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		Revision nr : 1
	Cartridge Assy Two Stage Heavy Metals	Issuing date : 10/20/2016
		Supersedes :

SECTION: 1. Product and company identification

1.1.Product identifier

Trade name/designation : Cartridge Assy Two Stage Heavy Metals

1.2.Relevant identified uses of the substance or mixture and uses advised against

Recommended uses and restrictions : Filter material/medium

1.3.Details of the supplier of the safety data sheet

Company: : Kaz USA, Inc.
400 Donald Lynch Blvd
Suite 300
Marlborough MA 01752
Telephone: +508 490 7000
Fax: +508 460 8056
E-mail: rkasbekar@kaz.com

1.4.Emergency telephone number

Emergency telephone : 800-255-3924 US Callers or
813-979-0626 International Callers
CHEMTEL CONTRACT # MIS0002655

SECTION: 2. Hazards identification

2.1.Classification of the substance or mixture

OSHA Regulatory Status : This material is classified as not hazardous under OSHA regulations.

2.2.Label elements

Signal word (GHS-US) : Not applicable
Hazard statements (GHS-US) : Article: Not applicable
Precautionary statements (GHS-US) : Article: Not applicable

2.3.Other hazards

Other hazards which do not result in classification : Article
Substances are only released upon destruction of the system. (dust)
Inhalation of dust may cause irritation of the respiratory system.
Contact with dust can cause mechanical irritation or drying of the skin.

SECTION: 3. Composition/information on ingredients

Substance name	CAS No	%
Sodium Titanium Silicate	12712-71-9	20
Activated Carbon	7440-44-0	15
Polyethylene	9002-88-4	2
Copolymer of acrylic acid with Divinylbenzene, sodium salt	009052-45-3	63

Note: The percentage by weight values reported for the ingredients in this product represent approximate formulation values.

SECTION: 4. First aid measures

4.1.Description of first aid measures

Inhalation : In case of air intake:
If inhaled, remove to fresh air.
When in doubt or if symptoms are observed, get medical advice.

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- Skin contact : In case of skin contact
Wash with plenty of soap and water.
When in doubt or if symptoms are observed, get medical advice.
- Eye contact : In case of eye contact
After contact with the eyes, rinse with water with the eyelids open for a sufficient length of time, then consult an ophthalmologist immediately.
When in doubt or if symptoms are observed, get medical advice.
- Ingestion : In case of ingestion
Drink 1 or 2 glasses of water.
Get medical advice/ attention.

4.2. Most important symptoms and effects, both acute and delayed

- Inhalation : Health injuries are not known or expected under normal use. Inhalation of dust may cause irritation of the respiratory system.
- Skin contact : Health injuries are not known or expected under normal use. Contact with dust can cause mechanical irritation or drying of the skin.
- Eye contact : Health injuries are not known or expected under normal use. Dust contact with the eyes can lead to mechanical irritation.
- Symptoms/injuries after ingestion : Health injuries are not known or expected under normal use.

4.3. Indication of any immediate medical attention and special treatment needed

no data available

SECTION: 5. Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media : Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
- Extinguishing media which shall not be used for safety reasons : Strong water jet

5.2. Special hazards arising from the substance or mixture

- Fire hazard : Combustible
- Specific hazards : Burning produces noxious and toxic fumes.
Hazardous decomposition products:
Smoke
Do not allow run-off from fire-fighting to enter drains or water courses. Dispose according to legislation.

5.3. Advice for firefighters

- Advice for firefighters : Use personal protective equipment as required.
In case of fire: Wear self-contained breathing apparatus.
Evacuate area.

SECTION: 6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel : Use personal protective equipment as required.
See also section 8
Avoid release to the environment
- For emergency responders : Only qualified personnel equipped with suitable protective equipment may intervene.

6.2. Methods and material for containment and cleaning up

- Spill or leak statements by chemical : Use appropriate personal protection equipment (PPE).
Carefully shovel or sweep up spilled material and place in suitable container.

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SECTION: 7. Handling and storage

7.1. Precautions for safe handling

- Handling : Provide adequate information, instruction and training for operators.
Do not open container by force.
Use personal protective equipment as required.
See also section 8
- Hygiene measures : Keep good industrial hygiene.
Wash hands and face before breaks and immediately after handling of the product.

7.2. Conditions for safe storage, including any incompatibilities

- Storage : Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
Keep in a cool, well-ventilated place.

SECTION: 8. Exposure controls/personal protection

8.1. Exposure guidelines

Cartridge Assy Two Stage Heavy Metals		
ACGIH	ACGIH TWA (mg/m ³)	No data available

8.2. Engineering controls

- Engineering control measures : Not required under normal use.
- Environmental exposure controls : Should not be released into the environment.
Comply with applicable environmental protection legislation.

8.3. Personal protective equipment (PPE)

- Respiratory protection : Not required under normal use.
Breathing apparatus only if aerosol or dust is formed.
- Hand protection : Not required under normal use. The selection of specific gloves for a specific application and time of use in a working area, should also take into account other factors on the working space, such as (but not limited to): other chemicals that are possibly used, physical requirements (protection against cutting/drilling, skill, thermal protection), and the instructions/specification of the supplier of gloves. Insulating protective gloves
- Eye protection : Not required under normal use. In case of dust production: protective goggles
- Skin and body protection : Not required under normal use.
- Thermal hazard protection : Not required under normal use.

SECTION: 9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

- Appearance : Article : Plastic cover with filter
- Color : No data available
- Odor : None.
- Odor threshold (ppm) : Not applicable
- pH : Not applicable
- Melting point : Not applicable
- Boiling point : Not applicable
- Flash point : Not applicable
- Evaporation rate : Not applicable
- Flammability (solid, gas) : Not applicable

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Explosion limits (LEL, UEL) : Not applicable
Vapor pressure : Not applicable
Relative vapor density at 20 °C : Not applicable
Relative density : Not applicable
Water solubility : Not applicable
Log Pow : Not applicable
Self ignition temperature : Not applicable
Decomposition temperature : Not applicable
Viscosity : Not applicable

SECTION: 10. Stability and reactivity

10.1.Reactivity

Reactivity : No data available

10.2.Chemical stability

Stability : The product is stable under storage at normal ambient temperatures.

