Safety Data Sheet

Issuing Date: Nov. 1st, 2014 **Revision Date: March 2, 2015** **Revision Number 0**

1. Identification

Product Identifier	Valve Regulated Maintenance Free Lead-Acid Batteries: DJW, DJM, DJ, FT, LP, LPC, LPL, LPF, LPX, LPS, XP, XPE, LCP, PLH, PLC, PLX Series
Other Means Of Identification	Valve Regulated Maintenance Free Lead-Acid Battery, Sealed Lead Acid Battery
Recommended Use	Lead acid battery. Lead Acid (Non-spillable) Battery
Supplier Name and Address	Leoch Battery Corp 19751 Descartes Unit A Foothill Ranch, CA 92610
Emergency phone Number	Phone:800-424-9300 Fax:949-588-5966 Contact: Paul Yu

2. Hazard(s) identification

Emergency Overview

NOTE: Under normal conditions of battery use, internal components will not present a health hazard. The following information is provided for battery acid and lead exposure that may occur during battery production or container breakage or under extreme heat conditions such as fire.

In case of rupture:

Corrosive

The product causes burns of eyes, skin and mucous membranes

Appearance: No information available. **Physical State:** Solid. **Odor:** Odorless

- **Classification of the chemical**

Chemical Name	CAS-No	Weight %
Lead	7439-92-1	65～75
Sulfuric acid	7664-93-9	10～20
ABS resin	9003-56-9	～5
Tin	7440-31-5	＜0.5
Calcium	7440-70-2	＜0.1

- **hazard statements**

Code (1)	Prevention precautionary statements (2)	Hazard class (3)	Hazard category (4)	Conditions for use (5)
P305 + P351 + P338	**IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.**	Skin corrosion (chapter 3.2)	1A, 1B, 1C	
		Severe eye damage (chapter 3.3)	1	
		Eye irritation (chapter 3.3)	2A, 2B	
P303 + P361 + P353	**IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.**	Flammable liquids (chapter 2.6)	1, 2, 3	
		Skin corrosion (chapter 3.2)	1A, 1B, 1C	
P302 +P352	**IF ON SKIN: Wash with plenty of water**	Acute toxicity, dermal (chapter 3.1)	1, 2, 3, 4	Leoch may specify a cleansing agent if appropriate, or may recommend an alternative agent in exceptional cases if water is clearly inappropriate.
		Skin irritation (chapter 3.2)	2	
		Skin sensitization (chapter 3.4)	1, 1A, 1B	
P332 +P313	**If skin irritation occurs: Get medical advice/attention.**	Skin irritation (chapter 3.2)	2, 3	*– may be omitted when P333+P313 appears on the label.*
P333 +P313	**If skin irritation or rash occurs: Get medical advice/attention.**	Skin sensitization (chapter 3.4)	1, 1A, 1B	
P304 +P340	**IF INHALED: Remove person to fresh air and keep comfortable for breathing.**	Acute toxicity, inhalation (chapter 3.1)	1, 2, 3, 4	
		Skin corrosion (chapter 3.2)	1A, 1B, 1C	
		Respiratory sensitization (chapter 3.4)	1, 1A, 1B	
		Specific target organ toxicity, single exposure;	3	
		respiratory tract irritation (chapter 3.8)		
		Specific target organ toxicity, single exposure;	3	
		narcotic effects (chapter 3.8)		
P301 + P334 +P331	**IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.**	Skin corrosion (chapter 3.2)	1A, 1B, 1C	
P301 +P312	**IF SWALLOWED: Call a POISON CENTER/doctor/…/if you feel unwell.**	Acute toxicity, oral (chapter 3.1)	4	Leoch specify the appropriate source of emergency medical advice.
P306 + P360	**IF ON CLOTHING: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes.**	Oxidizing liquids (chapter 2.13)	1	
		Oxidizing solids (chapter 2.14)	1	

3. COMPOSITION/INFORMATION ON INGREDIENTS

- **Physical Data**

Battery is considered as sealed non-spillable one. Under normal operating conditions, the materials sealed inside should not be hazardous to people's health. Only when these materials exposed during production or under case broken condition or being extremely heated (fired), they may be hazardous to people's health.

COMPONENTS	DENSITY	MELTING/BOILING (M/B) POINT	SOLUBILITY (H2O)	ODOR	APPEARANCE
Lead	11.34	327.46 ℃, 621.43 ℉ (M)	None	None	Sliver-Gray Metal
Lead Sulfate	6.2	1170 ℃, 2138 ℉ (B)	40 mg/l (15 ℃, 59 ℉)	None	White crystals or powder
Lead Dioxide	9.4	290 ℃, 554 ℉ (M)	None	None	Dark brown Powder
Sulfuric Acid	~1.3	95 ℃ -115 ℃ , 203 ℉ - 240 ℉ (B)	100%	Sharp, penetrating, pungent odor	Clear Colorless Liquid
Fiberglass Separator	--	--	Slight	None	White Fibrous
Case Material: Acrylonitrile Butadine Styrene (ABS)	--	--	None	None	Solid

- **Chemical Information**

COMPONENTS	Approx % by Wt.	CAS Number	Air Exposure Limits (μg/m3)			LD50 ORAL (mg/kg)
			ACGIH TLV	OSHA	NIOSH	500
Inorganic Lead/Lead Compounds	65%-75%	7439-92-1	150	50	10	500
Tin	<0.5%	7440-31-5	2000	2000	--	--
Calcium	<0.1%	7440-70-2	--	--	--	--
Dilute Sulfuric Acid	10%~20%	7664-93-9	1000	1000	1000	2.14
Fiberglass Separator	~ 5%	--	--	--	--	--

4. First-aid measures

Case Material: Acrylonitrile Butadine Styrene (ABS) or Polypropylene(PP)	~5%	9003-56-9 9003-07-0	--	--	--	--

- **Routes of Entry:**

Sulfuric Acid: Harmful by all routes of entry.
Lead Compounds: Hazardous Exposure can occur only when product is heated, oxidized, or otherwise processed or damaged
to create dust, vapor or fume.

General Advice	First aid is upon rupture of sealed battery.
Eye Contact	Sulfuric Acid: Immediate medical attention is required. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Do not rub affected area. consult physician.
Skin Contact	Sulfuric Acid: Immediate medical attention is required. Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes.
	Lead: Wash immediately with soap and water.
Inhalation	Sulfuric Acid: Move to fresh air. Call a physician or Poison Control Center immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.
Ingestion	Sulfuric Acid: Immediate medical attention is required. Call a physician or Poison Control Center immediately. Do NOT induce vomiting. Drink plenty of water. Never give anything by mouth to an unconscious person. Remove from exposure, lie down.
	Lead Compounds: May cause abdominal pain, nausea, vomiting, diarrhea, and severe cramping. Acute ingestion should be treated by a physician.
Notes to Physician	Treat symptomatically.
Protection of First-aid	Use personal protective equipment. Avoid contact with skin, eyes and clothing.

