



## Material Safety Data Sheet

### 1. Product & Company Identification

<b>Product:</b>	Valve Regulated Lead Acid Battery
<b>Manufacturer:</b>	Conrad Electronic SE
<b>Address:</b>	Klaus-Conrad-Str. 1, D-92240 Hirschau
<b>Telephone:</b>	+49 (0) 9604 / 40 - 8988
<b>Date of issue:</b>	20.05.2017

### 2. Composition/Information on Ingredients

C.A.S.	PRINCIPAL HAZARDOUS COMPONENT(S) (chemical & common name(s))	Hazard Category	% Weight	ACGIH TLV - mg/m <sup>3</sup>	OSHA PEL/TWA - mg/m <sup>3</sup>
7439-92-1	Lead/Lead Oxide (Litharge)/Lead Sulfate	Acute-Chronic	60-70	0.05 mg/m <sup>3</sup>	0.05 mg/m <sup>3</sup>
7440-70-2	Calcium (lead calcium alloy)	Reactive	<0.15	Not Established	Not Established
7440-31-5	Tin	Chronic	<1	2	2
7440-38-2	Arsenic (inorganic)	Acute-Chronic	<1	0.01	0.01
7664-93-9	Sulfuric Acid (Battery Electrolyte)	Reactive-Oxidizer, Acute -Chronic	10-15	1.0	1.0
Not applicable	Inert Ingredients	Not applicable	<6	Not applicable	Not applicable

**Note:**

PEL's for Individual states may differ from OSHA's PEL's. Check with local authorities for the applicable state PEL's.

OSHA – Occupational Safety and Health Administration; ACGIH – American Conference of Governmental Industrial Hygienists; NIOSH – National Institute for Occupational Safety and Health.

COMMON NAME: (Used on label) Valve Regulated Lead-acid Battery

(Trade Name & Synonyms) VRB, VRLA, SLAB, Recombinant lead acid: RG, GPL, AGM, PVX or FD Series, D8565 series

Chemical Family: Toxic and Corrosive Material Mixture

Chemical Formula: Lead/Acid

Name: Battery, Storage, Lead Acid, Valve Regulated



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### 3. Hazards Identification

#### Signs and Symptoms of Exposure

##### 1. Acute Hazards

Do not open battery. Avoid contact with internal components. Internal components include lead and absorbed electrolyte.

Electrolyte - Electrolyte is corrosive and contact may cause skin irritation and chemical burns. Electrolyte causes severe irritation and burns of eyes, nose and throat. Ingestion can cause severe burns and vomiting.

Lead - Direct skin or eye contact may cause local irritation. Inhalation or ingestion of lead dust or fumes may result in headache, nausea, vomiting, abdominal spasms, fatigue, sleep disturbances, weight loss, anemia and leg, arm and joint pain.

##### 2. Subchronic and Chronic Health Effects

Electrolyte - Repeated contact with electrolyte causes irritation and skin burns. Repeated exposure to mist may cause erosion of teeth, chronic eye irritation and/or chronic inflammation of the nose, throat and lungs.

Lead - Prolonged exposure may cause central nervous system damage, gastrointestinal disturbances, anemia, irritability, metallic taste, insomnia, wrist-drop, kidney dysfunction and reproductive system disturbances. Pregnant women should be protected from excessive exposure to prevent lead from crossing the placental barrier and causing infant neurological disorders.

California Proposition 65 Warning: Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm, and during charging, strong inorganic acid mists containing sulfuric acid are evolved, a chemical Known to the State of California to cause cancer. Wash hands after handling.

#### Medical Conditions Generally Aggravated by Exposure

Contact with internal components if battery is broken or opened, then persons with the following medical conditions must take precautions: pulmonary edema, bronchitis, emphysema, dental erosion and tracheobronchitis.

#### Routes of Entry

Inhalation - YES

Ingestion - YES

Eye Contact - YES

#### Chemical(s) Listed as Carcinogen or potential Carcinogen

Proposition 65 - YES

National Toxicology Program - YES

I.A.R.C. Monographs - YES

O.S.H.A. - NO



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### 4. First Aid Measures

#### Emergency and First Aid Procedures

Contact with internal components if battery is opened/broken.

##### 1. Inhalation

Remove to fresh air and provide medical oxygen/CPR if needed. Obtain medical attention.

##### 2. Eyes

Immediately flush with water for at least 15 minutes, hold eyelids open. Obtain medical attention.

##### 3. Skin

Flush contacted area with large amounts of water for at least 15 minutes. Remove contaminated clothing and obtain medical attention if necessary.

##### 4. Ingestion

Do not induce vomiting. If conscious drink large amounts of water/milk. Obtain medical attention. Never give anything by mouth to an unconscious person.