10.3.Possibility of hazardous reactions

Hazardous reactions : None under normal processing.

10.4.Conditions to avoid

Conditions to avoid : None under normal processing.

10.5.Incompatible materials

Incompatible materials : None under normal processing.

10.6.Hazardous decomposition products

Hazardous decomposition products : None known.

SECTION: 11. Toxicological information

11.1.Information on toxicological effects

Acute toxicity : Not classified

Carbon (7440-44-0)

LD50 oral rat > 10000 mg/kg

Irritation : Not classified
pH: Not applicable

Corrosivity : Not classified
pH: Not applicable

Sensitisation : Not classified

Repeated dose toxicity : Not classified

Carcinogenicity : Not classified

Mutagenicity : Not classified

Toxicity for reproduction : Not classified

Further information : Symptoms related to the physical, chemical and toxicological characteristics see section 4.2.

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SECTION 12: Ecological information

12.1.Toxicity

Ecotoxicity effects : Ecological injuries are not known or expected under normal use.

12.2.Persistence and degradability

Persistence and degradability : No data available

12.3.Bioaccumulative potential

Bioaccumulation : No data available

Log Pow : Not applicable

12.4.Mobility in soil

Mobility : No data available

12.5.Other adverse effects

Further information : No data available

SECTION 13: Disposal considerations

13.1.Waste treatment methods

Waste from residues / unused products : Do not allow to enter into surface water or drains.
Dispose according to legislation.

Contaminated packaging : Dispose according to legislation.

SECTION 14: Transport information

14.1. Basic shipping description

DOT

DOT Proper Shipping Name : Not applicable

14.2 Additional information

IMDG

IMDG : Not applicable

Packing group : Not applicable

ICAO/IATA

ICAO/IATA : Not applicable

Packing group : Not applicable

SECTION: 15. Regulatory information

15.1. US Federal regulations

Carbon (7440-44-0)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

SARA 311 and 312 Hazard Categories

Immediate (Acute) Health Hazard: Yes

Delayed (Chronic) Health Hazard: No

Fire Hazard: No

Reactivity Hazard: No

Sudden Release of Pressure: No

SARA Section 313 Notification

This product does not contain toxic chemicals subject to the reporting requirements of Section 313 of Title 40 of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

Ozone Depleting Substances (ODS)

This product neither contains nor is manufactured with an ozone depleting substance subject to the labelling requirements of the Clean Air Act Amendments 1990 and 40 CFR Part 82.

15.2. International regulations

15.2.1. CANADA

Carbon (7440-44-0)

Listed on the Canadian DSL (Domestic Substances List) inventory.

WHMIS Classification

Uncontrolled product according to WHMIS classification criteria

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15.2.2. National regulations

Carbon (7440-44-0)

Listed on the AICS (the Australian Inventory of Chemical Substances)
Listed on Inventory of Existing Chemical Substances (IECSC)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances) substances.
Listed on the Korean ECL (Existing Chemical List) inventory.
Listed on New Zealand - Inventory of Chemicals (NZIoC)
Listed on Inventory of Chemicals and Chemical Substances (PICCS)

15.3. US State regulations

Carbon (7440-44-0)

U.S. - Idaho - Occupational Exposure Limits - TWAs

SECTION: 16. Other information

Issuing date : 13/10/2016
Supersedes :
Sources of key data used to compile the Safety Data Sheet : Supplier information.

NFPA-code

HMIS III Rating

Health : 0 Minimal Hazard - No significant risk to health
Flammability : 1 Slight Hazard
Physical : 0 Minimal Hazard

This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

DISCLAIMER OF LIABILITY The information in this SDS was obtained from sources which we believe are reliable. However, the information is provided without any warranty, express or implied, regarding its correctness. The conditions or methods of handling, storage, use or disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product. This SDS was prepared and is to be used only for this product. If the product is used as a component in another product, this SDS information may not be applicable.



Product Safety Data Sheet (PSDS)

The battery products referenced in this PSDS document are consumer products. Batteries are considered "articles" under the Global Harmonized System and are exempted from the GHS labeling and SDS classification criteria. This PSDS document is provided as service in response to requests for information on battery use, safety and regulatory compliance.

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

Product Name: DURACELL LITHIUM MANGANESE DIOXIDE COIN CELLS

Product Identification: Lithium Manganese Dioxide Coin Cells – (lithium metal battery)

Duracell Designations: DL1216; DL1616; DL1620; DL1632; DL2016; DL2025; DL2032; DL2430; DL2450

Product Use: Energy Source

PSDS Date of Preparation: April 24, 2009 **Reaffirmed:** 4/08/2011; **Updated:** December 11, 2014

Document ID: Lithium Coin-NA

Company Identification

US Office

Duracell, a P&G business
Berkshire Corporate Park
14 Research Drive
Bethel, CT USA 06401
(203) 796-4000

Canadian Office

Duracell, a P&G business
4711 Yonge Street
Toronto, Ontario
Canada M2N 6K8
(416) 730-4711

SECTION 2: HAZARDS IDENTIFICATION

Physical Appearance: Coin cells.

EMERGENCY OVERVIEW

CAUTION: For information on treatment, call the NATIONAL BUTTON BATTERY INGESTION HOTLINE collect, day or night, at (202) 625-3333. Ingestion may lead to serious injury or death. Battery 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. Keep batteries away from children. If swallowed, consult a physician at once. Under certain misuse conditions and by abusively opening the battery, exposed lithium can react with water or moisture in the air causing potential thermal burns or fire.

Potential Health Effects:

The chemicals and metals in this product are contained in a sealed can. Exposure to the contents will not occur unless the battery leaks, is exposed to high temperatures or is mechanically, physically, or electrically abused.

Eye Contact: Contact with battery contents may cause irritation.

Skin Contact: Contact with battery contents may cause irritation.

Inhalation: Inhalation of vapors or fumes released due to heat or a large number of leaking batteries may cause respiratory and eye irritation.