5. FIRE-FIGHTING MEASURES

Flammable Properties	Not flammable.
Flash Point	Not determined.
Suitable Extinguishing Media	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Uniform Fire Code	Corrosive: Acid-Liquid
Hazardous Combustion Products	Hazardous metal fumes and oxides.
Explosion Data Sensitivity to Mechanical Impact	No.
Sensitivity to Static Discharge	No.
Specific Hazards Arising from the Chemical	The product causes burns of eyes, skin and mucous membranes. Thermal decomposition can lead to release of irritating gases and vapors. In the event of fire and/or explosion do not breathe fumes.

Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA **Health Hazard** 3 **Flammability 0** **Stability 2** **Physical and Chemical Hazards**

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions	Use personal protective equipment. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Do not get in eyes, on skin, or on clothing.
Environmental Precautions	Refer to protective measures listed in Sections 7 and 8.
Methods for Containment	Prevent further leakage or spillage if safe to do so.
Methods for Cleaning Up	In case of rupture: Use personal protective equipment. Dam up. Soak up with inert absorbent material. Take up mechanically and collect in suitable container for disposal. Clean contaminated surface thoroughly.
Other Information	Refer to protective measures listed in Sections 7 and 8.

7. HANDLING AND STORAGE

Precautions to be Taken in Handling and Storage	Keep away from flames during and immediately after charging. Combustion or overcharging may create or liberate toxic and hazardous gases and liquids including hydrogen, sulfuric acid mist, sulfur dioxide, sulfur trioxide, stibine, arsine and sulfuric acid. Store batteries in cool, dry, well-ventilated area. Do not short circuit battery terminals, or remove vent caps during storage or recharging. Protect battery from physical damage.
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 or smoking. Launder soiled clothing before reuse. Emptied batteries contain hazardous sulfuric acid residue.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

- **Exposure Guidelines**

Chemical Name	CAS Number	ACGIH TLV	OSHA PEL	NIOSH IDLH
Lead	7439-92-1	TWA:0.05 mg/m3	TWA: 50 µg/m3 Action Level: 30 µg/m3 Poison, See 29 CFR 1910.1025	IDLH: 100 mg/m3 TWA: 0.050 mg/m3
Sulfuric acid	7664-93-9	TWA:0.2 mg/m3 thoracic fraction	TWA: 1 mg/m3 (vacated) TWA: 1 mg/m3	IDLH: 15 mg/m3 TWA: 1 mg/m3
Tin	7440-31-5	TWA:2 mg/m3	TWA: 2 mg/m3 Sn except oxides (vacated) TWA: 2 mg/m3	IDLH: 100 mg/m3 TWA: 2 mg/m3

ACGIH TLV: American Conference of Governmental Industrial Hygienists - Threshold Limit Value.

OSHA PEL: Occupational Safety and Health Administration - Permissible Exposure Limits.

NIOSH IDLH: Immediately Dangerous to Life or Health.

Other Exposure Guidelines	Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir. , 1992).
Engineering Measures	Showers Eyewash stations Ventilation systems
Personal Protective Equipment Eye/Face Protection	Tightly fitting safety goggles.

Skin and Body Protection Respiratory Protection	Wear protective gloves/clothing. No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	No information available	**Odor**	Odorless.
Odor Threshold	No information available	**Physical State**	Solid
pH	No information available		
Flash Point	No information available.	**Auto-ignition Temperature**	No information available
Decomposition Temperature	No information available	**Boiling Point/Range**	No information available
Melting Point/Range	No information available		
Flammability Limits in Air	No information available	**Explosion Limits**	No information available
Water Solubility	Immiscible in water	**Solubility**	No information available
Evaporation Rate	No information available	**Vapor Pressure**	No data available
Vapor Density	No data available	**Partition Coefficient: noctanol/water**	

10. STABILITY AND REACTIVITY

Stability	Stable under recommended storage conditions.
Incompatible Products	Incompatible with strong acids and bases. Incompatible with oxidizing agents.
Conditions to Avoid	Exposure to air or moisture over prolonged periods.
Hazardous Decomposition Products	Thermal decomposition can lead to release of toxic/corrosive gases and vapors
Hazardous Polymerization	Hazardous polymerization does not occur.

11. TOXICOLOGICAL INFORMATION

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

ACUTE:
INGESTION/INHALATION: 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, hallucinations, 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.

- **Acute Toxicity**

Product Information Product does not present an acute toxicity hazard based on known or supplied information.

Irritation Causes severe irritation and or burns

Component Information

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Sulfuric acid	= 2140 mg/kg (Rat)	-	= 510 mg/m3(Rat) 2 h

- **Chronic Toxicity**

Chronic Toxicity	Lead compounds may be absorbed by ingestion, by inhalation and through the skin. Lead may damage kidney function, the blood forming system and the reproductive system. Avoid repeated exposure.

- **Carcinogenicity:** The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical Name	ACGIH	IARC	NTP	OSHA
Lead	A3	Group 2A	Reasonably Anticipated	X
Sulfuric acid	A2	Group 1	Known	X
ABS resin		Group 3		

ACGIH: (American Conference of Governmental Industrial Hygienists)
A2 - Suspected Human Carcinogen
A3 - Animal Carcinogen
IARC: (International Agency for Research on Cancer)
Group 1 - Carcinogenic to Humans
Group 2A - Probably Carcinogenic to Humans
NTP: (National Toxicity Program)
Known - Known Carcinogen
Reasonably Anticipated - Reasonably Anticipated to be a Human Carcinogen
OSHA: (Occupational Safety & Health Administration)
X - Present

Reproductive Toxicity	Product is or contains a chemical which is a known or suspected reproductive hazard.
Developmental Toxicity	Contains ingredients that have suspected developmental hazards. Inorganic lead compounds can cause developmental damage.
Target Organ Effects	None known.

12. ECOLOGICAL INFORMATION

- **Ecotoxicity**

The environmental impact of this product has not been fully investigated.

Chemical Name	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Daphnia Magna (Water Flea)
Lead		LC50: 0.44 mg/L (96 h semi-static) Cyprinus carpio LC50: 1.17 mg/L (96 h flow-through) Oncorhynchus mykiss LC50: 1.32 mg/L (96 h static) Oncorhynchus mykiss		EC50: 600 µg/L (48 h) water flea

Sulfuric acid		LC50: > 500 mg/L (96 h static) Brachydanio rerio		EC50: 29 mg/L (24 h) Daphnia magna

13. DISPOSAL CONSIDERATIONS

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 (when in the dissolved phase) is bioaccumulated by plants and animals, both aquatic and terrestrial.

