKIN PROTECTION:

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

### PROTECTIVE CLOTHING OR EQUIPMENT:

None required under normal-use conditions for absorbed electrolyte-type batteries. Wash hands after handling.

### EXPOSURE GUIDELINES & LIMITS:

OSHA Permissible Exposure Limit (PEL/TWA)	Lead, inorganic (as Pb) 0.05 mg/m <sup>3</sup> Sulfuric acid 1.00 mg/m <sup>3</sup>
ACGIH 2007 Threshold Limit Value (TLV)	Lead, inorganic (as Pb) 0.05 mg/m <sup>3</sup> Sulfuric acid 0.20 mg/m <sup>3</sup>
Quebec Permissible Exposure Value (PEV)	Lead, inorganic (as Pb) <b>TWA</b> 0.15 mg/m <sup>3</sup> Sulfuric acid <b>STEV</b> 1.00 mg/m <sup>3</sup>
Ontario Occupational Exposure Level (OEL)	Lead (designated substance) <b>TWAEV</b> 0.10 mg/m <sup>3</sup> Sulfuric acid <b>STEV</b> 1.00 mg/m <sup>3</sup>
Netherlands Maximaal Aanvaarde Concentratie (MAC)	Lead, inorganic (as Pb) 0.15 mg/m <sup>3</sup> Sulfuric acid 1.00 mg/m <sup>3</sup>
Germany Maximal Arbeitsplatzkonzentrationen (MAK)	Lead, inorganic (as Pb) <b>TWA</b> 0.10 mg/m <sup>3</sup> Sulfuric acid <b>STEL</b> 1.00 mg/m <sup>3</sup>
UK Exposure Standard (OES)	Lead 0.15 mg/m <sup>3</sup>

TWA: 8-Hour Time-Weighted Average; STE: Short-Term Exposure; mg/m<sup>3</sup>: milligrams per cubic meter of air;  
NE: Not Established; STEV: Short-term exposure value; TWAEV: Time-weighted average exposure value;  
STEL: Short-term exposure limit

### Additional Information

Batteries are housed in ABS 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<sup>3</sup> as total dust or 5 mg/m<sup>3</sup> as respirable dust. May be required to meet Domestic Requirements for a Specific Destination(s).

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

**APPEARANCE:** Industrial/commercial lead crystal battery, Black ABS plastic shell

**ODOR:** Odorless

**ODOR THRESHOLD:** NA

**PHYSICAL STATE:** Diluted Sulfuric Acid, Crystallized/ Lead, solid

**pH:** 1-2

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**BOILING POINT:** 300°C

**MELTING POINT:** NA

**FREEZING POINT:** NA

**VAPOUR PRESSURE:** NA

**VAPOUR DENSITY (AIR = 1):** NA

**SPECIFIC GRAVITY (H<sub>2</sub>O = 1):** 1.27

**EVAPORATION RATE (n-BuAc=1):** NA

**SOLUBILITY IN WATER:** 100% (as diluted sulfuric 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):** Not Available

**DECOMPOSITION TEMPERATURE:** Not Available

**FLAMMABILITY/HMIS HAZARD CLASSIFICATIONS (US/CN/EU):** As diluted sulfuric acid

HEALTH: 3 FLAMMABILITY: 0 REACTIVITY: 2

### SECTION 10: STABILITY AND REACTIVITY

#### INCOMPATIBILITY (MATERIAL TO AVOID):

This product is stable under normal conditions at ambient temperature up to 65 °C.

Strong bases, combustible organic materials, reducing agents, finely divided metals and strong oxidizers.

#### HAZARDOUS DECOMPOSITION OR BY PRODUCTS:

Thermal decomposition will produce sulfur dioxide, sulfur trioxide, carbon monoxide, sulfuric acid mist, and hydrogen.

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### HAZARDOUS POLYMERIZATION:

Will not occur

### CONDITIONS TO AVOID:

Continuous overcharging and sources of ignition

## SECTION 11: TOXICOLOGICAL INFORMATION

### ACUTE TOXICITY (Test Results Basis and Comments):

Sulfuric acid : LD50, Rat: 2140 mg/kg LC50, Guinea pig: 510 mg/m3

Lead : No data available for elemental lead

The other ingredients in this product, present at equal to 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.

## SECTION 12: ECOLOGICAL INFORMATION

### PERSISTENCE & DEGRADABILITY:

Lead is very persistent in soils and sediments. No data available on biodegradation.

### BIOACCUMULATIVE 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):

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

## SECTION 13: DISPOSAL CONSIDERATIONS

### WASTE DISPOSAL

Lead crystal batteries are recyclable when sent to a secondary lead smelter. Following local,

### METHOD:

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State/Provincial, and Federal/National regulations applicable to end-of-life characteristics will be the responsibility of the end-user.

#### HAZARDOUS WASTE

**CLASS/CODE:** US - Not applicable to finished product as manufactured for distribution into commerce.

CN – Not applicable to finished product as manufactured for distribution into commerce.

EWC – Not applicable to finished product as manufactured for distribution into commerce.

Not Included – Recycle or dispose as allowed by local jurisdiction for the end-of-life characteristics as-disposed.

