

## 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, and IEC 62474.

1. Document Information	
Document Name	Duracell Alkaline Batteries (Major and Specialty Cells)
Document ID	AIS-ALK
Issue Date	1-May-15
Version	1
Preparer	Global Product Stewardship
Last Revision	New
Information Contact	moquet.l@pg.com
2. Company Information	
Name & Address	P&G Duracell Global Business Unit, 14 Research Drive, Bethel, CT USA 06801
Telephone	(203) 796- 4430
Website	www.duracell.com
Consumer Relations	North America: 1-800-551-2355 (9:00 AM - 5:00 PM EST)
3. Article Information	
Description	Duracell branded consumer alkaline battery
Product Category	Electro-technical device
Use	Portable power source for electronic devices
Global sub-brands (Retail)	Coppertop, Plus, Quantum, Simply, Turbo, Ultra, Basic, TurboMax
Global sub-brands (B2B)	Procell, Industrial, OEM/OEA
Sizes	Major Cells: AA,AAA, C, D & 9V
Sizes	Specialty Cells: AAAA, MN11, MN21, MN27, MN175, PX76 (LR44), PX28, PX625, (LR09), LR43, LR54, N, J, 4.5V, 625A
Sizes	Lanterns: MN903, MN908, MN915, MN918; MN1203
Principles of Operation	A battery powers a device by converting stored chemical energy into electrical energy.
Representative Product Images	
	<div style="display: flex; justify-content: space-around; text-align: center;"> <div>Major Cells</div> <div>Major Cells</div> <div>Lantern</div> <div>Specialty</div> </div>
4. Article Construction	
Applicable Battery Industry Standards	ANSI C18.1M Part 1, ANSI C18.1M Part 2, ANSI C18.4, IEC 60086,1, IEC 60086-2, IEC 60086-5
Electro-technical System	Alkaline Manganese Dioxide
Electrode - Negative	Zinc (CAS # 7440-66-6)
Electrode - Positive	Manganese Dioxide (CAS # 1313-13-9)
Electrolyte	Alkali Metal Hydroxide (aqueous potassium hydroxide - CAS # 1310-58-3)
Materials of Construction - Can	Nickel Plated Steel
Declarable Substances (IEC 62474 Criteria 1)	None
Mercury Free Battery (ANSI C18.4M <50ppm)	Yes
Small Cell or Battery (ANSI C18.1M Part 2; IEC 60086-5)	Sizes: AAA and Specialty Cells fit inside a specially designed test cylinder 2.25 inches (57.1mm) long by 1.25 inches (31.70 mm) wide.
5. Health & Safety	

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<b>Ingestion/Small Parts Warning</b>	<u>Required for Small Cell or Battery (Sizes: AAA and Specialty Cells):</u> Keep away from children. If swallowed, consult a physician immediately.
<b>Normal Conditions of Use</b>	Exposure to contents inside the sealed battery will not occur unless the battery leaks, is exposed to high temperatures, or is mechanically abused.
<b>Note to Physician</b>	A damaged battery will release concentrated and caustic potassium hydroxide.
<b>First Aid - If swallowed</b>	Do not induce vomiting. Seek medical attention immediately. USA CALLS ONLY - CALL 24-HOUR NATIONAL BATTERY INGESTION HOTLINE: (202) 625-3333 - COLLECT.
<b>First Aid - Eye Contact</b>	Flush with water for at least 15 minutes. Seek medical care if irritation persists.
<b>First Aid - Skin Contact</b>	Remove contaminated clothing. Wash skin with soap and water. Seek medical care if irritation persists.
<b>First Aid - Inhalation</b>	Remove to fresh air.
<b>Battery Safety Standards &amp; Testing</b>	Duracell batteries meet the requirements of ANSI C18. 1M Part 2 and IEC 60086-5. These standards specify tests and requirements for alkaline batteries to ensure safe operation under normal use and reasonably foreseeable misuse. The test regimes assess three conditions of safety. These are: <u>1-Intended use simulation:</u> Partial use, vibration, thermal shock, and mechanical shock <u>2-Reasonably foreseeable misuse:</u> Incorrect installation, external short-circuit, free fall (user-drop), over-discharge, and crush <u>3-Design consideration:</u> Thermal abuse, mold stress
<b>Precautionary Statements</b>	<b>CAUTION:</b> Batteries may explode or leak, and cause burn injury, if recharged, disposed of in fire, mixed with a different battery type, inserted backwards or disassembled. Replace all used batteries at the same time. Do not carry batteries loose in your pocket or purse. Do not remove the battery label. Keep small batteries (i.e., AAA) away from children. If swallowed, consult a physician at once.
<b>6. Fire Hazard &amp; Firefighting</b>	
<b>Fire Hazard</b>	Batteries may rupture or leak if involved in a fire.
<b>Extinguishing Media</b>	Use any extinguishing media appropriate for the surrounding area.
<b>Fires Involving Large Quantities of Batteries</b>	Large quantities of batteries involved in a fire will rupture and release caustic potassium hydroxide. Firefighters should wear self-contained breathing apparatus and protective clothing.
<b>7. Handling &amp; Storage</b>	
<b>Handling Precautions</b>	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.
<b>Storage Precautions</b>	Store batteries in a dry place at normal room temperature. Refrigeration does not make them last longer.
<b>Spills of Large Quantities of Loose Batteries (unpackaged)</b>	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.
<b>8. Disposal Considerations (GHS Section 13)</b>	
<b>Collection &amp; Proper Disposal</b>	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.

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<b>USA EPA RCRA (40 CFR 261)</b>	Classified as non-hazardous waste (not ignitable, corrosive, reactive or toxic). Federal Universal Waste Regulations (40 CFR 273) do not apply. State requirements may be more stringent than Federal.
<b>California Universal Waste Rule (Cal. Code Regs. Title 22, Div. 4.5, Ch. 23)</b>	California prohibits disposal of batteries as trash (including household trash).
<b>9. Transport Information (GHS Section 14)</b>	
<b>Regulatory Status</b>	Not regulated. Alkaline batteries (sometimes referred to as "Dry Cell" or "household" batteries) are not listed or regulated as dangerous goods under IATA Dangerous Goods Regulations, ICAO Technical Instructions, IMDG Code, UN Model Regulations, U.S. Hazardous Materials Regulations (49 CFR), and UNECE ADR.
<b>UN Identification Number/ Shipping Name</b>	None - Not Required
<b>Special Provision (SP) Conformance</b>	Special regulatory provisions require batteries to be packaged in a manner that prevents the generation of a dangerous quantity of heat and short circuits. Shippers can prepare batteries by taping the terminals, individually packaging batteries, or otherwise segregating the batteries to prevent risk of creating a short circuit. Batteries shipped in original unopened Duracell packaging is compliant.
<b>US DOT SP</b>	49 CFR 172.102 Special Provision 130
<b>Air Transport (IATA/ICAO) SP</b>	Special Provision A123 (56th Edition - 2015). NOTE: The words "NOT RESTRICTED" and "SPECIAL PROVISION A123" must be included on the description of the substance on the Air Waybill, when air way-bill is issued.
<b>Passenger Air Travel</b>	No restrictions
<b>Emergency Transportation Hotline</b>	<b>CHEMTREC 24-Hour Emergency Response Hotline</b> <b>Within the United States call +703-527-3887</b> <b>Outside the United States, call +1 703-527-3887 (Collect)</b>
<b>10. Regulatory Information (GHS Section 15)</b>	
<b>10a. Battery Requirements</b>	
<b>USA EPA Mercury Containing &amp; Rechargeable Battery Management Act of 1996</b>	During the manufacturing process, no mercury is added.
<b>EU Battery Directive 2006/66/EC &amp; amendment 2013/56/EU</b>	Compliant with marking and substance restrictions for mercury (<0.0005%); cadmium (<0.0020%) and lead (<0.0040%). Global labels are marked with the special collection symbol and the EU qualifier in accordance with EU Battery Directive 2006/66/EC, Article 11. Paragraph 1 on batteries and accumulators and waste batteries and accumulators
<b>10b. General Requirements</b>	
<b>USA CPSIA 2008 (PL. 11900314)</b>	Exempt
<b>USA CPSC FHSA (16 CFR 1500)</b>	Consumer batteries are not listed as a hazardous product.
<b>USA EPA TSCA Section 13 (40 CFR 707.20)</b>	For customs clearance purpose, batteries are defined as an "Article".
<b>USA EPA RCRA (40 CFR 261)</b>	Classified as non-hazardous waste (not ignitable, corrosive, reactive or toxic). Federal Universal Waste Regulations (40 CFR 273) do not apply. State requirements may be more stringent than Federal.
<b>California Prop 65</b>	No warning required per 3rd party assessment.
<b>CANADA Products Containing Mercury Regulations SOR/20140254</b>	Mercury free
<b>EU REACH SVHC's (161 Substances) Candidate List December 2014)</b>	No listed substances are present (>0.01% w/w)
<b>EU REACH Article 31</b>	SDS is not required consumer alkaline batteries.