### 5. Firefighting Measures

Flash Point: Not Applicable

Flammable Limits in Air % by Volume: Not Applicable

Extinguishing Media: Class ABC, CO<sub>2</sub>, Halon

Auto-Ignition Temperature: 675 °F (polypropylene)

#### Special Fire Fighting Procedures

Lead/acid batteries do not burn, or burn with difficulty. Do not use water on fires where molten metal is present. Extinguish fire with agent suitable for surrounding combustible materials. Cool exterior of battery if exposed to fire to prevent rupture. The acid mist and vapors generated by heat or fire are corrosive. Use NIOSH approved self-contained breathing apparatus (SCBA) and full protective equipment operated in positive pressure mode.

#### Unusual Fire and Explosion Hazards

Sulfuric acid vapors are generated upon overcharge and polypropylene case failure. Use adequate ventilation. Avoid open flames/sparks/other sources of ignition near battery.



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### 6. Accidental Release Measures

#### Procedures for Cleanup:

Avoid contact with any spilled material. Contain spill, isolate hazard area, and deny entry. Limit site access to emergency responders. Neutralize with sodium bicarbonate, soda ash, lime or other neutralizing agent. Place battery in suitable container for disposal. Dispose of contaminated material in accordance with applicable local, state and federal regulations. Sodium bicarbonate, soda ash, sand, lime or other neutralizing agent should be kept on-site for spill remediation.

#### Personal Precautions:

Acid resistant aprons, boots and protective clothing. ANSI approved safety glasses with side shields/face shield recommended.

#### Environmental Precautions:

Lead and its compounds and sulfuric acid can pose a severe threat to the environment. Contamination of water, soil and air should be prevented.

### 7. Handling And Storage

#### Precautions to be Taken in Handling and Storage

Store away from reactive materials, open flames and sources of ignition as defined in Section 10 – Stability and Reactivity Data. Store batteries in cool, dry, well-ventilated areas. Batteries should be stored under roof for protection against adverse weather conditions. Avoid damage to containers.

#### Other Precautions

GOOD PERSONAL HYGIENE AND WORK PRACTICES ARE MANDATORY. Refrain from eating, drinking or smoking in work areas. Thoroughly wash hands, face, neck and arms, before eating, drinking and smoking. Work clothes and equipment should remain in designated lead contaminated areas, and never taken home or laundered with personal clothing. Wash soiled clothing, work clothes and equipment before reuse.



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### 8. Exposure Controls And Personal Protection

#### Respiratory Protection (Specify Type)

None required under normal conditions. Acid/gas NIOSH approved respirator is required when the PEL is exceeded or employee experiences respiratory irritation.

#### Ventilation

Store and handle in dry ventilated area.

#### Local Exhaust

When PEL is exceeded.

#### Mechanical (General)

Not Applicable

#### Protective Gloves

Wear rubber or plastic acid resistant gloves.

#### Eye Protection

ANSI approved safety glasses with side shields/face shield recommended

#### Other Protective Clothing or Equipment

Safety shower and eyewash.

### 9. Physical And Chemical Properties

Boiling Point:	Not Applicable
Vapor Pressure:	Not Applicable
Specific Gravity:	1.250-1.320 pH <2
Melting Point:	>320°F (polypropylene)
Percent Volatile By Volume:	Not Applicable
Vapor Density:	Hydrogen: 0.069 (Air =1) Electrolyte: 3.4 @ STP (Air = 1)
Evaporation Rate:	Not applicable
Solubility in water:	100% soluble (electrolyte)
Reactivity in Water:	Electrolyte – Water Reactive (1)
Appearance and Odor:	Battery: Co-polymer polypropylene, solid; may be contained within an outer casing of aluminum or steel. Case has metal terminals.
Lead:	Gray, metallic, solid; brown/grey oxide
Electrolyte:	Odorless, liquid absorbed in glass mat material. No apparent odor.



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### 10. Stability And Reactivity

**Stability:**

Stable

**Conditions to Avoid:**

Avoid overcharging and smoking, or sparks near battery surface. High temperatures-cases decompose at >320°F.

**Incompatibility (Materials to Avoid)**

Sparks, open flames, keep battery away from strong oxidizers.

**Hazardous Decomposition Products**

Combustion can produce carbon dioxide and carbon monoxide.

**Hazardous Polymerization**

Hazardous Polymerization has not been reported.

### 11. Toxicological Information

**GENERAL:**

The primary routes of exposure to lead are ingestion or inhalation of dust and fumes.

**ACUTE:**

INHALATION/INGESTION: Exposure to lead and its compounds may cause headache, nausea, vomiting, abdominal spasms, fatigue, sleep disturbances, weight loss, anemia, and pain in the legs, arms and joints. Kidney damage, as well as anemia, can occur from acute exposure.