Ingestion: Seek immediate medical advice. Batteries lodged in the esophagus should be removed immediately since leakage, caustic burns and perforation can occur as soon as two hours after ingestion. Irritation to the internal/external mouth areas, may occur following exposure to a leaking battery.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	Amount
Manganese Dioxide	1313-13-9	65-75%
Propylene Carbonate	108-32-7	10-15%
Lithium	7439-93-2	5-10%
Graphite, synthetic	7440-44-0	5-10%
1,2-Dimethoxyethane	110-71-4	1-10%
Lithium Perchlorate	7791-03-9	<1.5%

SECTION 4: FIRST AID MEASURES

Eye Contact: If battery is leaking and material contacts the eye, flush thoroughly with copious amounts of running water for 30 minutes. Seek immediate medical attention.

Skin Contact: If battery is leaking and material contacts the skin, remove any contaminated clothing and flush exposed skin with copious amounts of running water for at least 15 minutes. If irritation, injury or pain persists, seek medical attention.

Inhaled: If battery is leaking, contents may be irritating to respiratory passages. Move to fresh air. If irritation persists, seek medical attention.

Swallowed: If battery is swallowed seek immediate medical advice. Batteries lodged in the esophagus should be removed immediately since leakage, caustic burns and perforation can occur as soon as two hours after ingestion. If mouth area irritation or burning has occurred, rinse the mouth and surrounding area with tepid water for at least 15 minutes. Do not give ipecac.

Note to Physician: Published reports recommend removal from the esophagus be done endoscopically (under direct visualization). Batteries beyond the esophagus need not be retrieved unless there are signs of injury to the GI tract or a large diameter battery fails to pass the pylorus. If asymptomatic, follow-up x-rays are necessary only to confirm the passage of larger batteries. Confirmation by stool inspection is preferable under most circumstances. For information on treatment, telephone (202) 625-3333, collect day or night. Potential leakage of less than 50 milligrams of dimethoxyethane and propylene carbonate. Dimethoxyethane rapidly evaporates. Do not give ipecac.

SECTION 5: FIRE FIGHTING MEASURES

Fire and Explosion Hazards: Batteries may burst and release hazardous decomposition products when exposed to a fire situation.

Extinguishing Media: Use dry chemical, alcohol foam, water or carbon dioxide as appropriate for the surrounding fire. For incipient fires, carbon dioxide extinguishers are more effective than water.

Special Fire Fighting Procedures: Firefighters should wear positive pressure self-contained breathing apparatus and full protective clothing. Fight fire from a distance or protected area. Cool fire exposed batteries to prevent rupture. Use caution when handling fire-exposed containers (batteries may explode in heat of fire).

Hazardous Combustion Products: Thermal degradation may produce hazardous fumes of lithium and manganese; oxides of carbon and other toxic by-products.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Notify safety personnel of large spills. Irritating vapors and flammable vapors may be released from leaking or ruptured batteries. Eliminate all ignition sources. Evacuate the area and allow the vapors to dissipate. Clean-up personnel should wear appropriate protective clothing to avoid eye and skin contact and inhalation of vapors or fumes. Increase

ventilation. Carefully collect batteries and place in an appropriate container for disposal. Remove spilled liquid with absorbent and contain for disposal.

SECTION 7: HANDLING AND STORAGE

Avoid mechanical or electrical abuse. DO NOT short circuit or install incorrectly. Batteries may explode, pyrolyze or vent if disassembled, crushed, recharged or exposed to high temperatures. Install batteries in accordance with equipment instructions. Replace all batteries in equipment at the same time. Do not carry batteries loose in a pocket or bag.

Storage: Store batteries in a dry place at normal room temperature.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

The following occupational exposure limits are provided for informational purposes. No exposure to the battery components should occur during normal consumer use.

Chemical Name	Exposure Limits
Manganese Dioxide	5 mg/m ³ Ceiling OSHA PEL 0.2 mg/m ³ TWA ACGIH TLV
Propylene Carbonate	2 mg/m ³ Ceiling ACGIH TLV
Lithium	None established
Graphite (synthetic non-fibrous))	5 mg/m ³ TWA (respirable dust), 15 mg/m ³ TWA (total dust) OSHA PEL 2 mg/m ³ TWA (respirable dust) ACGIH TLV
1,2-Dimethoxyethane	None established.
Lithium Perchlorate	None established

Ventilation: No special ventilation is needed for normal use.

Respiratory Protection: None required for normal use.

Skin Protection: None required for normal use. Use butyl rubber gloves when handling leaking batteries.

Eye Protection: None required for normal use. Wear safety goggles when handling leaking batteries.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor: Coin cells.

Specific Gravity: Not applicable

Water Solubility: Insoluble

Vapor Pressure: Not applicable

Vapor Density: Not applicable

Boiling Point: Not applicable

Melting Point: Not applicable

Flash Point: 29°F (-2°C) (1,2-Dimethoxyethane)

Autoignition Point: Not applicable

SECTION 10: STABILITY AND REACTIVITY

Stability: This product is stable.

Incompatibility/Conditions to Avoid: Contents are incompatible with strong oxidizing agents. Do not heat, crush, disassemble, short circuit or recharge.

Hazardous Decomposition Products: Thermal decomposition may produce hazardous fumes of lithium and manganese; oxides of carbon and other toxic by-products.

Hazardous Polymerization: Will not occur

SECTION 11: TOXICOLOGICAL INFORMATION

Acute Toxicity Data:

Manganese Dioxide: LD50 oral rat >3478 mg/kg

Propylene Carbonate: LD50 oral rat 29100 uL/kg; LD50 dermal rabbit >20 mL/kg; LC50 inhalation rat >5 g/m³

1,2-Dimethoxyethane: LDLo oral rat 1000 mg/kg, LCLo inhalation rat 63 g/m³/6 hr

Chronic Effects: The chemicals in this product are contained in a sealed can and exposure does not occur during normal handling and use. No chronic effects would be expected from handling a leaking battery.

Target Organs: Skin, eyes and respiratory system.

Carcinogenicity: None of the components of this product are listed as carcinogens by ACGIH, IARC, NTP or OSHA

SECTION 12: ECOLOGICAL INFORMATION

No ecotoxicity data is available. This product is not expected to present an environmental hazard.