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**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 (UTGT2.S50939 Single Multiple Station Smoke Alarms - Component)	AA, 9V Certification Standard: ANSI/UL 217 Single & Multiple Station Smoke Alarms
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**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: <i><b>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."</b></i>
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 (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.
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.

**DISCLAIMER:** This AIS is intended to provide a brief summary of our knowledge and guidance regarding the use of this material. The information contained here has been compiled from sources considered by Procter & Gamble 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. Procter & Gamble 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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MATERIAL SAFETY DATA SHEET

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IDENTITY                    Product Category                    :        Rechargeable Battery for Base Station  
                                  Model Name                            :        SEB1N9-0000  
                                  Brand                                    :        ring  
                                  Nominal Capacity                    :        5100 mAh  
                                  Nominal Voltage                     :        3.6V  
                                  Watt-hour                             :        18.36 W/hr  
                                  Chemical System                     :        Lithium Cobaltate / Carbon  
                                  Designed for Recharge              :         Yes  No

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SECTION 1 MANUFACTURER'S INFORMATION

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Manufacturer's Name        :        Welltech Energy Inc.  
 Supplier's Name            :        Welltech Energy Inc.  
 Supplier's Address         :        2F, No.181, An Mei St., Nei Hu District, Taipei City 11484, Taiwan  
 Information Telephone     :        886-2-2790-7958  
 Emergency Telephone     :        886-2-2790-7959  
 Date Prepared              :        2019/12/18

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SECTION 2 HAZARDS IDENTIFICATION

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## PRIMARY ROUTES OF ENTRY

Skin contact, Skin absorption, Eye contact, Inhalation, and Ingestion : NO

## SYMPTOMS OF EXPOSURE

Skin contact: No effect under routine handling and use.

Skin absorption: No effect under routine handling and use.

Eye contact: No effect under routine handling and use.

Inhalation: No effect under routine handling and use.

REPORTED AS CARCINOGEN : Not applicable

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SECTION 3 MATERIAL AND INGREDIENTS INFORMATION

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Battery Cell :

Hazardous Ingredients	%	CAS number
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Aluminum Foil	2-10	7429-90-5
Metal Oxide (proprietary)	20-50	182442-95-1
Polyvinylidene Fluoride (PVDF)	<5	24937-79-9
Copper Foil	2-10	7440-50-8
Carbon (proprietary)	10-30	7740-44-0
Electrolyte (proprietary)	10-20	Confidential
Stainless steel, Nickel and inert materials	Remainder	N/A

## Circuit Module :

HAZARDOUS INGREDIENTS	%	CAS number
Lead	<0.1	7439-92-1
Mercury	0	7439-97-6
Chromium	0	7440-47-3
Cadmium	0	7440-43-9

## Plastic Parts :

HAZARDOUS INGREDIENTS	%	CAS number
Lead	<0.1	7439-92-1
Nickel	<0.01	7440-02-0
CFCs	0	75-69-4
Polychlorinated Biphenyls	0	1336-36-3

## SECTION 4 FIRST-AID MEASURES

**Internal cell materials of an opened battery cell**

- Inhalation :

Make the victim blow his/her nose, gargle. Seek medical attention if necessary.

- Skin contact :

Remove contaminated clothes and shoes immediately. Wash the adhere or contact region with soap and plenty of water immediately.

- Eye contact :

Immediately flush eyes with water continuously for at least 15 minutes. Seek medical attention immediately.

**A battery cell and internal cell materials of an opened battery cell**

Reference Number : MSDS-191218-08



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• Ingestion :

Induce vomiting. When it is impossible or the feeling is not well after vomiting, seek medical attention.

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## SECTION 5 FIRE-FIGHTING MEASURE

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### GENERAL HAZARD

Cell is not flammable but internal organic material will burn if the cell is incinerated. Combustion products include, but are not limited to hydrogen fluoride, carbon monoxide and carbon dioxide.

### EXTINGUISHING MEDIA

Use extinguishing media suitable for the materials that are burning.

### SPECIAL FIREFIGHTING INSTRUCTIONS

If possible, remove cell(s) from fire fighting area. If heated above 125°C, cell(s) can explode/vent.

### FIREFIGHTING EQUIPMENT

Use NIOSH/MSHA approved full-face self-contained breathing apparatus (SCBA) with full protective gear.

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## SECTION 6 ACCIDENTAL RELEASE MEASURES

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### ON LAND

Place material into suitable containers and call local fire/police department.

### IN WATER

If possible, remove from water and call local fire/police department.

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## SECTION 7 HANDLING AND STORAGE

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Storage	:	Store in a cool, well-ventilated area. Do not expose to high temperature ( 45 °C ) . Since short circuit can cause burn hazard or safety vent to open, do not store with metal jewelry, metal covered tables, or metal belt.
Handling	:	Do not disassemble, crush or solder. Do not short + and - terminals with a metal. Do not open the battery.
Charging	:	Charge within the limits of 0°C to 45°C temperature. Charge with specified charger designed for this battery.
Discharging	:	Discharge within the limits of -20°C to 60°C temperature.
Battery Energy Rate	:	The cell capacity at shipment is 30% of the full capacity.
Disposal	:	Dispose in accordance with applicable federal, state and local regulations.
Warning	:	Fire or explosion if incorrectly installed, shorted, disassembled, hated or

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disposed of in fire.

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## SECTION 8 Exposure controls/personal protection

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### Engineering controls

Keep away from heat and open flame. Store in a cool, dry place.

### Personal Protection

#### Respirator

Not required during normal operations. SCBA required in the event of a fire.

#### Eye/face protection

Not required beyond safety practices of employer.

#### Gloves

Not required for handling of cells.

#### Foot protection

Steel toed shoes recommended for large container handling.