#### SECTION 14: TRANSPORT INFORMATION

**GROUND – US-DOT/CAN-TDG/EU-ADR/APEC-ADR:**

**AIRCRAFT – ICAO-IATA:** Not regulated as a Hazardous Material, transported as normal goods

**VESSEL – IMO-IMDG:** Not regulated as a Hazardous Material, transported as normal goods

#### Additional Information

Transport requires proper packaging and paperwork, including the Nature and Quantity of goods, per applicable origin/destination/customs points as-shipped. Origin/destination/customs points as-shipped.

Each battery and the outer packaging must be plainly and durably marked “Non-spillable” or “Non-spillable Battery”

Non-Spillable Battery complies with the provisions listed in 49 CFR 173.159a; therefore, must not be marked with an identification number or hazardous label and is not subject to hazardous shipping paper requirements.

#### SECTION 15: REGULATORY INFORMATION

All components are listed on the TSCA; EINECS/ELINCS; and DSL, unless noted otherwise below.

**U.S. FEDERAL REGULATIONS: TSCA Section 8b – Inventory Status:** All chemicals comprising this product are either exempt or listed on the TSCA Inventory. **TSCA Section 12b – Export Notification:** If the finished product contains chemicals subject to TSCA Section 12b export notification, they are listed below:

#### Chemical CAS #

None NA

#### **CERCLA (COMPREHENSIVE RESPONSE COMPENSATION, AND LIABILITY ACT)**

Chemicals present in the product which could require reporting under the statute:



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### **Chemical CAS #**

Lead 7439-92-1 Sulfuric acid 7664-93-9

### **SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)**

The finished product contains chemicals subject to the reporting requirements of Section 313 of SARA Title III.

Chemical	CAS #	% wt
Lead	7439-92-1	70
Diluted Sulfuric acid	7664-93-9	3

**CERCLA SECTION 311/312 HAZARD CATEGORIES:** Note that the finished product is exempt from these regulations, but lead and sulfuric acid above the thresholds are reportable on Tier II reports.

Fire Hazard No Pressure Hazard No

Reactivity Hazard No

Immediate Hazard Yes (Internal acid gel is Corrosive)

Delayed Hazard No

Sulfuric Acid is regulated as an Extremely Hazardous Substance

### **STATE REGULATIONS (US):**

#### **California Proposition 65**

The following chemicals identified to exist in the finished product as distributed into commerce are known to the State of California to cause cancer, birth defects, or other reproductive harm:

#### **Chemical CAS # % Wt**

Strong inorganic acid mists including sulfuric NA 10 acid Lead 7439-92-1 67

#### **California Consumer Product Volatile Organic Compound Emissions**

This Product is not regulated as a Consumer Product for purposes of CARB/OTC VOC Regulations, as-sold for the intended purpose and into the industrial/Commercial supply chain

### **INTERNATIONAL REGULATIONS (Non-US):**

#### **Canadian Domestic Substance List (DSL)**

All ingredients remaining in the finished product as distributed into commerce are included on the Domestic Substances List.

#### **WHMIS Classifications**

Class E: Corrosive materials present at greater than 1% This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the Controlled Products Regulations

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### NPRI and Ontario Regulation 127/01

This product contains the following chemicals subject to the reporting requirements of Canada NPRI +/-or Ont. Reg. 127/01

Chemical	CAS #	% Wt
Lead	7439-92-1	70
Diluted Sulfuric acid	7664-93-9	3

### European Inventory of Existing Commercial Chemical Substances (EINECS)

All ingredients remaining in the finished product as distributed into commerce are exempt from, or included on the European Inventory of Existing Commercial Chemical Substances

**European Communities (EC) Hazard Classification according to directives 67/548/EEC and 1999/45/EC.**

**R-Phrases S-Phrases** 35, 36, 38 1/2, 26, 30, 45

### Additional Information

This product may be subject to Restriction of Hazardous Substances (RoHS) regulations in Europe and China, or may be regulated under additional regulations and laws not identified above, such as for uses other than described or as-designed/as intended by the manufacturer, or for distribution into specific domestic destinations.

## SECTION 16: OTHER INFORMATION

### OTHER INFORMATION:

Distribution into Quebec to follow Canadian Controlled Product Regulations (CPR) 24(1) and 24(2).

Distribution into the EU to follow applicable Directives to the Use, Import/Export of the product as-sold

### SOURCES OF INFORMATION:

International Agency for Research on Cancer (1987), *IARC Monographs on the Evaluation of Carcinogenic Risks to Humans: Overall Evaluations of Carcinogenicity: An updating of IARC Monographs Volumes 1-42, Supplement 7*, Lyon, France. Ontario Ministry of Labour Regulation 654/86. Regulations Respecting Exposure to Chemical or Biological Agents. RTECS – Registry of Toxic Effects of Chemical Substances, National institute for Occupational Safety and Health

### MSDS/SDS PREPARATION INFORMATION:

DATE OF ISSUE: **10 January 2012** SUPERCEDES: **20 July 2011**

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### **DISCLAIMER:**

This Material Safety Data Sheet is based upon information and sources available at the time of preparation or revision date. The information in the MSDS was obtained from sources which we believe are reliable, but are beyond our direct supervision or control. We make no Warranty of Merchantability, Fitness for any particular purpose, or any other Warranty, Expressed or Implied, with respect to such information, and we assume no liability resulting from its use. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use of, or disposal of the product. It is the obligation of each user of the product to determine the suitability of this product and comply with the requirements of all applicable laws regarding use and disposal of this product. For additional information concerning Spark Batteries products or questions concerning the content of this MSDS please contact your Spark Batteries International representative

**END**