SECTION 13: DISPOSAL INFORMATION

Disposal should be in accordance with Federal, state/provincial and local regulations. Large quantities of open batteries should be treated as hazardous waste. Do not incinerate except for disposal in a controlled environment.

Some communities offer recycling or collection of batteries – contact your local government for disposal practices in your area

In California, packages that contain lithium manganese dioxide coin cells and the owner/operating instructions of products that contain lithium manganese dioxide coin cells must include the following statement: **“Perchlorate Material – Special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate.”**

SECTION 14: TRANSPORT INFORMATION

Emergency Phone Number:

**CHEMTREC 24-Hour Emergency Response Hotline
+703-527-3887 (United States of America)**

The information in this section is provided for informational purposes only.

DURACELL lithium metal batteries are produced and delivered in accordance with IATA 56th ICAO, IMO and US DOT Regulations. DURACELL lithium metal cells and 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 appropriate regulations.

All persons who prepare or offer lithium batteries for transport are required by regulation to be sufficiently trained and aware of all applicable regulations. Regulatory guidance for safe packaging requires that batteries be packaged in a manner that prevents short circuits, prevent battery movement within the package and that prevents spillage of contents.

DURACELL Primary Lithium Metal Batteries
UN3090 Primary lithium metal batteries UN3091 Primary lithium metal batteries packed with or contained in equipment
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 and the batteries were
US DOT: Special Provision 49CFR-173.185,
Air Transport IATA/ICAO: Special Provisions A88, A99, A154, A164, A183, A201 PI 968 – Lithium metal batteries only PI 969 – Lithium metal batteries packed with equipment PI 970 – Lithium metal batteries contained in equipment
Marine/Water Transport (IMDG): Special Provision 188, 230, 310, 957
ADR: Special Provisions: 188, 230, 310, 957
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.

The gram weight of lithium metal in Duracell lithium metal cells & batteries is:

Catalog Number	Lithium Content grams
DL 1616	.02 g
DL 1620	.02 g
DL 2016	.02 g
DL 2032	.07 g
DL 2430	.07 g
DL 2450	.15 g

SECTION 15: REGULATORY INFORMATION

United States

OSHA Status: While the finished product(s) is considered an article and not covered by the OSHA Hazard Communication Standard, 29 CFR 1910.1200, this PSDS contains valuable information critical to the safe handling and proper use of the product".

EPA TSCA Status: All intentionally-added components of this product are listed on the US TSCA Inventory.

SARA 313/302/304/311/312 chemicals: Manganese compounds 65-75%

California: This product has been evaluated and certain products require a warning labeling for perchlorate under California Proposition 65.

State Right-to-Know and CERCLA:

The following ingredients present in the finished product are listed on state right-to-know lists or state worker exposure lists

Ingredient	CAS #	Level	CERCLA RQ	State				
				IL	MA	NJ	PA	RI
Manganese Dioxide	1313-13-9	65-75%	None	Y	Y	N	Y	Y
Propylene Carbonate	108-32-7	10-15%	None	Y	Y	Y	Y	Y
Lithium	7439-93-2	5-10%	None	Y	Y	Y	Y	Y
Graphite	7782-42-5 7440-44-0	5-10%	None	Y	Y	N	Y	Y
1,2-Dimethoxyethane	110-71-4	1-10%	None	Y	Y	Y	Y	N
Lithium Perchlorate	7791-03-9	<1.5%	None	N	N	N	N	N

Canada All intentionally-added components of this product are listed on the Canadian DSL. This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and this PSDS contains all information required by the Controlled Products Regulations.

SECTION 16: OTHER INFORMATION

P&G Hazard Rating: Health: 0 Fire: 0 Reactivity: 0

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Data supplied is for use only in connection with occupational safety and health.

DISCLAIMER: This PSDS 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 P&G 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. P&G assumed 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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Product Use: Energy Source

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Document ID: Lithium Coin-NA

Company Identification

US Office

Duracell, a P&G business
Berkshire Corporate Park
14 Research Drive
Bethel, CT USA 06401
(203) 796-4000

Canadian Office

Duracell, a P&G business
4711 Yonge Street
Toronto, Ontario
Canada M2N 6K8
(416) 730-4711

SECTION 2: HAZARDS IDENTIFICATION

Physical Appearance: Coin cells.

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Potential Health Effects:

The chemicals and metals in this product are contained in a sealed can. Exposure to the contents will not occur unless the battery leaks, is exposed to high temperatures or is mechanically, physically, or electrically abused.

Eye Contact: Contact with battery contents may cause irritation.

Skin Contact: Contact with battery contents may cause irritation.

Inhalation: Inhalation of vapors or fumes released due to heat or a large number of leaking batteries may cause respiratory and eye irritation.

Ingestion: Seek immediate medical advice. Batteries lodged in the esophagus should be removed immediately since leakage, caustic burns and perforation can occur as soon as two hours after ingestion. Irritation to the internal/external mouth areas, may occur following exposure to a leaking battery.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

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Fire and Explosion Hazards: Batteries may burst and release hazardous decomposition products when exposed to a fire situation.

Extinguishing Media: Use dry chemical, alcohol foam, water or carbon dioxide as appropriate for the surrounding fire. For incipient fires, carbon dioxide extinguishers are more effective than water.

Special Fire Fighting Procedures: Firefighters should wear positive pressure self-contained breathing apparatus and full protective clothing. Fight fire from a distance or protected area. Cool fire exposed batteries to prevent rupture. Use caution when handling fire-exposed containers (batteries may explode in heat of fire).

Hazardous Combustion Products: Thermal degradation may produce hazardous fumes of lithium and manganese; oxides of carbon and other toxic by-products.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Notify safety personnel of large spills. Irritating vapors and flammable vapors may be released from leaking or ruptured batteries. Eliminate all ignition sources. Evacuate the area and allow the vapors to dissipate. Clean-up personnel should wear appropriate protective clothing to avoid eye and skin contact and inhalation of vapors or fumes. Increase

ventilation. Carefully collect batteries and place in an appropriate container for disposal. Remove spilled liquid with absorbent and contain for disposal.