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## SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

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State	Solid
Odor	N/A
PH	N/A
Vapor pressure	N/A
Vapor density	N/A
Boiling point	N/A
Solubility in water	Insoluble
Specific gravity	N/A
Density	N/A

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## SECTION 10 STABILITY AND REACTIVITY

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### REACTIVITY

None

### INCOMPATIBILITIES

None during normal operation. Avoid exposure to heat, open flame, and corrosives.

### HAZARDOUS DECOMPOSITION PRODUCTS



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None during normal operating conditions. If cells are opened, hydrogen fluoride and carbon monoxide may be released.

#### CONDITIONS TO AVOID

Avoid exposure to heat and open flame. Do not puncture, crush or incinerate

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### SECTION 11 TOXICOLOGICAL INFORMATION

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This product does not elicit toxicological properties during routine handling and use.

Sensitization	Teratogenicity	Reproductive toxicity	Acute toxicity
NO	NO	NO	NO

If the batteries are opened through misuse or damage, discard immediately. Internal components of cell are irritants and sensitizers.

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### SECTION 12 ECOLOGICAL INFORMATION

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Some materials within the cell are bioaccumulative. Under normal conditions, these materials are contained and pose no risk to persons or the surrounding environment.

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### SECTION 13 DISPOSAL CONSIDERATIONS

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#### CALIFORNIA REGULATED DEBRIS

RCRA Waste Code: Non-regulated

Dispose of according to all federal, state, and local regulations.

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### SECTION 14 Transport information

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The Lithium Ion batteries are considered to be "Rechargeable batteries" and meet the requirements of transportation by the U.S. Department of Transportation(DOT), International Civil Aviation Administration(ICA), International Air Transport Association(IATA) Dangerous Goods Regulations (61th Edition,2020. Special Provision A88, A99, A154 , A164, A181, A182 and Section II or IB of package instruction 965,966 or 967 for lithium ion batteries for UN 3481) and belong to non-dangerous goods and meets all requirements under UN Manual of Tests and Criteria Part III, subsection 38.3.

The International Maritime Dangerous Goods (IMDG) Code · 2018 Edition ( Incorporating Amendment 39-18 ) with special provision 188 & 230.

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## SECTION 15 REGULATORY INFORMATION

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Regulations specifically applicable to the product :

- The transport of the lithium batteries is regulated by the United Nations, "Model Regulations on Transport of Dangerous Goods Special Provisions A188".
- Lithium batteries are subject to shipping requirements exceptions under 49 CFR 173.185(paragraph c).
- Shipping of Lithium batteries in aircrafts are regulated by the International Civil Aviation Organization (ICAO) and the International Air Transport Association (IATA) requirements in Special Provision "A48".
- Shipping of lithium batteries on sea are regulated the International Maritime Dangerous Goods (IMDG) requirements.
- The internal component (thionyl chloride) is non-hazardous and under the criteria of the Federal OSHA Hazard Communication Standard 29 CFR 190.1200.

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## SECTION 16 SPECIAL PROTECTION INFORMATION

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Respiratory Protection : Not necessary under normal use.  
Ventilation : Not necessary under normal use.  
Eye Protection : Not necessary under normal use.  
Protective Gloves : Not necessary under normal use.

# Material Safety Data Sheet

## Section 1-Chemical Product and Company Identification

Product name: Lithium ion rechargeable battery cell

Details

BATTER MODEL	Cell Voltage (V)	Battery Voltage (V)	Watt hour Rating (Wh)	Weight (grams)	Equivalent Lithium Content (grams)
PT464085 PCM2000	3.7V	3.7V	7.4Wh	35g	0.6g

**Manufacturer:**

Guangdong Pow-tech New Power Co., Ltd

Address: No.9,Hengdong 3Road,Hengkeng Shiling Industry Zone,Liaobu Town,Dongguan

Tel: (+86)769-83527566, Fax: (+86)0769-83520288

E-mail [luisa-wang@szpowtech.com.cn](mailto:luisa-wang@szpowtech.com.cn)

## Section 2-Hazards Identification

### Preparation hazards and classification

Not dangerous with normal use. Do not dismantle, open or shred Li-ion Battery

Exposure to the ingredients contained within or their ingredients products could be harmful.

**Appearance, Color, and Odor:** Solid object with no odor, no color.

### Primary Route(s) of Exposure:

These chemicals are contained in a Aluminum-plastic composite membrane or hermetically sealed metal or metal laminated plastic case,

Risk of exposure occurs only if the cell is mechanically, thermally or electrically abused to the point of compromising the enclosure. If this occurs, exposure to the electrolyte solution contained within can occur by Inhalation, Ingestion, Eye contact and Skin contact.

### Potential Health Effects:

Acute (short term): see Section 8 for exposure controls In the event that this battery has been ruptured, the electrolyte solution contained within the battery would be corrosive and can cause burns.

Inhalation: Inhalation of materials from a sealed battery is not an expected route of exposure. Vapors or mists from a ruptured battery may cause respiratory irritation.

Ingestion: Swallowing of materials from a sealed battery is not an expected route of exposure. Swallowing the contents of an open battery can cause serious chemical burns of mouth, esophagus, and gastrointestinal tract

Skin: Contact between the battery and skin will not cause any harm. Skin contact with contents of an open battery can cause severe irritation or burns to the skin.

Eye: Contact between the battery and the eye will not cause any harm. Eye contact with contents of an open battery can cause severe irritation or burns to the eye.

**Medical Conditions Aggravated by Exposure:** Not applicable

**Reported as carcinogen:** Not applicable

### Section 3-Composition/Information on Ingredients

Chemical Composition	Molecular Formula	Weight%	CAS No	OSHA(PEL)	ACGIH(TLV)
Cobalt lithium manganese nickel oxide	$\text{LiNi}_x\text{Co}_y\text{Mn}_{1-x-y}\text{O}_2$	45%	182442-95-1	N/A	N/A
Graphite	C	25%	7782-42-5	N/A	N/A
Electrolyte	$\text{LiPF}_6 \text{ C}_3\text{H}_4\text{O}_3 \text{ C}_4\text{H}_6\text{O}_3 \text{ C}_3\text{H}_{10}\text{O}_3$	13%	21324-40-3	N/A	N/A
CMC	$[\text{C}_6\text{H}_7\text{O}_2(\text{OH})_2\text{CH}_2\text{COONa}]_n$	0.2%	9004-32-4	N/A	N/A
Cu	Cu	10%	7440-50-8	N/A	N/A
Aluminum foil	Al	5%	7429-90-5	N/A	N/A
1,1-Difluoroethylene polymer	$(\text{C}_2\text{H}_2\text{F}_2)_n$	1.2%	24937-79-9	N/A	N/A
SBR	$(\text{C}_8\text{H}_8.\text{C}_4\text{H}_6)_x$	0.6%	9003-55-8	N/A	N/A

### Section 4-First-aid Measures

Inhalation	If contents of an opened battery are inhaled, remove source of contamination or move victim to fresh air. Obtain medical advice.
Skin contact	If skin contact with contents of an open battery occurs, as quickly as possible remove contaminated clothing, shoes and leather goods. Immediately flush with lukewarm, gently flowing water for at least 30 minutes. If irritation or pain persists, seek medical attention. Completely decontaminate clothing, shoes and leather goods before reuse or discard.
Eye contact	If eye contact with contents of an open battery occurs, immediately flush the contaminated eye(s) with lukewarm, gently flowing water for at least 30 minutes while holding the eyelids open. Neutral saline solution may be used as soon as it is available. If necessary, continue flushing during transport to emergency care facility. Take care not to rinse contaminated water into the unaffected eye or onto face. Quickly transport victim to an emergency care facility.
Ingestion	If ingestion of contents of an open battery occurs, never give anything by mouth if victim is rapidly losing consciousness, or is unconscious or convulsing. Have victim rinse mouth thoroughly with water. DO NOT INDUCE VOMITING. Have victim drink 60 to 240 mL (2-8 oz.) of water. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Have victim rinse mouth with water again. Quickly transport victim to an emergency care facility.