Waste Disposal Methods	This material, as supplied, is a hazardous waste according to federal regulations (40 CFR 261). Should not be released into the environment.
Contaminated Packaging	Do not re-use empty containers.
US EPA Waste Number	D002 D008

Chemical Name	**RCRA**	**RCRA - Basis for Listing**	**RCRA - D Series Wastes**	**RCRA - U Series Wastes**
Lead - 7439-92-1	(hazardous constituent - no waste number)	Included in waste streams: F035, F037, F038, F039, K002, K003, K005, K046, K048, K049, K051, K052, K061, K062, K064, K065, K066, K069, K086, K100, K176	= 5.0 mg/L regulatory level	

California Hazardous Waste Codes 792

This product contains one or more substances that are listed with the State of California as a hazardous waste.

Chemical Name	**California EHW**	**California Carc**	**California Hazardous Waste**	**California Waste - Part 2**
Lead			Toxic	TCLP (for CA Toxicity): 5.0 mg/L
Sulfuric acid			Toxic Corrosive	
Calcium	Ignitable Reactive			

14. TRANSPORT INFORMATION

- Proper Shipping Name

UN2800 — Batteries, wet, Non- Spillable, and electric storage
Batteries, dry, Non-Spillable, and dry storage

- **North America Ground and Air Shipment**

Our non-spillable lead acid batteries are under the U.S. Department of Transportation's (DOT) hazardous materials regulations but are exempted from these regulations since they meet all of the following requirements found at 49 CFR 173.159(d) – NMFC # 60680 Class 65.

- When offered for transport, the batteries are protected against short circuits and securely packaged as required by 49 CFR 173.159(d) (1);
- The batteries and outer packaging are marked with the words NONSPILLABLE BATTERY as required by 49 CFR 173.159(d) (2);

The batteries comply with the vibration and pressure differential tests found in 49 CFR 173.159(d) (3) and "crack test" found at 49 CFR 173.159(d) (4).

- **International Shipments**

Our non-spillable lead acid batteries also are ***excepted*** from the international hazardous materials (also known as "dangerous goods") regulations since they comply with the following requirements:

- The vibration and pressure differential tests found in Packing Instruction 806 and Special Provision A67 of the **International Air Transport Association (IATA) Dangerous Goods Regulations**;

The vibration and pressure differential tests found in Packing Instruction 806 and Special Provision A67 of the **International Civil Aviation Organization (ICAO)** Technical Instructions for the Safe Transport of Dangerous Goods by Air;

- The vibration, pressure differential, and "crack" tests found in Special Provision 238.1 and 238.2 of the **International Maritime Dangerous Goods (IMDG) Code.**

Note:		Exempt from hazardous materials regulations per 49CFR173.159 (d).
DOT	**Description**	NOT REGULATED NON-SPILLABLE BATTERY
TDG	**Description**	Not regulated NON-SPILLABLE BATTERY
MEX	**Description**	Not regulated NON-SPILLABLE BATTERY
ICAO Description		Not regulated NON-SPILLABLE BATTERY
IATA	**Description**	Not regulated NON-SPILLABLE BATTERY
IMDG/IMO Description		Not regulated NON-SPILLABLE BATTERY

15. REGULATORY INFORMATION

International Inventories	
TSCA **DSL**	Complies Not determined
U.S. Federal Regulations	

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) . This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372:

Chemical Name	CAS-No	Weight %	SARA 313 - Threshold Values %
Lead	7439-92-1	65～75	0.1
Sulfuric acid	7664-93-9	10～20	1.0

SARA 311/312 Hazard Categories Acute Health Hazard	Yes

Chronic Health Hazard	Yes
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

Clean Water Act
This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42):

Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Lead		X	X	
Sulfuric acid	1000 lb			X

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)
This product contains the following substances which are listed hazardous air pollutants (HAPS) under Section 112 of the Clean Air Act:

Chemical Name	CAS-No	Weight %	HAPS data	VOC Chemicals	Class 1 Ozone Depletors	Class 2 Ozone Depletors
Lead	7439-92-1	65～75				

CERCLA
This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302):

Chemical Name	Hazardous Substances RQs	Extremely Hazardous Substances RQs
Lead	10 lb	
Sulfuric acid	1000 lb	1000 lb

U.S. State Regulations

California Proposition 65
This product contains the following Proposition 65 chemicals:

Chemical Name	CAS-No	California Prop. 65
Lead	7439-92-1	Carcinogen Developmental Female Reproductive Male Reproductive
Sulfuric acid	7664-93-9	Carcinogen

U.S. State Right-to-Know Regulations

Chemical Name	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Lead	X	X	X	X	X
Tin	X	X	X		
Calcium	X	X	X		
Sulfuric acid	X	X	X	X	X

International Regulations

Mexico - Grade Minimum risk, Grade 0

Chemical Name	Carcinogen Status	Exposure Limits
Lead	A3	Mexico: TWA= 0.15 mg/m3
Tin		Mexico: TWA 2 mg/m3 Mexico: STEL 4 mg/m3
Sulfuric acid	A2	Mexico: TWA 1 mg/m3

Canada

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 CPR.

WHMIS Hazard Class
D2A Very toxic materials E Corrosive material

Chemical Name	NPRI
Lead	X
Sulfuric acid	X

16. OTHER INFORMATION

Prepared By	5th Floor, Xinbaohui Bldg., Nanhai Blvd. Kevin Zhang, Nanshan, Shenzhen, China. 518054 86-0755-2606-7267
Contact at GGS	Nov. 1, 2014
Issuing Date	March 2, 2015
Revision Date	No information available
Revision Note	5th Floor, Xinbaohui Bldg., Nanhai Blvd.

General Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of Safety Data Sheet

Article Information Sheet (AIS)

This Article Information Sheet (AIS) provides relevant battery information to retailers, consumers, OEMs and others users requesting a GHS-compliant SDS. Articles, such as batteries, are exempt from GHS SDS classification criteria. The GHS criteria is not designed or intended to be used to classify the physical, health and environmental hazards of an article. Branded consumer batteries are defined as electro-technical devices. The design, safety, manufacture, and qualification of branded consumer batteries follow ANSI and IEC battery standards. This document is based on principles set forth in the following hazard communication approaches: ANSI Z-400.1, GHS, JAMP AIS, IEC 62474, and ANSI C18.4M.