**CHRONIC:**

INHALATION/INGESTION: Prolonged exposure to lead and its compounds may produce many of the symptoms of short-term exposure and may also cause central nervous system damage, gastrointestinal disturbances, anemia, and wrist drop. Symptoms of central nervous system damage include fatigue, headaches, tremors, hypertension, hallucination, convulsions and delirium. Kidney dysfunction and possible injury has also been associated with chronic lead poisoning. Chronic over-exposure to lead has been implicated as a causative agent for the impairment of male and female reproductive capacity, but there is at present, no substantiation of the implication. Pregnant women should be protected from excessive exposure. Lead can cross the placental barrier and unborn children may suffer neurological damage or developmental problems due to excessive lead exposure in pregnant women.

### 12. Ecological Information

In most surface water and groundwater, lead forms compounds with anions such as hydroxides, carbonates, sulfates, and phosphates, and precipitates out of the water column. Lead may occur as sorbed ions or surface coatings on sediment mineral particles or may be carried in colloidal particles in surface water. Most lead is strongly retained in soil, resulting in little mobility. Lead may be immobilized by ion exchange with hydrous oxides or clays or by chelation with humic or fulvic acids in the soil. Lead (dissolved phase) is bioaccumulated by plants and animals, both aquatic and terrestrial.



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### 13. Disposal Considerations

Lead-acid batteries are completely recyclable. Return whole scrap batteries to distributor, manufacturer or lead smelter for recycling. For information on returning batteries to us, contact us. For neutralized spills, place residue in acid-resistant containers with sorbent material, sand or earth and dispose of in accordance with local, state and federal regulations for acid and lead compounds. Contact local and/or state environmental officials regarding disposal information.

### 14. Transport Information

All AGM, CP, FM,CL series and CTA series are valve regulated lead acid (VRLA) batteries.

Our VRLA batteries have passed vibration, pressure differential and free flowing acid tests under CFR 49 173.159(d) and the substance is not restricted to IMO IMDG code according to special provision 238. They are protected from short circuits and labeled "Non-Spillable." Our VRLA batteries are exempt from DOT Hazardous Material Regulations and IMDG Dangerous Goods Regulations.

Note: The shipper has the option of shipping the batteries Hazmat regulated under UN2800. Additional labeling and paperwork would be required. See CFR 49 and IATA Dangerous Goods Regulations for more information.

U.S. DOT PROPER SHIPPING NAME: Batteries, wet, non-spillable

U.S. DOT HAZARD CLASS: 8

U.S. DOT ID NUMBER: UN2800

U.S. DOT PACKING GROUP: III

**OR Excepted from the requirements because batteries have passed the Vibration and Pressure Differential performance tests, and ruptured case test for Nonspillable designation.**

U.S. DOT LABEL: CORROSIVE

IMO PROPER SHIPPING NAME: Batteries, wet, non-spillable Ems # - F-A, S-B

IMO U.N. CLASS: 8

IMO U.N. NUMBER: UN 2800

IMO LABEL: CORROSIVE

IMO VESSEL STOWAGE: A

IATA PROPER SHIPPING NAME: Batteries, wet, non-spillable

IATA U.N. CLASS: 8

**OR Excepted from the requirements because batteries have passed the vibration and pressure differential performance tests, and ruptured case test for nonspillable designation. And, when packaged for transport, the terminals are protected from short circuit.**

IATA U.N. NUMBER: UN 2800

IATA LABEL: CORROSIVE

ERG Code – 8L



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### 15. Regulatory Information

U.S. HAZARDOUS UNDER HAZARD COMMUNICATION STANDARD: LEAD - YES  
ARSENIC – YES  
SULFURIC ACID – YES

INGREDIENTS LISTED ON TSCA INVENTORY: YES

CERCLA SECTION 304 HAZARDOUS SUBSTANCES: LEAD – YES RQ: N/A\*  
ARSENIC – YES RQ: 1 POUND  
SULFURIC ACID – YES RQ: 1000 POUNDS

\* RQ: REPORTING NOT REQUIRED WHEN DIAMETER OF THE PIECES OF SOLID METAL RELEASED IS EQUAL TO OR EXCEEDS 100 µm (micrometers).

EPCRA SECTION 302 EXTREMELY HAZARDOUS SUBSTANCE: SULFURIC ACID – YES

EPCRA SECTION 313 TOXIC RELEASE INVENTORY: LEAD – CAS NO: 7439-92-1  
ARSENIC – CAS NO: 7440-38-2  
SULFURIC ACID – CAS NO: 7664-93-9