### Section 5-Fire Fighting Measures

Flammable Properties	In the event that this battery has been ruptured, the electrolyte solution contain within the battery would be flammable. Like any sealed container, battery cells may rupture when exposed to excessive heat; this could result in the release of flammable or corrosive materials.
Suitable extinguishing Media	Use extinguishing media suitable for the materials that are burning.

Unsuitable extinguishing Media	Not available
Explosion Data	Sensitivity to Mechanical Impact: This may result in rupture in extreme cases Sensitivity to Static Discharge: Not Applicable
Specific Hazards arising from the chemical	Fires involving Li-ion Battery can be controlled with water. When water is used, however, hydrogen gas may evolve. In a confined space, hydrogen gas can form an explosive mixture. In this situation, smothering agents are recommended to extinguish the fire
Protective Equipment and precautions for firefighters	As for any fire, evacuate the area and fight the fire from a safe distance. Wear a pressure-demand, self-contained breathing apparatus and full protective gear. Fight fire from a protected location or a safe distance. Use NIOSH/MSHA approved full-face self-contained breathing apparatus(SCBA) with full protective gear.
NFPA	Health: 0 Flammability: 0 Instability: 0

## Section 6-Accidental Release Measures

Spilled internal cell materials, such as electrolyte leaked from a battery cell, are carefully dealt with according to the followings:

Precautions for human body:

Remove spilled materials with protective equipment (protective glasses and protective gloves). Do not inhale the gas as much as possible. Moreover, avoid touching with as much as possible.

Environmental precautions:

Do not throw out into the environment. Method of cleaning up: The spilled solids are put into a container. The leaked place is wiped off with dry cloth. Prevention of secondary hazards:

Avoid re-scattering. Do not bring the collected materials close to fire.

## Section 7-Handling and Storage

Handling	Don't handling Li-ion Battery with metalwork. Do not open, disassemble, crush or burn battery. Ensure good ventilation/ exhaustion at the workplace. Prevent formation of dust. Information about protection against explosions and fires: Keep ignition sources away- Do not smoke.
Storage	If the Li-ion Battery are subject to storage for such a long term as more than 3 months, it is recommended to recharge the Li-ion Battery periodically. 3 months: -10 ~+40 , 45 to 85%RH And recommended at 0 ~+35 for long period storage. The capacity recovery rate in the delivery state (50% capacity of fully charged) after storage is assumed to be 80% or more. The voltage for a long time storage shall be 3.7V~4.2V range. Do not storage Li-ion Battery haphazardly in a box or drawer where they may short-circuit each other or be short-circuited by other metal objects. Keep out of reach of children. Do not expose Li-ion Battery to heat or fire.

	Avoid storage in direct sunlight. Do not store together with oxidizing and acidic materials.
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## Section 8-Exposure Controls/Personal Protection

Engineering Controls	Use local exhaust ventilation or other engineering controls to control sources of dust, mist, fumes and vapor. Keep away from heat and open flame. Store in a cool, dry place.
Personal Protective Equipment	Respiratory Protection: Not necessary under normal conditions. Skin and body Protection: Not necessary under normal conditions, Wear neoprene or nitrile rubber gloves if handling an open or leaking battery. Hand protection: Wear neoprene or natural rubber material gloves if handling an open or leaking battery. Eye Protection: Not necessary under normal conditions, Wear safety glasses if handling an open or leaking battery.
Other Protective Equipment	Have a safety shower and eye wash fountain readily available in the immediate work area.
Hygiene Measures	Do not eat, drink, or smoke in work area. Maintain good housekeeping.

## Section 9-Physical and Chemical Properties

Physical State	Form: Solid
	Color: White
	Odor: Monotony
Change in condition:	
pH, with indication of the concentration	Not applicable
Melting point/freezing point	Not available.
Boiling Point, initial boiling point and Boiling range:	Not available.
Flash Point	Not available.
Upper/lower flammability or explosive limits	Not available.
Vapor Pressure:	Not applicable
Vapor Density: (Air = 1)	Not applicable
Density/relative density	Not available.
Solubility in Water:	Insoluble
n-octanol/water partition coefficient	Not available.

Auto-ignition temperature	130
Decomposition temperature	Not available.
Odor threshold	Not available.
Evaporation rate	Not available.
Flammability (soil, gas)	Not available.
Viscosity	Not applicable

## Section 10- Stability and Reactivity

Stability	The product is stable under normal conditions.
Conditions to Avoid (e.g. static discharge, shocker vibration)	Do not subject Li-ion Battery to mechanical shock. Vibration encountered during transportation does not cause leakage, fire or explosion. Do not disassemble, crush, short or install with incorrect polarity. Avoid mechanical or electrical abuse.
Incompatible Materials	Not Available
Hazardous Decomposition Products	This material may release toxic fumes if burned or exposed to fire
Possibility of Hazardous Reaction	Not Available

## Section 11-Toxicological Information

Irritation	Risk of irritation occurs only if the cell is mechanically, thermally or electrically abused to the point of compromising the enclosure. If this occurs, irritation to the skin, eyes and respiratory tract may occur.
Sensitization	Not Available
Neurological Effects	Not Available
Teratogenicity	Not Available
Reproductive Toxicity	Not Available
Mutagenicity (Genetic Effects)	Not Available
Toxicologically Synergistic Materials	Not Available

## Section 12-Ecological Information

General note:

Since a battery cell and the internal materials remain in the environment, do not bury or throw out into the environment.

Water hazard class 1(Self-assessment): slightly hazardous for water. Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

## Section 13-Disposal Considerations

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Product disposal recommendation: Observe local, state and federal laws and regulations. Packaging disposal recommendation: Be aware discarded batteries may cause fire, tape the battery terminals to insulate them. Don't disassembly the battery. Completely discharge containers (no tear drops, no powder rest, scraped carefully). Containers may be recycled or re-used. Observe local, state and federal laws and regulations.

The potential effects on the environment and human health of the substances used in batteries and accumulations; the desirability of not disposing of waste batteries and accumulators as unsorted municipal waste and of participating in their separate collection so as to facilitate treatment and recycling.

## Section 14-Transport Information

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This report applies to by sea, by air and by land;

The Li-ion Battery tested according to the requirements of the 6th revised edition of the UN manual of tests and Criteria, Part , subsection 38.3

Lithium ion battery was protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to short circuit;

The LITHIUM ION BATTERY according to Section II/IA/IB of PACKING INSTRUCTION 965/ 966 /967 of the 2020 IATA Dangerous Goods regulations 61th Edition may be transported and applicable U.S.DOT regulations for the safe transport of Li-ion Battery.

More information concerning shipping, testing, marking and packaging can be obtained from label master at <http://www.labelmaster.com/>.

The packaging shall be adequate to avoid mechanical damage during transport, handling and stacking.

The materials and pack design shall be chosen so as to prevent the development of unintentional electrical conduction, corrosion of the terminals and ingress of moisture.