1. Document Information	
Document Name	**Duracell Lithium Coin Batteries (primary lithium metal cells and batteries)**
Document ID	AIS-LiCoin
Issue Date	1-Jul-15
Version	6.0
Preparer	Product Safety & Regulatory (PSR)
Last Revision	1/1/2020
2. Company Information	
Name & Address	Duracell US Operations, Inc., 14 Research Drive, Bethel, CT USA 06801
Website	www.duracell. com
Consumer Relations: NA	North America: 1-800-551-2355 (9:00 AM - 5:00 PM EST)
Consumer Relations: ASIA	ASIA: asiaconsumer.im@duracell.com
Consumer Relations - IEMEA	(UK) 0800 716434, (FR) 0800 346 790 Service & appel gratuits, (IRL) 1 800 509 176, (DE) 800 101 2112, (AT) 0800 1025 1956, (CH) 0800 000 885, (BE) 0800 509 95, (NL) 0800 265 8616, (IT) 800 125 662, (ES) 900 800 522, (PT) 800 781 012, (GR) 210 66 75 000, (CY) 22-210900, (DK) 78734857, (SE) 0852503857, (FI) 0942705057, (NO) 63791957, (ZA) 0800980782, (RO) 021 3361915, (MD) 022472402, (BG) 02 40 24 500, (BIH) 033756000, (MNE) 020261920, (PL) 22 692 42 77, (LT) (8) 37 401 111, (LV) 67798667, (EE) 622 6360, (CZ) 224 826 323, (SK) 224 826 323, (HU) 0620 770 7099, (HR) 0800 0009, (SI) 01/588 6800, (AZ) 812 3100949, (UA) 044 490-97-71 (САВСЕРВІС СТОЛИЦЯ), (KZ) +7 727 250 05 50, (TM) 00865 530070, (KG) 0312 41 77 04 (Apple City International), (TR) 0 850 502 61 40,
3. Article Information	
Description	Duracell branded consumer lithium battery
Product Category	Electro-technical device
Use	Portable power source for electronic devices
Global sub-brands (Retail)	Duracell, Ultra
Global sub-brands (B2B)	Bulk
Sizes	1025, 1216, 1220, 1225, 1612, 1616, 1620, 1632, 2016, 2025, 2032, 2320, 2325, 2330, 2354, 2412, 2430, 2450, 2477
IEC Designations	CR (1025, 1216, 1220, 1225, 1612, 1616, 1620, 1632, 2016, 2025, 2032, 2320, 2325, 2330, 2354, 2412, 2430, 2450, 2477)
Principles of Operation	A battery powers a device by converting stored chemical energy into electrical energy.
Representative Product Images	 
	Retail **Bulk**

Article Information Sheet (AIS)

4. Article Construction	
Applicable Battery Industry Standards	ANSI C18.3M Part 1, ANSI C18.3M Part 2, ANSI C18.4, IEC 60086,1, IEC 60086-2, IEC 60086-4
Electro-technical System	Lithium Manganese Dioxide
Electrode - Negative	Lithium Alloy (CAS # 7439-93-2)
Electrode - Positive	Manganese Dioxide (CAS # 1313-13-9)
Electrolyte	Propylene Carbonate Solvent (CAS # 108-32-7)
Electrolyte	1,2-Dimethoxyethane Solvent (CAS # 110-71-4)
Electrolyte	Lithium Perchlorate Salt (CAS # 7791-03-9)
Electrolyte	Dioxolane (CAS # 646-06-0)
Materials of Construction - Can	Steel (CAS # 110-71-4)
Declarable Substances (IEC 62474 Criteria 1)	1-2-Dimethoxyethane (CAS # 110-71-4)
Mercury Free Battery (ANSI C18.4M <5ppm)	Yes
Small Cell or Battery (ANSI C18.1M Part 2; IEC 60086-5)	Lithium coin batteries fit inside a specially designed test cylinder 2.25 inches (57.1mm) long by 1.25 inches (31.70 mm) wide.
5. Health & Safety	
Ingestion/Small Parts Warning	Required for all sizes of lithium coin batteries: Keep away from children. If swallowed, consult a physician immediately.
Normal Conditions of Use	Exposure to contents inside the sealed battery will not occur unless the battery leaks, is exposed to high temperatures, or is mechanically abused.

Article Information Sheet (AIS)

Note to Physician	**Note to Physician** – For information on battery identification and treatment, call the 24 hour **NATIONAL BATTERY INGESTION HOTLINE (800-408-8666**). Additional treatment information is available from the **NATIONAL CAPITAL POISON CONTROL CENTER BUTTON BATTERY INGESTION TRIAGE AND TREATMENT GUIDELINE: https://www.poison.org/battery/guideline.** If the patient is less than or equal to 12 years, immediately obtain an x-ray to locate the battery. If the patient is > 12 years and the battery diameter is > than 12 mm or unknown also obtain an x-ray. X-rays should include the entire neck, esophagus and abdomen. Once the position of the battery in the esophagus is determined by x-ray and if less than 12 hours post ingestion consider giving sucralfate suspension 10ml by mouth every 10 minutes, up to 3 doses while waiting for sedation for endoscopy. Do not delay battery removal because a patient has eaten recently or was given honey or sucralfate by mouth. Batteries lodged in the esophagus should be removed immediately since battery leakage, caustic burns and perforation can occur as soon as two hours after ingestion. Endoscopic removal is preferred as it allows direct visualization of tissue injury. After the battery is removed from the esophagus if no perforation is evident irrigate the injured area with 50 mL to 150 mL of 0.25% sterile acetic acid and then observe for delayed complications. If a large battery (equal to or greater than 20 mm) is in the stomach or beyond of a child < 5 years, and based on history, might have lodged in the esophagus for > 2 hours, consider diagnostic endoscopy to exclude the remote possibility of esophageal injury. Retrieve batteries, endoscopically if possible, from the stomach or beyond if: 1) A magnet was also ingested, 2) The patient develops signs or symptoms that are likely related to a battery ingestion, or, 3) A large battery equal to or greater than 15 mm is ingested by a child younger than 6 years, remains in the stomach for 4 days or longer. Allow batteries to pass spontaneously if they have passed beyond the esophagus (stomach and beyond) and no clinical indication of any significant gastrointestinal injury is evident. Confirm battery passage by inspecting stools. Consider repeat radiographs to confirm passage if battery passage not observed in 10-14 days.
First Aid - If swallowed	**First Aid – If battery swallowed DO NOT GIVE IPECAC.** Do not induce vomiting. Seek medical attention immediately and call 24 hour **NATIONAL BATTERY INGESTION HOTLINE (800-498-8666)** for assistance with battery identification and treatment. Attempt to determine battery imprint code (or diameter) of companion or replacement battery. If no imprint code is available, measure or estimate the battery diameter based on the size of the slot the battery fits or the size of the comparable battery. Provide this information to the treating health care provider. If the child is greater than 12 months of age and able to swallow, and the battery was swallowed within the prior 12 hours, if readily available administer honey immediately and while on route to the emergency room. Give 10 mL (2 teaspoons) of honey by mouth every 10 minutes for up to 6 doses. **Do not delay going to the ER to obtain or give honey.** Other than the honey do not give anything by mouth.
Poison Center/North America	**USA/CANADA CALLS ONLY: 1-800-498-8666 (Toll Free) [24 Hour National Battery Ingestion Hotline]**
Poison Centers /World Directory	http://apps.who.int/poisoncentres
First Aid - Eye Contact	Flush with running water for at least 30 minutes. Seek medical attention immediately.
First Aid - Skin Contact	Remove contaminated clothing and flush skin with running water for at least 15 minutes. Seek medical attention if irritation persists.
First Aid - Inhalation	Contents of leaking battery may be irritating to respiratory passages. Move to fresh air. Seek medical attention if irritation persists.