SECTION 7: HANDLING AND STORAGE

Avoid mechanical or electrical abuse. DO NOT short circuit or install incorrectly. Batteries may explode, pyrolyze or vent if disassembled, crushed, recharged or exposed to high temperatures. Install batteries in accordance with equipment instructions. Replace all batteries in equipment at the same time. Do not carry batteries loose in a pocket or bag.

Storage: Store batteries in a dry place at normal room temperature.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

The following occupational exposure limits are provided for informational purposes. No exposure to the battery components should occur during normal consumer use.

Chemical Name	Exposure Limits
Manganese Dioxide	5 mg/m ³ Ceiling OSHA PEL 0.2 mg/m ³ TWA ACGIH TLV
Propylene Carbonate	2 mg/m ³ Ceiling ACGIH TLV
Lithium	None established
Graphite (synthetic non-fibrous))	5 mg/m ³ TWA (respirable dust), 15 mg/m ³ TWA (total dust) OSHA PEL 2 mg/m ³ TWA (respirable dust) ACGIH TLV
1,2-Dimethoxyethane	None established.
Lithium Perchlorate	None established

Ventilation: No special ventilation is needed for normal use.

Respiratory Protection: None required for normal use.

Skin Protection: None required for normal use. Use butyl rubber gloves when handling leaking batteries.

Eye Protection: None required for normal use. Wear safety goggles when handling leaking batteries.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor: Coin cells.

Specific Gravity: Not applicable

Water Solubility: Insoluble

Vapor Pressure: Not applicable

Vapor Density: Not applicable

Boiling Point: Not applicable

Melting Point: Not applicable

Flash Point: 29°F (-2°C) (1,2-Dimethoxyethane)

Autoignition Point: Not applicable

SECTION 10: STABILITY AND REACTIVITY

Stability: This product is stable.

Incompatibility/Conditions to Avoid: Contents are incompatible with strong oxidizing agents. Do not heat, crush, disassemble, short circuit or recharge.

Hazardous Decomposition Products: Thermal decomposition may produce hazardous fumes of lithium and manganese; oxides of carbon and other toxic by-products.

Hazardous Polymerization: Will not occur

SECTION 11: TOXICOLOGICAL INFORMATION

Acute Toxicity Data:

Manganese Dioxide: LD50 oral rat >3478 mg/kg

Propylene Carbonate: LD50 oral rat 29100 uL/kg; LD50 dermal rabbit >20 mL/kg; LC50 inhalation rat >5 g/m³

1,2-Dimethoxyethane: LDLo oral rat 1000 mg/kg, LCLo inhalation rat 63 g/m³/6 hr

Chronic Effects: The chemicals in this product are contained in a sealed can and exposure does not occur during normal handling and use. No chronic effects would be expected from handling a leaking battery.

Target Organs: Skin, eyes and respiratory system.

Carcinogenicity: None of the components of this product are listed as carcinogens by ACGIH, IARC, NTP or OSHA

SECTION 12: ECOLOGICAL INFORMATION

No ecotoxicity data is available. This product is not expected to present an environmental hazard.

SECTION 13: DISPOSAL INFORMATION

Disposal should be in accordance with Federal, state/provincial and local regulations. Large quantities of open batteries should be treated as hazardous waste. Do not incinerate except for disposal in a controlled environment.

Some communities offer recycling or collection of batteries – contact your local government for disposal practices in your area

In California, packages that contain lithium manganese dioxide coin cells and the owner/operating instructions of products that contain lithium manganese dioxide coin cells must include the following statement: **“Perchlorate Material – Special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate.”**

SECTION 14: TRANSPORT INFORMATION

Emergency Phone Number:

**CHEMTREC 24-Hour Emergency Response Hotline
+703-527-3887 (United States of America)**

The information in this section is provided for informational purposes only.

DURACELL lithium metal batteries are produced and delivered in accordance with IATA 56th ICAO, IMO and US DOT Regulations. DURACELL lithium metal cells and 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 appropriate regulations.

All persons who prepare or offer lithium batteries for transport are required by regulation to be sufficiently trained and aware of all applicable regulations. Regulatory guidance for safe packaging requires that batteries be packaged in a manner that prevents short circuits, prevent battery movement within the package and that prevents spillage of contents.

DURACELL Primary Lithium Metal Batteries
UN3090 Primary lithium metal batteries UN3091 Primary lithium metal batteries packed with or contained in equipment
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 and the batteries were
US DOT: Special Provision 49CFR-173.185,
Air Transport IATA/ICAO: Special Provisions A88, A99, A154, A164, A183, A201 PI 968 – Lithium metal batteries only PI 969 – Lithium metal batteries packed with equipment PI 970 – Lithium metal batteries contained in equipment
Marine/Water Transport (IMDG): Special Provision 188, 230, 310, 957
ADR: Special Provisions: 188, 230, 310, 957
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.

The gram weight of lithium metal in Duracell lithium metal cells & batteries is:

Catalog Number	Lithium Content grams
DL 1616	.02 g
DL 1620	.02 g
DL 2016	.02 g
DL 2032	.07 g
DL 2430	.07 g
DL 2450	.15 g

SECTION 15: REGULATORY INFORMATION

United States

OSHA Status: While the finished product(s) is considered an article and not covered by the OSHA Hazard Communication Standard, 29 CFR 1910.1200, this PSDS contains valuable information critical to the safe handling and proper use of the product".

EPA TSCA Status: All intentionally-added components of this product are listed on the US TSCA Inventory.

SARA 313/302/304/311/312 chemicals: Manganese compounds 65-75%

California: This product has been evaluated and certain products require a warning labeling for perchlorate under California Proposition 65.

State Right-to-Know and CERCLA:

The following ingredients present in the finished product are listed on state right-to-know lists or state worker exposure lists

Ingredient	CAS #	Level	CERCLA RQ	State				
				IL	MA	NJ	PA	RI
Manganese Dioxide	1313-13-9	65-75%	None	Y	Y	N	Y	Y
Propylene Carbonate	108-32-7	10-15%	None	Y	Y	Y	Y	Y
Lithium	7439-93-2	5-10%	None	Y	Y	Y	Y	Y
Graphite	7782-42-5 7440-44-0	5-10%	None	Y	Y	N	Y	Y
1,2-Dimethoxyethane	110-71-4	1-10%	None	Y	Y	Y	Y	N
Lithium Perchlorate	7791-03-9	<1.5%	None	N	N	N	N	N

Canada All intentionally-added components of this product are listed on the Canadian DSL. This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and this PSDS contains all information required by the Controlled Products Regulations.