The package must be handled with care and that a flammability hazard exists if the package is damaged;

Each package must be labeled with a Li-ion Battery handling label or in addition to the Class 9 hazard label.

With regard to transport, the following regulations are cited and considered:

- The International Civil Aviation Organization (ICAO) Technical Instructions.
- The International Air transport Association (IATA) Dangerous Goods Regulations. UN number of lithium battery: UN3480 or UN3481;

UN Proper shipping name/Description (technical name): Lithium ion batteries or Lithium ion batteries contained in equipment or Lithium ion batteries packed with equipment;

UN Classification (Transport hazard class): Non dangerous;

Marine pollutant (Y/N): N;

- The International Maritime Dangerous Goods IMDG Code(Amend 39-2018).

For lithium-ion batteries by sea, provided that packaging is strong and prevent the products from short-circuit.

UN number of lithium battery: UN3480 or UN3481;

UN Proper shipping name/Description (technical name): Lithium ion batteries or Lithium ion batteries contained in equipment or Lithium ion batteries packed with equipment;

UN Classification (Transport hazard class): Non dangerous; Marine pollutant (Y/N): N;

Special Provision: International maritime dangerous goods IMDG (Amend 39-2018)188, 230, 310, 348, 957;

- The US Hazardous Materials Regulation (HMR) pursuant to a final rule issued by RSPA
- The Office of Hazardous Materials Safety within the US Department of Transportations' (DOT) Research and Special Programs Administration (RSPA)



**Section 15-Regulatory Information**

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Regulations specifically applicable to the product: Wastes Disposal and Public Cleaning Law [Japan] Law for Promotion of Effective Utilization of resources [Japan] US Department of Transportation 49 Code of Federal Regulations [USA]

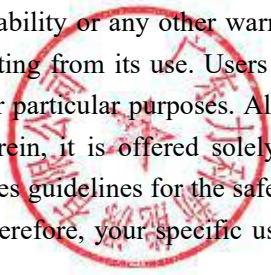
OSHA hazard communication standard (29 CFR 1910.1200)

\_\_\_\_\_ Hazardous                                    V   Non-hazardous

**Section 16-Other Information**

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The information above is believed to be accurate and represents the best information currently available to us. However, concord makes no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. Although reasonable precautions have been taken in the preparation of the data contained herein, it is offered solely for your information, consideration of investigation. This material safety data sheet provides guidelines for the safe handling and use of this product; it does not and cannot advise on all possible situations, therefore, your specific use of this product should be evaluated to determine if additional precautions are required.



The data/information contained herein has been reviewed and approved for general release on the basis that this document contains no export controlled information.

# Material Safety Data Sheet

## Section 1-Chemical Product and Company Identification

Product name: Lithium ion rechargeable battery cell

Details:

BATTER MODEL	Cell Voltage (V)	Battery Voltage (V)	Watt hour Rating (Wh)	Weight (grams)	Equivalent Lithium Content (grams)
PT603040	3.7V	3.7V	2.78Wh	11.7g	0.225g

Manufacturer:

Guangdong Pow-tech New Power Co., Ltd

Address: No.9,Hengdong 3Road,Hengkeng Shiling Industry Zone,Liaobu Town,Dongguan

Tel: (+86)769-83527566, Fax: (+86)0769-83520288

E-mail : [luisa-wang@szpowtech.com.cn](mailto:luisa-wang@szpowtech.com.cn)

## Section 2-Hazards Identification

### Preparation hazards and classification

Not dangerous with normal use. Do not dismantle, open or shred Li-ion Battery

Exposure to the ingredients contained within or their ingredients products could be harmful.

**Appearance, Color, and Odor:** Solid object with no odor, no color.

### Primary Route(s) of Exposure:

These chemicals are contained in a Aluminum-plastic composite membrane or hermetically sealed metal or metal laminated plastic case,

Risk of exposure occurs only if the cell is mechanically, thermally or electrically abused to the point of compromising the enclosure. If this occurs, exposure to the electrolyte solution contained within can occur by Inhalation, Ingestion, Eye contact and Skin contact.

### Potential Health Effects:

Acute (short term): see Section 8 for exposure controls In the event that this battery has been ruptured, the electrolyte solution contained within the battery would be corrosive and can cause burns.

Inhalation: Inhalation of materials from a sealed battery is not an expected route of exposure. Vapors or mists from a ruptured battery may cause respiratory irritation.

Ingestion: Swallowing of materials from a sealed battery is not an expected route of exposure. Swallowing the contents of an open battery can cause serious chemical burns of mouth, esophagus, and gastrointestinal tract

Skin: Contact between the battery and skin will not cause any harm. Skin contact with contents of an open battery can cause severe irritation or burns to the skin.

Eye: Contact between the battery and the eye will not cause any harm. Eye contact with contents of an open battery can cause severe irritation or burns to the eye.

**Medical Conditions Aggravated by Exposure:** Not applicable

**Reported as carcinogen:** Not applicable

### Section 3-Composition/Information on Ingredients

Chemical Composition	Molecular Formula	Weight%	CAS No	OSHA(PEL)	ACGIH(TLV)
Cobalt lithium manganese nickel oxide	$\text{LiNi}_x\text{Co}_y\text{Mn}_{1-x-y}\text{O}_2$	45%	182442-95-1	N/A	N/A
Graphite	C	25%	7782-42-5	N/A	N/A
Electrolyte	$\text{LiPF}_6 \text{ C}_3\text{H}_4\text{O}_3 \text{ C}_4\text{H}_6\text{O}_3 \text{ C}_3\text{H}_{10}\text{O}_3$	13%	21324-40-3	N/A	N/A
CMC	$[\text{C}_6\text{H}_7\text{O}_2(\text{OH})_2\text{CH}_2\text{COONa}]_n$	0.2%	9004-32-4	N/A	N/A
Cu	Cu	10%	7440-50-8	N/A	N/A
Aluminum foil	Al	5%	7429-90-5	N/A	N/A
1,1-Difluoroethylene polymer	$(\text{C}_2\text{H}_2\text{F}_2)_n$	1.2%	24937-79-9	N/A	N/A
SBR	$(\text{C}_8\text{H}_8.\text{C}_4\text{H}_6)_x$	0.6%	9003-55-8	N/A	N/A

### Section 4-First-aid Measures

Inhalation	If contents of an opened battery are inhaled, remove source of contamination or move victim to fresh air. Obtain medical advice.
Skin contact	If skin contact with contents of an open battery occurs, as quickly as possible remove contaminated clothing, shoes and leather goods. Immediately flush with lukewarm, gently flowing water for at least 30 minutes. If irritation or pain persists, seek medical attention. Completely decontaminate clothing, shoes and leather goods before reuse or discard.
Eye contact	If eye contact with contents of an open battery occurs, immediately flush the contaminated eye(s) with lukewarm, gently flowing water for at least 30 minutes while holding the eyelids open. Neutral saline solution may be used as soon as it is available. If necessary, continue flushing during transport to emergency care facility. Take care not to rinse contaminated water into the unaffected eye or onto face. Quickly transport victim to an emergency care facility.
Ingestion	If ingestion of contents of an open battery occurs, never give anything by mouth if victim is rapidly losing consciousness, or is unconscious or convulsing. Have victim rinse mouth thoroughly with water. DO NOT INDUCE VOMITING. Have victim drink 60 to 240 mL (2-8 oz.) of water. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Have victim rinse mouth with water again. Quickly transport victim to an emergency care facility.