Article Information Sheet (AIS)

Battery Safety Standards & Testing	Duracell lithium coin cell batteries meet the requirements of ANSI C18. 3M Part 2 and IEC 60086-4. These standards specify tests and requirements for lithum primary cells and batteries to ensure safe operation under normal use and reasonably foreseeable misuse. The test regimes assess three conditions of safety. These are: **1-Intended use simulation:** Partial use, vibration, thermal shock, and mechanical shock **2-Reasonably foreseeable misuse:** Incorrect installation, external short-circuit, free fall (user-drop), over-discharge, and crush **3-Design consideration:** Thermal abuse, mold stress
Precautionary Statements	CAUTION: Keep batteries away from children. If swallowed, consult a physician at once. For information on treatment, within North America call **1-800-498-8666 (Toll Free)** . Ingestion may lead to serious injury or death. Cell can explode or leak if heated, disassembled, shorted, recharged, exposed to fire or high temperature or inserted incorrectly. Keep in original package until ready to use. Do not carry batteries loose in your pocket or purse.
6. Fire Hazard & Firefighting	
Fire Hazard	Batteries may rupture or leak if involved in a fire.
Extinguishing Media	Use any extinguishing media appropriate for the surrounding area. For incipient (beginning) fires, carbon dioxide extinguishers or copious amounts of water are effective in cooling burning lithium metal batteries. If fire progresses to where lithium metal is exposed (deep red flames), use a Class D extinguisher suitable for lithium metal.
Fires Involving Large Quantities of Batteries	Large quantities of batteries involved in a fire will rupture and release irritating fumes from thermal degradation Use a Class “D” fire extinguisher or other smothering agent such as Lith-X, copper powder or dry sand. If using water, use enough to smother the fire. Using an insufficient amount of water will make the fire worse. Cooling exterior of batteries will help prevent rupturing. Burning batteries generate toxic and corrosive lithium hydroxide fumes. Firefighters should wear self-contained breathing apparatus. Detailed information on fighting a lithium metal battery fire can be found in US DOT Emergency Response Guide 138 (Substances–Water–Reactive).
7. Handling & Storage	
Handling Precautions	Avoid mechanical and electrical abuse. Do not short circuit or install incorrectly. Batteries may rupture or vent if disassembled, crushed, recharged or exposed to high temperatures. Install batteries in accordance with equipment instructions.
Storage Precautions	Store batteries in a dry place at normal room temperature. Refrigeration does not make them last longer.
Spills of Large Quantities of Loose Batteries (unpackaged)	Notify spill personnel of large spills. Irritating and flammable vapors may be released from leaking or ruptured batteries. Spread batteries apart to stop shorting. Eliminate all ignition sources. Evacuate area and allow vapors to dissipate. Clean-up personnel should wear appropriate PPE to avoid eye and skin contact and inhalation of vapors or fumes. Increase ventilation. Carefully collect batteries and place in appropriate container for disposal. Remove any spilled liquid with absorbent material and contain for disposal.
8. Disposal Considerations (GHS Section 13)	

Article Information Sheet (AIS)

Collection & Proper Disposal	Dispose of used (or excess) batteries in compliance with federal, state/provincial and local regulations. Do not accumulate large quantities of used batteries for disposal as accumulations could cause batteries to short-circuit. Do not incinerate. In countries, such as Canada and the EU, where there are regulations for the collection and recycling of batteries, consumers should dispose of their used batteries into the collection network at municipal depots and retailers. They should not dispose of batteries with household trash.
USA EPA RCRA (40 CFR 261)	"Charged" lithium coin batteries meet the criteria (D003 - Reactivity) of a hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA) 40 CRT 261.23. If recycled, lithium coin batteries are classified as Universal Waste.
USA DOT (49 CFR 173.184 (d))	d) Lithium cells or batteries shipped for disposal or recycling. A lithium cell or battery, including a lithium cell or battery contained in equipment, that is transported by motor vehicle to a permitted storage facility or disposal site, or for purposes of recycling, is excepted from the testing and record keeping requirements of paragraph (a) and the specification packaging requirements of paragraph (b)(3) of this section, when packed in a strong outer packaging conforming to the requirements of §§173.24 and 173.24a. A lithium cell or battery that meets the size, packaging, and hazard communication conditions in paragraph (c)(1)-(3) of this section is excepted from subparts C through H of part 172 of this subchapter.
California Universal Waste Rule (Cal. Code Regs. Title 22, Div. 4.5, Ch. 23)	California prohibits disposal of batteries as trash (including household trash).
Vermont Primary Battery Stewardship Law (ACT 139)	In Vermont, consumers must recycle lithium coin batteries. For information, contact http://www.call2recycle.org.
9. Transport Information (GHS Section 14)	
UN38.3 Test Summary Documents	**UN38.3 Test Summary Documents that are required January 1, 2020 by the UN Model Regulations, 20th Revised Edition, 2.9.4 can be requested by sending an email request to UN38.3_duracell@duracell.com**
Regulatory Status	Duracell lithium coin batteries are produced and delivered in accordance with current IATA/ICAO regulations. Duracell lithium coin batteries can be shipped in accordance with ICAO, 2018 edition or IATA 2020- 61th edition. Shipping packages for all DURACELL lithium cells/batteries are designed to prevent: short circuits, movement within the package, damge to the cells/batteries, and release of the package contents. Persons who prepare or offer lithium batteries for transport are required by regulation to be trained to the extent of their responsibility. The information in this section is provided for informational purposes only. The transportation of lithium metal batteries is regulated by ICAO, IATA, IMO and US DOT. Duracell lithium coin batteries are not subject to the other provisions of the Dangerous Goods regulations as long as they are packaged and marked in accordance with the applicable regulations.
DEFECTIVE Lithium Batteries	Defective Lithium batteries are **forbidden** on both Passenger and Cargo Aircraft. For all other modes of transportation, defective lithium batteries are fully regulated as **Dangerous Goods.**
Total Lithium Content (grams)	The lithium metal content of each coin cell is less than 0.3g.
UN Identification Number/ Shipping Name	UN3090 Primary lithium metal batteries UN3091 Primary lithium metal batteries packed with or contained in equipment

Article Information Sheet (AIS)