SECTION 16: OTHER INFORMATION

P&G Hazard Rating: Health: 0 Fire: 0 Reactivity: 0

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Data supplied is for use only in connection with occupational safety and health.

DISCLAIMER: This PSDS 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 P&G 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. P&G assumed no responsibility for injury to the recipient or third persons, or for any damage to any property resulting from misuse of the product.



Product Safety Data Sheet (PSDS)

The battery products referenced in this PSDS document are consumer products. Batteries are considered "articles" under the Global Harmonized System and are exempted from the GHS labeling and SDS classification criteria. This PSDS document is provided as service in response to requests for information on battery use, safety and regulatory compliance.

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

Product Name: DURACELL LITHIUM MANGANESE DIOXIDE COIN CELLS

Product Identification: Lithium Manganese Dioxide Coin Cells – (lithium metal battery)

Duracell Designations: DL1216; DL1616; DL1620; DL1632; DL2016; DL2025; DL2032; DL2430; DL2450

Product Use: Energy Source

PSDS Date of Preparation: April 24, 2009 **Reaffirmed:** 4/08/2011; **Updated:** December 11, 2014

Document ID: Lithium Coin-NA

Company Identification

US Office

Duracell, a P&G business
Berkshire Corporate Park
14 Research Drive
Bethel, CT USA 06401
(203) 796-4000

Canadian Office

Duracell, a P&G business
4711 Yonge Street
Toronto, Ontario
Canada M2N 6K8
(416) 730-4711

SECTION 2: HAZARDS IDENTIFICATION

Physical Appearance: Coin cells.

EMERGENCY OVERVIEW

CAUTION: For information on treatment, call the NATIONAL BUTTON BATTERY INGESTION HOTLINE collect, day or night, at (202) 625-3333. Ingestion may lead to serious injury or death. Battery 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. Keep batteries away from children. If swallowed, consult a physician at once. Under certain misuse conditions and by abusively opening the battery, exposed lithium can react with water or moisture in the air causing potential thermal burns or fire.

Potential Health Effects:

The chemicals and metals in this product are contained in a sealed can. Exposure to the contents will not occur unless the battery leaks, is exposed to high temperatures or is mechanically, physically, or electrically abused.

Eye Contact: Contact with battery contents may cause irritation.

Skin Contact: Contact with battery contents may cause irritation.

Inhalation: Inhalation of vapors or fumes released due to heat or a large number of leaking batteries may cause respiratory and eye irritation.

Ingestion: Seek immediate medical advice. Batteries lodged in the esophagus should be removed immediately since leakage, caustic burns and perforation can occur as soon as two hours after ingestion. Irritation to the internal/external mouth areas, may occur following exposure to a leaking battery.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	Amount
Manganese Dioxide	1313-13-9	65-75%
Propylene Carbonate	108-32-7	10-15%
Lithium	7439-93-2	5-10%
Graphite, synthetic	7440-44-0	5-10%
1,2-Dimethoxyethane	110-71-4	1-10%
Lithium Perchlorate	7791-03-9	<1.5%

SECTION 4: FIRST AID MEASURES

Eye Contact: If battery is leaking and material contacts the eye, flush thoroughly with copious amounts of running water for 30 minutes. Seek immediate medical attention.

Skin Contact: If battery is leaking and material contacts the skin, remove any contaminated clothing and flush exposed skin with copious amounts of running water for at least 15 minutes. If irritation, injury or pain persists, seek medical attention.

Inhaled: If battery is leaking, contents may be irritating to respiratory passages. Move to fresh air. If irritation persists, seek medical attention.

Swallowed: If battery is swallowed seek immediate medical advice. Batteries lodged in the esophagus should be removed immediately since leakage, caustic burns and perforation can occur as soon as two hours after ingestion. If mouth area irritation or burning has occurred, rinse the mouth and surrounding area with tepid water for at least 15 minutes. Do not give ipecac.

Note to Physician: Published reports recommend removal from the esophagus be done endoscopically (under direct visualization). Batteries beyond the esophagus need not be retrieved unless there are signs of injury to the GI tract or a large diameter battery fails to pass the pylorus. If asymptomatic, follow-up x-rays are necessary only to confirm the passage of larger batteries. Confirmation by stool inspection is preferable under most circumstances. For information on treatment, telephone (202) 625-3333, collect day or night. Potential leakage of less than 50 milligrams of dimethoxyethane and propylene carbonate. Dimethoxyethane rapidly evaporates. Do not give ipecac.

SECTION 5: FIRE FIGHTING MEASURES

Fire and Explosion Hazards: Batteries may burst and release hazardous decomposition products when exposed to a fire situation.

Extinguishing Media: Use dry chemical, alcohol foam, water or carbon dioxide as appropriate for the surrounding fire. For incipient fires, carbon dioxide extinguishers are more effective than water.

Special Fire Fighting Procedures: Firefighters should wear positive pressure self-contained breathing apparatus and full protective clothing. Fight fire from a distance or protected area. Cool fire exposed batteries to prevent rupture. Use caution when handling fire-exposed containers (batteries may explode in heat of fire).

Hazardous Combustion Products: Thermal degradation may produce hazardous fumes of lithium and manganese; oxides of carbon and other toxic by-products.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Notify safety personnel of large spills. Irritating vapors and flammable vapors may be released from leaking or ruptured batteries. Eliminate all ignition sources. Evacuate the area and allow the vapors to dissipate. Clean-up personnel should wear appropriate protective clothing to avoid eye and skin contact and inhalation of vapors or fumes. Increase

ventilation. Carefully collect batteries and place in an appropriate container for disposal. Remove spilled liquid with absorbent and contain for disposal.