### Section 5-Fire Fighting Measures

Flammable Properties	In the event that this battery has been ruptured, the electrolyte solution contain within the battery would be flammable. Like any sealed container, battery cells may rupture when exposed to excessive heat; this could result in the release of flammable or corrosive materials.
Suitable extinguishing Media	Use extinguishing media suitable for the materials that are burning.

Unsuitable extinguishing Media	Not available
Explosion Data	Sensitivity to Mechanical Impact: This may result in rupture in extreme cases Sensitivity to Static Discharge: Not Applicable
Specific Hazards arising from the chemical	Fires involving Li-ion Battery can be controlled with water. When water is used, however, hydrogen gas may evolve. In a confined space, hydrogen gas can form an explosive mixture. In this situation, smothering agents are recommended to extinguish the fire
Protective Equipment and precautions for firefighters	As for any fire, evacuate the area and fight the fire from a safe distance. Wear a pressure-demand, self-contained breathing apparatus and full protective gear. Fight fire from a protected location or a safe distance. Use NIOSH/MSHA approved full-face self-contained breathing apparatus(SCBA) with full protective gear.
NFPA	Health: 0 Flammability: 0 Instability: 0

## Section 6-Accidental Release Measures

Spilled internal cell materials, such as electrolyte leaked from a battery cell, are carefully dealt with according to the followings:

Precautions for human body:

Remove spilled materials with protective equipment (protective glasses and protective gloves). Do not inhale the gas as much as possible. Moreover, avoid touching with as much as possible.

Environmental precautions:

Do not throw out into the environment. Method of cleaning up: The spilled solids are put into a container. The leaked place is wiped off with dry cloth. Prevention of secondary hazards:

Avoid re-scattering. Do not bring the collected materials close to fire.

## Section 7-Handling and Storage

Handling	Don't handling Li-ion Battery with metalwork. Do not open, disassemble, crush or burn battery. Ensure good ventilation/ exhaustion at the workplace. Prevent formation of dust. Information about protection against explosions and fires: Keep ignition sources away- Do not smoke.
Storage	If the Li-ion Battery are subject to storage for such a long term as more than 3 months, it is recommended to recharge the Li-ion Battery periodically. 3 months: -10°C~+40°C, 45 to 85%RH And recommended at 0°C~+35°C for long period storage. The capacity recovery rate in the delivery state (50% capacity of fully charged) after storage is assumed to be 80% or more. The voltage for a long time storage shall be 3.7V~4.2V range. Do not storage Li-ion Battery haphazardly in a box or drawer where they may short-circuit each other or be short-circuited by other metal objects. Keep out of reach of children. Do not expose Li-ion Battery to heat or fire.

	Avoid storage in direct sunlight. Do not store together with oxidizing and acidic materials.
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## Section 8-Exposure Controls/Personal Protection

Engineering Controls	Use local exhaust ventilation or other engineering controls to control sources of dust, mist, fumes and vapor. Keep away from heat and open flame. Store in a cool, dry place.
Personal Protective Equipment	Respiratory Protection: Not necessary under normal conditions. Skin and body Protection: Not necessary under normal conditions, Wear neoprene or nitrile rubber gloves if handling an open or leaking battery. Hand protection: Wear neoprene or natural rubber material gloves if handling an open or leaking battery. Eye Protection: Not necessary under normal conditions, Wear safety glasses if handling an open or leaking battery.
Other Protective Equipment	Have a safety shower and eye wash fountain readily available in the immediate work area.
Hygiene Measures	Do not eat, drink, or smoke in work area. Maintain good housekeeping.

## Section 9-Physical and Chemical Properties

Physical State	Form: Solid
	Color: White
	Odor: Monotony
Change in condition:	
pH, with indication of the concentration	Not applicable
Melting point/freezing point	Not available.
Boiling Point, initial boiling point and Boiling range:	Not available.
Flash Point	Not available.
Upper/lower flammability or explosive limits	Not available.
Vapor Pressure:	Not applicable
Vapor Density: (Air = 1)	Not applicable
Density/relative density	Not available.
Solubility in Water:	Insoluble
n-octanol/water partition coefficient	Not available.

Auto-ignition temperature	130°C
Decomposition temperature	Not available.
Odor threshold	Not available.
Evaporation rate	Not available.
Flammability (soil, gas)	Not available.
Viscosity	Not applicable

## Section 10- Stability and Reactivity

Stability	The product is stable under normal conditions.
Conditions to Avoid (e.g. static discharge, shocker vibration)	Do not subject Li-ion Battery to mechanical shock. Vibration encountered during transportation does not cause leakage, fire or explosion. Do not disassemble, crush, short or install with incorrect polarity. Avoid mechanical or electrical abuse.
Incompatible Materials	Not Available
Hazardous Decomposition Products	This material may release toxic fumes if burned or exposed to fire
Possibility of Hazardous Reaction	Not Available

## Section 11-Toxicological Information

Irritation	Risk of irritation occurs only if the cell is mechanically, thermally or electrically abused to the point of compromising the enclosure. If this occurs, irritation to the skin, eyes and respiratory tract may occur.
Sensitization	Not Available
Neurological Effects	Not Available
Teratogenicity	Not Available
Reproductive Toxicity	Not Available
Mutagenicity (Genetic Effects)	Not Available
Toxicologically Synergistic Materials	Not Available

## Section 12-Ecological Information

General note:

Since a battery cell and the internal materials remain in the environment, do not bury or throw out into the environment.

Water hazard class 1(Self-assessment): slightly hazardous for water. Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

## Section 13-Disposal Considerations

---

Product disposal recommendation: Observe local, state and federal laws and regulations. Packaging disposal recommendation: Be aware discarded batteries may cause fire, tape the battery terminals to insulate them. Don't disassembly the battery. Completely discharge containers (no tear drops, no powder rest, scraped carefully). Containers may be recycled or re-used. Observe local, state and federal laws and regulations.

The potential effects on the environment and human health of the substances used in batteries and accumulations; the desirability of not disposing of waste batteries and accumulators as unsorted municipal waste and of participating in their separate collection so as to facilitate treatment and recycling.

## Section 14-Transport Information

---

This report applies to by sea, by air and by land;

The Li-ion Battery tested according to the requirements of the 6th revised edition of the UN manual of tests and Criteria, Part III, subsection 38.3;

Lithium ion battery was protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to short circuit;

The LITHIUM ION BATTERY according to Section II/IA/IB of PACKING INSTRUCTION 965/ 966 /967 of the 2020 IATA Dangerous Goods regulations 61th Edition may be transported and applicable U.S.DOT regulations for the safe transport of Li-ion Battery.

More information concerning shipping, testing, marking and packaging can be obtained from label master at <http://www.labelmaster.com/>.

The packaging shall be adequate to avoid mechanical damage during transport, handling and stacking.

The materials and pack design shall be chosen so as to prevent the development of unintentional electrical conduction, corrosion of the terminals and ingress of moisture.

The package must be handled with care and that a flammability hazard exists if the package is damaged;

Each package must be labeled with a Li-ion Battery handling label or in addition to the Class 9 hazard label.

With regard to transport, the following regulations are cited and considered:

- The International Civil Aviation Organization (ICAO) Technical Instructions.
- The International Air transport Association (IATA) Dangerous Goods Regulations. UN number of lithium battery: UN3480 or UN3481;

UN Proper shipping name/Description (technical name): Lithium ion batteries or Lithium ion batteries contained in equipment or Lithium ion batteries packed with equipment;

UN Classification (Transport hazard class): Non dangerous;

Marine pollutant (Y/N): N;

- The International Maritime Dangerous Goods IMDG Code(Amend 39-2018).