UN 38.3 Transportation Tests	Duracell certifies that all of its lithium batteries meet the requirements of the UN Manual of Tests and Criteria, Part III subsection 38.3. If you assemble these batteries into larger battery packs, it is recommended that you perform the UN Tests to ensure the requirements are met prior to shipment.
Special Provisions Conformance	Special regulatory provisions require batteries to be packaged in a manner that prevents the generation of a dangerous quantity of heat and short circuits.
USA DOT Special Provision	49 CFR 173.185(c) SP A101
USA DOT Exceptions for Lithium Cells or Batteries Shipped for Disposal or Recycling	40 CFR 173.185(d)
Air Transport (IATA/ICAO) Packing Instructions	PI 968 – Lithium metal batteries PI 969 – Lithium metal batteries packed with equipment PI 970 – Lithium metal batteries contained in equipment
Marine/Water Transport (IMDG) Special Provision	188
ADR/RID Special Provision	188
Passenger Air Travel	Air travelers should consult the US Department of Transportation (DOT) Safety Travel web site at http://safetravel.dot.gov for guidance regarding carry on of lithium batteries.
Emergency Transportation Hotline	**CHEMTREC 24-Hour Emergency Response Hotline** **Within the United States call +703-527-3887** **Outside the United States, call +1 703-527-3887 (Collect)**

10. Regulatory Information (GHS Section 15)

10a. Battery Requirements

USA EPA Mercury Containing & Rechargeable Battery Management Act of 1996	During the manufacturing process, no mercury is added.
EU Battery Directive 2006/66/EC & amendment 2013/56/EU	Compliant with marking and substance restrictions for mercury (<0.0005%); cadmium (<0.0020%)l and lead (<0.0040%). EU retail and bulk packaging containing lithium coin batteries are marked with the special collection sysmbol in accordance with Article 21,

10b. General Requirements

USA CPSIA 2008 (PL. 11900314)	Exempt
USA CPSC FHSA (16 CFR 1500)	Consumer batteries are not listed as a hazardous product.
USA EPA TSCA Section 13 (40 CFR 707.20)	For customs clearance purpose, batteries are defined as an "Article".
USA EPA RCRA (40 CFR 261)	"Charged" lithium coin batteries meet the criteria (D003 - Reactivity) of a hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261.23. If recycled, lithium coin batteries are classified as Universal Waste.
USA California Prop 65	No warning required per 3rd party assessment.
USA California Perchlorate Contamination Prevention Act of 2003	Contains perchlorate. Required labeling: Perchlorate material - special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate

Article Information Sheet (AIS)

CANADA Products Containing Mercury Regulations SOR/20140254	Mercury free
EU REACH REGULATION (EC) NO. 1907/2006	Regulated as an "article." Contains 1,2-dimethoxyethane (CAS# 110-71-4).
EU REACH SVHC Communication	SVHC Substance Name: 1,2-dimethoxyethane (EGDME) Use: Incorporated in a lithium battery as electrolyte solvent EINEC Number: 203-794-9 CAS Number: 110-71-4 Concentration: The battery contains EGDME –SVHC in a concentration ranging from 1.0 to 10.0% by weight. Because the battery is sealed, 100% of the EGDME-SVHC is contained in the battery. Safe Handling: Do not open the battery or disassemble it. Do not expose to fire or high temperatures (>60°C). At end of life, the battery should be taken back to the nearest collection point established by a National Collection Scheme used for batteries.
EU REACH Article 31	An SDS is not required for articles.

10c. Regulatory Definitions - Articles

USA OSHA	29 CFR 1910.1200(b)(6)(v)
USA TSCA	40 CFR 704.3; 710.2(3)(c); and [19 CFR 12.1209a)]
EU REACH	Title 1 - Chapter 2 - Article 3(3)
GHS	Section 1.3.2.1

11. Other Information

11a. Certification & 3rd Party Approvals

UL Listing	Lithium Batteries - Component BBCV2.MH12538

11b. AIS Hazard Communication Approaches (consulted in developing this document):

Globally Harmonized System (GHS)	GHS SDS requirements and classification criteria do not apply to articles or products (such as batteries) that have a fixed shape, which are not intended to release a chemical. The article exemption is found in Section 1.3.2.1.1 of the GHS and reads: ***The GHS applies to pure substances and their dilute solutions and to mixtures. "Articles" as defined by the Hazard Communication Standard (29 CFR 1900.1200) of the OSHA of the USA, or by similar definition, are outside the scope of the system."***
Joint Article Management Promotion Consortium JAMP	JAMP is a Japanese Industry Association who developed the concept of an Article Information Sheet as a supply chain tool to share and communicate chemical information in articles. The AIS authoring process is based on “declarable” substances to meet global regulatory requirements as well as substances to be reported by GADSL, JIG, etc.
IEC 62474 Ed. 1.0 B:2012 Material Declaration for Products of and for the Electro-technical Industry	An international standard that came into effect in March 2012 concerning declaration for electrical and electronic products. IEC 6274 replaces the defunct Joint Industry Guide – Material Declaration for Electro-technical Products (JIG-101-Ed 4.1 (May 21, 2012)
IEC 62474 Database - Publically available online (http://std.iec.ch/iec62474). Maintained by TC11: Environmental Standardization for electrical and electronic products and systems.	The general principle for a substance to be included in the database as a declarable substance is: 1) existing national laws or regulations in an IEC member country that are relevant to Electro-technical products and that prohibit or restrict substances, or that have a labeling, communication, reporting or notification requirement, and 2) applying IEC 62474 criteria results in identification of declarable substance.

Article Information Sheet (AIS)

ANSI Z 400.1/Z19.1 (2010)	2.1 Scope: Applies to preparation of SDSs for hazardous chemicals used under occupational conditions. Does not address how the standard may be applied to articles. It presents basic information on how to develop and write a SDS. Additional information is provided to help comply with state and federal environmental and safety laws and regulations. Elements of the standard may be acceptable for International use.
ANSI C18.4M-2017 Portable Cells and Batteries - Environmental	This standard provides regulatory guidance and a template to author an article information sheet for a portable consumer battery. See Annex C.2 (Informative) Safety Data Sheets and Annex E (Informative) Article Information Sheet.

DISCLAIMER: This AIS is intended to provide a brief summary of our knowledge and guidance regarding the use of this article. The information contained here has been compiled from sources considered by Duracell to be dependable and is accurate to the best of the Company's knowledge. It is not meant to be an all-inclusive document on worldwide hazard communication regulations. This information is offered in good faith. Each user of this material needs to evaluate the conditions of use and design the appropriate protective mechanisms to prevent employee exposures, property damage or release to the environment. Duracell assumes no responsibility for injury to the recipient or third persons or for any damage to any property resulting from misuse of the product.