SECTION 7: HANDLING AND STORAGE

Avoid mechanical or electrical abuse. DO NOT short circuit or install incorrectly. Batteries may explode, pyrolyze or vent if disassembled, crushed, recharged or exposed to high temperatures. Install batteries in accordance with equipment instructions. Replace all batteries in equipment at the same time. Do not carry batteries loose in a pocket or bag.

Storage: Store batteries in a dry place at normal room temperature.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

The following occupational exposure limits are provided for informational purposes. No exposure to the battery components should occur during normal consumer use.

Chemical Name	Exposure Limits
Manganese Dioxide	5 mg/m ³ Ceiling OSHA PEL 0.2 mg/m ³ TWA ACGIH TLV
Propylene Carbonate	2 mg/m ³ Ceiling ACGIH TLV
Lithium	None established
Graphite (synthetic non-fibrous))	5 mg/m ³ TWA (respirable dust), 15 mg/m ³ TWA (total dust) OSHA PEL 2 mg/m ³ TWA (respirable dust) ACGIH TLV
1,2-Dimethoxyethane	None established.
Lithium Perchlorate	None established

Ventilation: No special ventilation is needed for normal use.

Respiratory Protection: None required for normal use.

Skin Protection: None required for normal use. Use butyl rubber gloves when handling leaking batteries.

Eye Protection: None required for normal use. Wear safety goggles when handling leaking batteries.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor: Coin cells.

Specific Gravity: Not applicable

Water Solubility: Insoluble

Vapor Pressure: Not applicable

Vapor Density: Not applicable

Boiling Point: Not applicable

Melting Point: Not applicable

Flash Point: 29°F (-2°C) (1,2-Dimethoxyethane)

Autoignition Point: Not applicable

SECTION 10: STABILITY AND REACTIVITY

Stability: This product is stable.

Incompatibility/Conditions to Avoid: Contents are incompatible with strong oxidizing agents. Do not heat, crush, disassemble, short circuit or recharge.

Hazardous Decomposition Products: Thermal decomposition may produce hazardous fumes of lithium and manganese; oxides of carbon and other toxic by-products.

Hazardous Polymerization: Will not occur

SECTION 11: TOXICOLOGICAL INFORMATION

Acute Toxicity Data:

Manganese Dioxide: LD50 oral rat >3478 mg/kg

Propylene Carbonate: LD50 oral rat 29100 uL/kg; LD50 dermal rabbit >20 mL/kg; LC50 inhalation rat >5 g/m³

1,2-Dimethoxyethane: LDLo oral rat 1000 mg/kg, LCLo inhalation rat 63 g/m³/6 hr

Chronic Effects: The chemicals in this product are contained in a sealed can and exposure does not occur during normal handling and use. No chronic effects would be expected from handling a leaking battery.

Target Organs: Skin, eyes and respiratory system.

Carcinogenicity: None of the components of this product are listed as carcinogens by ACGIH, IARC, NTP or OSHA

SECTION 12: ECOLOGICAL INFORMATION

No ecotoxicity data is available. This product is not expected to present an environmental hazard.

SECTION 13: DISPOSAL INFORMATION

Disposal should be in accordance with Federal, state/provincial and local regulations. Large quantities of open batteries should be treated as hazardous waste. Do not incinerate except for disposal in a controlled environment.

Some communities offer recycling or collection of batteries – contact your local government for disposal practices in your area

In California, packages that contain lithium manganese dioxide coin cells and the owner/operating instructions of products that contain lithium manganese dioxide coin cells must include the following statement: **“Perchlorate Material – Special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate.”**

SECTION 14: TRANSPORT INFORMATION

Emergency Phone Number:

**CHEMTREC 24-Hour Emergency Response Hotline
+703-527-3887 (United States of America)**

The information in this section is provided for informational purposes only.

DURACELL lithium metal batteries are produced and delivered in accordance with IATA 56th ICAO, IMO and US DOT Regulations. DURACELL lithium metal cells and 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 appropriate regulations.

All persons who prepare or offer lithium batteries for transport are required by regulation to be sufficiently trained and aware of all applicable regulations. Regulatory guidance for safe packaging requires that batteries be packaged in a manner that prevents short circuits, prevent battery movement within the package and that prevents spillage of contents.

DURACELL Primary Lithium Metal Batteries
UN3090 Primary lithium metal batteries UN3091 Primary lithium metal batteries packed with or contained in equipment
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 and the batteries were
US DOT: Special Provision 49CFR-173.185,
Air Transport IATA/ICAO: Special Provisions A88, A99, A154, A164, A183, A201 PI 968 – Lithium metal batteries only PI 969 – Lithium metal batteries packed with equipment PI 970 – Lithium metal batteries contained in equipment
Marine/Water Transport (IMDG): Special Provision 188, 230, 310, 957
ADR: Special Provisions: 188, 230, 310, 957
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.

The gram weight of lithium metal in Duracell lithium metal cells & batteries is:

Catalog Number	Lithium Content grams
DL 1616	.02 g
DL 1620	.02 g
DL 2016	.02 g
DL 2032	.07 g
DL 2430	.07 g
DL 2450	.15 g

SECTION 15: REGULATORY INFORMATION

United States

OSHA Status: While the finished product(s) is considered an article and not covered by the OSHA Hazard Communication Standard, 29 CFR 1910.1200, this PSDS contains valuable information critical to the safe handling and proper use of the product".

EPA TSCA Status: All intentionally-added components of this product are listed on the US TSCA Inventory.

SARA 313/302/304/311/312 chemicals: Manganese compounds 65-75%

California: This product has been evaluated and certain products require a warning labeling for perchlorate under California Proposition 65.

State Right-to-Know and CERCLA:

The following ingredients present in the finished product are listed on state right-to-know lists or state worker exposure lists

Ingredient	CAS #	Level	CERCLA RQ	State				
				IL	MA	NJ	PA	RI
Manganese Dioxide	1313-13-9	65-75%	None	Y	Y	N	Y	Y
Propylene Carbonate	108-32-7	10-15%	None	Y	Y	Y	Y	Y
Lithium	7439-93-2	5-10%	None	Y	Y	Y	Y	Y
Graphite	7782-42-5 7440-44-0	5-10%	None	Y	Y	N	Y	Y
1,2-Dimethoxyethane	110-71-4	1-10%	None	Y	Y	Y	Y	N
Lithium Perchlorate	7791-03-9	<1.5%	None	N	N	N	N	N

Canada All intentionally-added components of this product are listed on the Canadian DSL. This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and this PSDS contains all information required by the Controlled Products Regulations.