For lithium-ion batteries by sea, provided that packaging is strong and prevent the products from short-circuit. UN number of lithium battery: UN3480 or UN3481;

UN Proper shipping name/Description (technical name): Lithium ion batteries or Lithium ion batteries contained in equipment or Lithium ion batteries packed with equipment;

UN Classification (Transport hazard class): Non dangerous; Marine pollutant (Y/N): N;

Special Provision: International maritime dangerous goods code IMDG (Amend 39-2018)188, 230, 310, 348, 957;

- The US Hazardous Materials Regulation (HMR) pursuant to a final rule issued by RSPA
- The Office of Hazardous Materials Safety within the US Department of Transportations' (DOT) Research and Special Programs Administration (RSPA)

**Section 15-Regulatory Information**

Regulations specifically applicable to the product: Wastes Disposal and Public Cleaning Law [Japan] Law for Promotion of Effective Utilization of resources [Japan] US Department of Transportation 49 Code of Federal Regulations [USA]

OSHA hazard communication standard (29 CFR 1910.1200)

\_\_\_\_\_ Hazardous                          V \_\_\_\_\_ Non-hazardous

**Section 16-Other Information**



The information above is believed to be accurate and represents the best information currently available to us. However, concord makes no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. Although reasonable precautions have been taken in the preparation of the data contained herein, it is offered solely for your information, consideration of investigation. This material safety data sheet provides guidelines for the safe handling and use of this product; it does not and cannot advise on all possible situations, therefore, your specific use of this product should be evaluated to determine if additional precautions are required.

The data/information contained herein has been reviewed and approved for general release on the basis that this document contains no export controlled information.



**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	
<b>Document Name</b>	<b>Duracell Lithium Coin Batteries (primary lithium metal cells and batteries)</b>
<b>Document ID</b>	AIS-LiCoin
<b>Issue Date</b>	1-Jul-15
<b>Version</b>	5.0
<b>Preparer</b>	Product Safety & Regulatory (PSR)
<b>Last Revision</b>	1/1/2019
2. Company Information	
<b>Name &amp; Address</b>	Duracell US Operations, Inc., 14 Research Drive, Bethel, CT USA 06801
<b>Website</b>	www.duracell.com
<b>Consumer Relations</b>	North America: 1-800-551-2355 (9:00 AM - 5:00 PM EST)
3. Article Information	
<b>Description</b>	Duracell branded consumer lithium battery
<b>Product Category</b>	Electro-technical device
<b>Use</b>	Portable power source for electronic devices
<b>Global sub-brands (Retail)</b>	Duracell, Ultra
<b>Global sub-brands (B2B)</b>	Bulk
<b>Sizes</b>	1025, 1216, 1220, 1225, 1612, 1616, 1620, 1632, 2016, 2025, 2032, 2320, 2325, 2330, 2354, 2412, 2430, 2450, 2477
<b>IEC Designations</b>	CR (1025, 1216, 1220, 1225, 1612, 1616, 1620, 1632, 2016, 2025, 2032, 2320, 2325, 2330, 2354, 2412, 2430, 2450, 2477)
<b>Principles of Operation</b>	A battery powers a device by converting stored chemical energy into electrical energy.
<b>Representative Product Images</b>	<div style="display: flex; justify-content: space-around; align-items: center;">   </div>
	<div style="display: flex; justify-content: space-around;"> <span><b>Retail</b></span> <span><b>Bulk</b></span> </div>
4. Article Construction	
<b>Applicable Battery Industry Standards</b>	ANSI C18.3M Part 1, ANSI C18.3M Part 2, ANSI C18.4, IEC 60086,1, IEC 60086-2, IEC 60086-4
<b>Electro-technical System</b>	Lithium Manganese Dioxide
<b>Electrode - Negative</b>	Lithium Alloy (CAS # 7439-93-2)
<b>Electrode - Positive</b>	Manganese Dioxide (CAS # 1313-13-9)
<b>Electrolyte</b>	Propylene Carbonate Solvent (CAS # 108-32-7)
<b>Electrolyte</b>	1,2-Dimethoxyethane Solvent (CAS # 110-71-4)
<b>Electrolyte</b>	Lithium Perchlorate Salt (CAS # 7791-03-9)
<b>Materials of Construction - Can</b>	Steel (CAS # 110-71-4)
<b>Declarable Substances (IEC 62474 Criteria 1)</b>	1-2-Dimethoxyethane (CAS # 110-71-4)
<b>Mercury Free Battery (ANSI C18.4M &lt;500m)</b>	Yes

**Article Information Sheet (AIS)**

<p><b>Small Cell or Battery</b> <b>(ANSI C18.1M Part 2; IEC 60086-5)</b></p>	<p>Lithium coin batteries fit inside a specially designed test cylinder 2.25 inches (57.1mm) long by 1.25 inches (31.70 mm) wide.</p>
<p><b>5. Health &amp; Safety</b></p>	
<p><b>Ingestion/Small Parts Warning</b></p>	<p><u>Required for all sizes of lithium coin batteries:</u> Keep away from children. If swallowed, consult a physician immediately.</p>
<p><b>Normal Conditions of Use</b></p>	<p>Exposure to contents inside the sealed battery will not occur unless the battery leaks, is exposed to high temperatures, or is mechanically abused.</p>
<p><b>Note to Physician</b></p>	<p><b>Note to Physician</b> – For information on battery identification and treatment, call the 24 hour <b>NATIONAL BATTERY INGESTION HOTLINE (800-408-8666)</b>. Additional treatment information is available from the <b>NATIONAL CAPITAL POISON CONTROL CENTER BUTTON BATTERY INGESTION TRIAGE AND TREATMENT GUIDELINE: <a href="https://www.poison.org/battery/guideline">https://www.poison.org/battery/guideline</a></b>. If the patient is less than or equal to 12 years, immediately obtain an x-ray to locate the battery. If the patient is &gt; 12 years and the battery diameter is &gt; 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 &lt; 5 years, and based on history, might have lodged in the esophagus for &gt; 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.</p>
<p><b>First Aid - If swallowed</b></p>	<p><b>First Aid – If battery swallowed DO NOT GIVE IPECAC.</b> Do not induce vomiting. Seek medical attention immediately and call 24 hour <b>NATIONAL BATTERY INGESTION HOTLINE (800-498-8666)</b> 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. <b>Do not delay going to the ER to obtain or give honey.</b> Other than the honey do not give anything by mouth.</p>

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<b>24 Hour National Battery Ingestion Hotline</b>	<b>USA/CANADA CALLS ONLY: 1-800-498-8666 (Toll Free)</b>
<b>First Aid - Eye Contact</b>	Flush with running water for at least 30 minutes. Seek medical attention immediately.
<b>First Aid - Skin Contact</b>	Remove contaminated clothing and flush skin with running water for at least 15 minutes. Seek medical attention if irritation persists.
<b>First Aid - Inhalation</b>	Contents of leaking battery may be irritating to respiratory passages. Move to fresh air. Seek medical attention if irritation persists.
<b>Battery Safety Standards &amp; Testing</b>	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 lithium 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: <u><b>1-Intended use simulation:</b></u> Partial use, vibration, thermal shock, and mechanical shock <u><b>2-Reasonably foreseeable misuse:</b></u> Incorrect installation, external short-circuit, free fall (user-drop), over-discharge, and crush <u><b>3-Design consideration:</b></u> Thermal abuse, mold stress
<b>Precautionary Statements</b>	CAUTION: Keep batteries away from children. If swallowed, consult a physician at once. For information on treatment, within North America call <b>1-800-498-8666 (Toll Free)</b> . 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.
<b>6. Fire Hazard &amp; Firefighting</b>	
<b>Fire Hazard</b>	Batteries may rupture or leak if involved in a fire.
<b>Extinguishing Media</b>	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.
<b>Fires Involving Large Quantities of Batteries</b>	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).
<b>7. Handling &amp; Storage</b>	
<b>Handling Precautions</b>	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.
<b>Storage Precautions</b>	Store batteries in a dry place at normal room temperature. Refrigeration does not make them last longer.