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PONY
Pony Testing International Group

Report No.: MNI6BHLT06791716

MSDS Report

Sample Description & Model	Button lithium manganese battery CR2032
Applicant	CHANGZHOU JINYUE BATTERY CO.,LTD
Address	No.6 workshop, cailing science park, no.38 fenghuang road, tianning district, changzhou city, jiangsu

微信扫一扫，使用小程序　小程序扫一扫，在线验证
No.: MNI6BHLT06791716
Code: x6y4yx

Material Safety Data Sheet

Reference to ST/SG/AC.10/30/Rev.8 (GHS)

Section 1 - Chemical Product and Company Identification

Chemical Product Identification

Sample Description: Button lithium manganese battery

Sample Model: CR2032

Recommended Uses: N/A

Restrictions on Use: N/A

Supplier Name: CHANGZHOU JINYUE BATTERY CO.,LTD

Address: No.6 workshop, cailing science park, no.38 fenghuang road, tianning district, changzhou city, jiangsu

Phone Number: 0519-69186368

FAX: 0519-69186358

E-mail: 119421625@qq.com

Emergency Phone Number: 0519-69186368

Section 2 - Hazards Identification

Emergency overview: This product is a battery. Intended use of the product should not result in exposure to the chemical substance. In case of rupture the below hazards exist.

Classification according to GHS

Acute toxicity, oral (4)

Acute toxicity, inhalation (4)

Skin corrosion/irritation (1A-1C)

Serious eye damage/eye irritation (1)

Sensitisation, skin (1, 1A, 1B)

Carcinogenicity (2)

Specific target organ toxicity, single exposure; Respiratory tract irritation (3)

Specific target organ toxicity, repeated exposure (2)

Label elements

Hazard pictogram(s):

Signal word: Danger

Hazard statement(s):

H302 Harmful if swallowed

H332 Harmful if inhaled

H314 Causes severe skin burns and eye damage

H318 Causes serious eye damage

H317 May cause an allergic skin reaction

H351 Suspected of causing cancer

H335 May cause respiratory irritation

H373 May cause damage to organs through prolonged or repeated exposure

Precautionary statement(s):

Prevention:

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P260 Do not breathe dust, fume, gas, mist, vapours, spray.

P264 Wash skin and clothing thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P271 Use only outdoors or in a well-ventilated area.

P272 Contaminated work clothing should not be allowed out of the workplace.

P280 Wear protective gloves, protective clothing, eye protection, face protection.

Response:

P330 Rinse mouth.

P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.

P363 Wash contaminated clothing before reuse.

P310 Immediately call a POISON CENTER.

P321 Specific treatment (See additional emergency instructions).

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P302 + P352 IF ON SKIN: Wash with plenty of water.

Storage

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.

P405 Store locked up.

Disposal:

P501 Send contents to approved waste treatment plants.

Other hazards

Physical and chemical hazards: See Section 10

Human health hazards: See Section 11

Environmental hazards: See Section 12

Section 3 – Composition/Information on Ingredients

Chemical characterization: Mixture

Chemical Composition	CAS No.	EC#	Weight (%)
Iron	7439-89-6	231-096-4	50.5
Polypropylene	9003-07-0	618-352-4	3.76
Manganese dioxide	1313-13-9	215-202-6	30.96
Polytetrafluoroethylene resin	9002-84-0	618-337-2	2.17
Graphite	7782-42-5	231-955-3	2.17
Lithium	7439-93-2	231-102-5	1.91
Lithium Perchlorate	7791-03-9	232-237-2	4
1,2-Propanediolcyclic carbonate	108-32-7	203-572-1	3
Ethylene glycol dimethyl ether	110-71-4	203-794-9	1.2

Section 4 - First Aid Measures

Description of first aid measures

General information No special measures required.

After eye contact

Flush eyes with plenty of water for several minutes while holding eyelids open. Get medical attention if irritation persists.

After skin contact

Remove contaminated clothing and shoes. Immediately wash with water and soap and rinse thoroughly. Wash clothing and shoes before reuse. If irritation occurs, get medical attention.

After inhalation

Remove victim to fresh area. Administer artificial respiration if breathing is difficult. Seek medical attention.

After swallowing

Do not induce vomiting. Get medical attention.

Personal protective equipment for first-aid responders: No data available.

Most important symptoms/effects, acute and delayed: No data available.

Indication of immediate medical attention and special treatment needed: Treat symptomatically.

Section 5 - Fire Fighting Measures

Suitable extinguishing media:

Small Fire: Dry chemical, soda ash, lime or sand. Large Fire: DRY sand, dry chemical, soda ash or lime or withdraw from area and let fire burn. Move containers from fire area if you can do it without risk.

Unsuitable extinguishing media:

Water or foam.

Specific Hazards arising from the chemical:

Special hazards arising from the substance or mixture

Battery may burst and release hazardous decomposition products when exposed to a fire situation. Produce flammable gases on contact with water. May ignite on contact with water or moist air. Some react vigorously or explosively on contact with water. May be ignited by heat, sparks or flames. May re-ignite after fire is extinguished. Runoff may create fire or explosion hazard.

Specific protective actions for fire-fighters:

Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection.

Section 6 - Accidental Release Measures

Personal precautions:

As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids. Keep unauthorized personnel away. Stay upwind, uphill and/or upstream. Ventilate the area before entry.

Protective equipment:

No data available.

Emergency procedures:

ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Do not touch or walk through spilled material. Stop leak if you can do it without risk. Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact

spilled material. DO NOT GET WATER on spilled substance or inside containers. Small Spill: Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain. Dike for later disposal; do not apply water unless directed to do so. Powder Spill: Cover powder spill with plastic sheet or tarp to minimize spreading and keep powder dry. DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST.

Environmental precautions:

Do not allow material to be released to the environment without proper governmental permits.

Methods and materials for containment and cleaning up:

For all waste handing must refer to United Nations, National and Local Regulations for disposal.

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

Section 7 - Handling and Storage

Precautions for safe handling:

Avoid short circuiting the battery. Avoid mechanical damage of the battery. Do not open or disassemble. Batteries may explode or cause burns, if disassembled, crushed or exposed to fire or high temperatures. Do not short or install with incorrect polarity. Avoid all personal contact, including inhalation. Wear protective clothing when risk of exposure occurs. Use in a well-ventilated area. Prevent concentration in hollows and sumps.

Conditions for safe storage, including any incompatibilities:

Store in a cool, dry, well-ventilated place. Keep away from heat, avoiding the long time of sunlight.

Section 8 - Exposure Controls/Personal Protection

Control parameters

CAS No.	ACGIH	NIOSH	OSHA
7439-89-6	N/A	N/A	N/A
9003-07-0	N/A	N/A	N/A
1313-13-9	N/A	N/A	N/A
9002-84-0	N/A	N/A	N/A

7782-42-5	TLV-TWA 2mg/m^3	REL-TWA 2.5mg/m^3	PEL-TWA 15mppcf PEL-TWA 20mppcf
7439-93-2	N/A	N/A	N/A
7791-03-9	N/A	N/A	N/A
108-32-7	N/A	N/A	N/A
110-71-4	N/A	N/A	N/A

Appropriate engineering controls:

The usual precautionary measures for handling chemicals should be followed.

Keep away from foodstuffs, beverages and feed.

Remove all soiled and contaminated clothing immediately.

Wash hands before breaks and at the end of work.

Personal Protective Equipment:

Respiratory protection: Wear suitable protective mask. For a large large number of battery leakages, wear chemical protective clothing, including self-contained breathing apparatus.

Hand Protection: Wear appropriate protective gloves to reduce skin contact.

Eye Protection: Wear safety goggles or eye protection combined with respiratory protection.

Skin and Body Protection: Working environment required, wear suitable protective clothing to minimize contact with skin. The type of protective equipment must be according to the concentration and the content of certain hazardous substances in the workplace.

Section 9 - Physical and Chemical Properties

Information on basic physical and chemical properties

Colour:	Silver.
Physical State:	Button.
Odour:	Not available.
Odour threshold:	Not available.
pH:	Not available.
Melting point/freezing point:	Not available.
Initial boiling point and boiling range:	Not available.
Flash Point:	Not available.
Evaporation rate:	Not available.
Flammability (solid, gas):	Not available.

Explosion Limits (vol% in air):	Not available.
Vapour pressure, kPa at 20℃:	Not available.
Vapor density:	Not available.
Density/Relative density (water = 1):	Not available.
Solubility(ies):	Not available.
Partition coefficient: n-octanol/water:	Not available.
Auto-ignition temperature:	Not available.
Decomposition temperature:	Not available.
Viscosity:	Not available.
Other information:	
Voltage	3.0V
Electric capacity	210mAh
Lithium metal content	0.05g

Section 10 - Stability and Reactivity

Reactivity: No data available.

Chemical stability: Stable.

Possibility of hazardous reactions: No data available.

Conditions to Avoid: Flames, sparks, and other sources of ignition, incompatible materials.

Incompatible materials: Oxidizing agents, acid base.

Hazardous decomposition products: Carbon monoxide, carbon dioxide, lithium oxide fumes.

Section 11 - Toxicological Information

Acute Toxicity:

CAS No.	LC50/LD50
7439-89-6	No data available.
9003-07-0	No data available.
1313-13-9	No data available.
9002-84-0	No data available.
7782-42-5	No data available.
7439-93-2	No data available.
7791-03-9	No data available.

108-32-7	LD50 Rat (oral): ≥29000mg/kg; LD50 Rabbit (Dermal): >20000mg/kg
110-71-4	LD50 Rat (oral): 2525mg/kg

Skin corrosion/irritation: No data available.
Serious eye damage/irritation: No data available.
Respiratory or Skin sensitization: No data available.
Germ Cell mutagenicity: No data available.
Carcinogenicity: No data available.
Reproductive toxicity: No data available.
Specific target organ toxicity-Single exposure: No data available.
Specific target organ toxicity-Repeated exposure: No data available.
Aspiration hazard: No data available.
Information on the likely routes of exposure: No data available.
Eye: No data available.
Skin: No data available.
Ingestion: No data available.
Inhalation: No data available.

Section 12 - Ecological Information

Ecological Toxicity:
CAS# 108-32-7
LC50: >1000 mg/L- Fish (Carp)-96h;
EC50: >1000 mg/L- Crustaceans (Daphnia magna)-48h;
EC50: >900 mg/L- Algae (Scenedesmus subspicatus) -72h
Persistence and degradability: No data available.
Bioaccumulative Potential: No data available.
Mobility in Soil: No data available.
Other adverse effects: No data available.

Section 13 - Disposal Considerations

Disposal methods:
Recommendation:
Consult state, local or national regulations to ensure proper disposal.

Uncleaned packaging

Recommendation: Disposal must be made according to official regulations.

Section 14 - Transport Information

UN Number	
IATA	UN3090
IMDG	UN3090
UN Proper shipping name	
IATA	Lithium metal batteries
IMDG	LITHIUM METAL BATTERIES
Transport hazard class(es)	
IATA	9
IMDG	9
Packing group	
IATA	N/A
IMDG	N/A
Packaging Sign	
IATA	N/A
IMDG	N/A
Environmental hazards	
Marine pollutant:	No
Special precautions for user	No information available.

Transport information: The Button lithium manganese battery CR2032 has passed the test UN38.3, according to the report ID: MLI71QCU84520721.

According to the Packing Instruction 968 section II of IATA DGR 61th Edition for transportation, Cargo aircraft only.

According to the special provision 188 of IMDG (39-18), the goods are not subject to other provision of this code.

Separate batteries to prevent short-circuiting. and they should be packed in strong package during transport. Lithium cell or battery should incorporate a safety venting device or be designed to prevent a violent rupture under normal transport conditions. Keep away from high temperature and open flames.

Transport Fashion: By air, by sea.

Section 15 - Regulatory Information

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

CAS No.	TSCA	IECSC	DSL/NDSL	EINECS/ ELINCS/ NLP
7439-89-6	Listed	Listed	Listed DSL	Listed
9003-07-0	Listed	Listed	Listed DSL	Listed
1313-13-9	Listed	Listed	Listed DSL	Listed
9002-84-0	Listed	Listed	Listed DSL	Listed
7782-42-5	Listed	Listed	Listed DSL	Listed
7439-93-2	Listed	Listed	Listed DSL	Listed
7791-03-9	Listed	Listed	Listed DSL	Listed
108-32-7	Listed	Listed	Listed DSL	Listed
110-71-4	Listed	Listed	Listed DSL	Listed

Section 16 - Other Information

Issue Date: 2020-01-03

Issue Department: Technical department

Modification record:

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Other Information:

CAS: (Chemical Abstracts Service);

EC: (European Commission);

ACGIH: (American Conference of Governmental Industrial Hygienists);

NIOSH: (US National Institute for Occupational Safety and Health);

OSHA: (US Occupational Safety and Health);

TLV: (Threshold Limit Value)
TWA: (Time Weighted Average);
STEL: (Short Term Exposure Limit);
PEL: (Permissible Exposure Level);
REL: (Recommended Exposure Limit);
PC-STEL: (Permissible concentration-short time exposure limit);
PC-TWA: (Permissible concentration-time weighted average);
LC50: (Lethal concentration, 50 percent kill);
LD50: (Lethal dose, 50 percent kill);
IARC: (International Agency for Research on Cancer);
EC50: (Median effective concentration);
BCF: (Bioconcentration Factor);
BOD: (Biochemical oxygen demand);
NOEC: (No observed effect concentration);
NTP: (US National Toxicology Program);
RTECS: (Registry of Toxic Effects of Chemical Substances);
IATA: (International Air Transport Association);
IMDG: (International Maritime Dangerous Goods);
TDG: (Recommendations on the TRANSPORT OF DANGEROUS GOODS Model Regulations);
TOC: (Total Organic Carbon);
TSCA: (Toxic Substances Control Act of USA);
DSL: (the Domestic Substances List of Canada);
NDSL: (the Non-domestic Substances List of Canada)

End of report