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<p><b>Spills of Large Quantities of Loose Batteries (unpackaged)</b></p>	<p>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.</p>
<p><b>8. Disposal Considerations (GHS Section 13)</b></p>	
<p><b>Collection &amp; Proper Disposal</b></p>	<p>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.</p>
<p><b>USA EPA RCRA (40 CFR 261)</b></p>	<p>"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.</p>
<p><b>USA DOT (49 CFR 173.184 (d))</b></p>	<p>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.</p>
<p><b>California Universal Waste Rule (Cal. Code Regs. Title 22, Div. 4.5, Ch. 23)</b></p>	<p>California prohibits disposal of batteries as trash (including household trash).</p>
<p><b>Vermont Primary Battery Stewardship Law (ACT 139)</b></p>	<p>In Vermont, consumers must recycle lithium coin batteries. For information, contact <a href="http://www.call2recycle.org">http://www.call2recycle.org</a>.</p>
<p><b>9. Transport Information (GHS Section 14)</b></p>	
<p><b>Regulatory Status</b></p>	<p>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 2019- 60th edition. Shipping packages for all DURACELL lithium cells/batteries are designed to prevent: short circuits, movement within the package, damage 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.</p>
<p><b>DEFECTIVE Lithium Batteries</b></p>	<p>Defective Lithium batteries are <b>forbidden</b> on both Passenger and Cargo Aircraft. For all other modes of transportation, defective lithium batteries are fully regulated as <b><u>Dangerous Goods</u></b>.</p>

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<b>Total Lithium Content (grams)</b>	The lithium metal content of each coin cell is less than 0.3g.
<b>UN Identification Number/ Shipping Name</b>	UN3090 Primary lithium metal batteries UN3091 Primary lithium metal batteries packed with or contained in equipment
<b>UN 38.3 Transportation Tests</b>	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.
<b>Special Provisions Conformance</b>	Special regulatory provisions require batteries to be packaged in a manner that prevents the generation of a dangerous quantity of heat and short circuits.
<b>USA DOT Special Provision</b>	49 CFR 173.185( c) SP A101
<b>USA DOT Exceptions for Lithium Cells or Batteries Shipped for Disposal or Recycling</b>	40 CFR 173.185(d)
<b>Air Transport (IATA/ICAO) Packing Instructions</b>	PI 968 – Lithium metal batteries PI 969 – Lithium metal batteries packed with equipment PI 970 – Lithium metal batteries contained in equipment
<b>Marine/Water Transport (IMDG) Special Provision</b>	188
<b>ADR/RID Special Provision</b>	188
<b>Passenger Air Travel</b>	Air travelers should consult the US Department of Transportation (DOT) Safety Travel web site at <a href="http://safetravel.dot.gov">http://safetravel.dot.gov</a> for guidance regarding carry on of lithium batteries.
<b>Emergency Transportation Hotline</b>	<b>CHEMTREC 24-Hour Emergency Response Hotline</b> <b>Within the United States call +703-527-3887</b> <b>Outside the United States, call +1 703-527-3887 (Collect)</b>
<b>10. Regulatory Information (GHS Section 15)</b>	
<b>10a. Battery Requirements</b>	
<b>USA EPA Mercury Containing &amp; Rechargeable Battery Management Act of 1996</b>	During the manufacturing process, no mercury is added.
<b>EU Battery Directive 2006/66/EC &amp; amendment 2013/56/EU</b>	Compliant with marking and substance restrictions for mercury (<0.0005%); cadmium (<0.0020%) and lead (<0.0040%). EU retail and bulk packaging containing lithium coin batteries are marked with the special collection symbol in accordance with Article 21,
<b>10b. General Requirements</b>	
<b>USA CPSIA 2008 (PL. 11900314)</b>	Exempt
<b>USA CPSC FHSA (16 CFR 1500)</b>	Consumer batteries are not listed as a hazardous product.
<b>USA EPA TSCA Section 13 (40 CFR 707.20)</b>	For customs clearance purpose, batteries are defined as an "Article".

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<b>USA EPA RCRA (40 CFR 261)</b>	"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.
<b>USA California Prop 65</b>	No warning required per 3rd party assessment.
<b>USA California Perchlorate Contamination Prevention Act of 2003</b>	Contains perchlorate. <u>Required labeling</u> : Perchlorate material - special handling may apply. See <a href="http://www.dtsc.ca.gov/hazardouswaste/perchlorate">www.dtsc.ca.gov/hazardouswaste/perchlorate</a>
<b>CANADA Products Containing Mercury Regulations SOR/20140254</b>	Mercury free
<b>EU REACH REGULATION (EC) NO. 1907/2006</b>	Regulated as an "article." Contains 1,2-dimethoxyethane (CAS# 110-71-4).
<b>EU REACH SVHC Communication</b>	<u>SVHC Substance Name</u> : 1,2-dimethoxyethane (EGDME) <u>Use</u> : Incorporated in a lithium battery as electrolyte solvent <u>EINEC Number</u> : 203-794-9 <u>CAS Number</u> : 110-71-4 <u>Concentration</u> : 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. <u>Safe Handling</u> : 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.
<b>EU REACH Article 31</b>	An SDS is not required for articles.
<b>10c. Regulatory Definitions - Articles</b>	
<b>USA OSHA</b>	29 CFR 1910.1200(b)(6)(v)
<b>USA TSCA</b>	40 CFR 704.3; 710.2(3)(c); and [19 CFR 12.1209a]]
<b>EU REACH</b>	Title 1 - Chapter 2 - Article 3(3)
<b>GHS</b>	Section 1.3.2.1
<b>11. Other Information</b>	
<b>11a. Certification &amp; 3rd Party Approvals</b>	
<b>UL Listing</b>	Lithium Batteries - Component BBCV2.MH12538
<b>11b. AIS Hazard Communication Approaches (consulted in developing this document):</b>	
<b>Globally Harmonized System (GHS)</b>	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: <b><i>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.</i></b>
<b>Joint Article Management Promotion Consortium JAMP</b>	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.

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<p><b>IEC 62474 Ed. 1.0 B:2012 Material Declaration for Products of and for the Electro-technical Industry</b></p>	<p>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))</p>
<p><b>IEC 62474 Database - Publically available online (<a href="http://std.iec.ch/iec62474">http://std.iec.ch/iec62474</a>). Maintained by TC11: Environmental Standardization for electrical and electronic products and systems.</b></p>	<p>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.</p>
<p><b>ANSI Z 400.1/Z19.1 (2010)</b></p>	<p>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.</p>
<p><b>ANSI C18.4M-2017 Portable Cells and Batteries - Environmental</b></p>	<p>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.</p>

**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.**