SECTION 16: OTHER INFORMATION

P&G Hazard Rating: Health: 0 Fire: 0 Reactivity: 0

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Data supplied is for use only in connection with occupational safety and health.

DISCLAIMER: This PSDS 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 P&G 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. P&G assumed no responsibility for injury to the recipient or third persons, or for any damage to any property resulting from misuse of the product.



Product Safety Data Sheet (PSDS)

The battery products referenced in this PSDS document are consumer products. Batteries are considered "articles" under the Global Harmonized System and are exempted from the GHS labeling and SDS classification criteria. This PSDS document is provided as service in response to requests for information on battery use, safety and regulatory compliance.

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

Product Name: DURACELL LITHIUM MANGANESE DIOXIDE COIN CELLS

Product Identification: Lithium Manganese Dioxide Coin Cells – (lithium metal battery)

Duracell Designations: DL1216; DL1616; DL1620; DL1632; DL2016; DL2025; DL2032; DL2430; DL2450

Product Use: Energy Source

PSDS Date of Preparation: April 24, 2009 **Reaffirmed:** 4/08/2011; **Updated:** December 11, 2014

Document ID: Lithium Coin-NA

Company Identification

US Office

Duracell, a P&G business
Berkshire Corporate Park
14 Research Drive
Bethel, CT USA 06401
(203) 796-4000

Canadian Office

Duracell, a P&G business
4711 Yonge Street
Toronto, Ontario
Canada M2N 6K8
(416) 730-4711

SECTION 2: HAZARDS IDENTIFICATION

Physical Appearance: Coin cells.

EMERGENCY OVERVIEW

CAUTION: For information on treatment, call the NATIONAL BUTTON BATTERY INGESTION HOTLINE collect, day or night, at (202) 625-3333. Ingestion may lead to serious injury or death. Battery 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. Keep batteries away from children. If swallowed, consult a physician at once. Under certain misuse conditions and by abusively opening the battery, exposed lithium can react with water or moisture in the air causing potential thermal burns or fire.

Potential Health Effects:

The chemicals and metals in this product are contained in a sealed can. Exposure to the contents will not occur unless the battery leaks, is exposed to high temperatures or is mechanically, physically, or electrically abused.

Eye Contact: Contact with battery contents may cause irritation.

Skin Contact: Contact with battery contents may cause irritation.

Inhalation: Inhalation of vapors or fumes released due to heat or a large number of leaking batteries may cause respiratory and eye irritation.

Ingestion: Seek immediate medical advice. Batteries lodged in the esophagus should be removed immediately since leakage, caustic burns and perforation can occur as soon as two hours after ingestion. Irritation to the internal/external mouth areas, may occur following exposure to a leaking battery.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	Amount
Manganese Dioxide	1313-13-9	65-75%
Propylene Carbonate	108-32-7	10-15%
Lithium	7439-93-2	5-10%
Graphite, synthetic	7440-44-0	5-10%
1,2-Dimethoxyethane	110-71-4	1-10%
Lithium Perchlorate	7791-03-9	<1.5%

SECTION 4: FIRST AID MEASURES

Eye Contact: If battery is leaking and material contacts the eye, flush thoroughly with copious amounts of running water for 30 minutes. Seek immediate medical attention.

Skin Contact: If battery is leaking and material contacts the skin, remove any contaminated clothing and flush exposed skin with copious amounts of running water for at least 15 minutes. If irritation, injury or pain persists, seek medical attention.

Inhaled: If battery is leaking, contents may be irritating to respiratory passages. Move to fresh air. If irritation persists, seek medical attention.

Swallowed: If battery is swallowed seek immediate medical advice. Batteries lodged in the esophagus should be removed immediately since leakage, caustic burns and perforation can occur as soon as two hours after ingestion. If mouth area irritation or burning has occurred, rinse the mouth and surrounding area with tepid water for at least 15 minutes. Do not give ipecac.

Note to Physician: Published reports recommend removal from the esophagus be done endoscopically (under direct visualization). Batteries beyond the esophagus need not be retrieved unless there are signs of injury to the GI tract or a large diameter battery fails to pass the pylorus. If asymptomatic, follow-up x-rays are necessary only to confirm the passage of larger batteries. Confirmation by stool inspection is preferable under most circumstances. For information on treatment, telephone (202) 625-3333, collect day or night. Potential leakage of less than 50 milligrams of dimethoxyethane and propylene carbonate. Dimethoxyethane rapidly evaporates. Do not give ipecac.

SECTION 5: FIRE FIGHTING MEASURES

Fire and Explosion Hazards: Batteries may burst and release hazardous decomposition products when exposed to a fire situation.

Extinguishing Media: Use dry chemical, alcohol foam, water or carbon dioxide as appropriate for the surrounding fire. For incipient fires, carbon dioxide extinguishers are more effective than water.

Special Fire Fighting Procedures: Firefighters should wear positive pressure self-contained breathing apparatus and full protective clothing. Fight fire from a distance or protected area. Cool fire exposed batteries to prevent rupture. Use caution when handling fire-exposed containers (batteries may explode in heat of fire).

Hazardous Combustion Products: Thermal degradation may produce hazardous fumes of lithium and manganese; oxides of carbon and other toxic by-products.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Notify safety personnel of large spills. Irritating vapors and flammable vapors may be released from leaking or ruptured batteries. Eliminate all ignition sources. Evacuate the area and allow the vapors to dissipate. Clean-up personnel should wear appropriate protective clothing to avoid eye and skin contact and inhalation of vapors or fumes. Increase

ventilation. Carefully collect batteries and place in an appropriate container for disposal. Remove spilled liquid with absorbent and contain for disposal.

SECTION 7: HANDLING AND STORAGE

Avoid mechanical or electrical abuse. DO NOT short circuit or install incorrectly. Batteries may explode, pyrolyze or vent if disassembled, crushed, recharged or exposed to high temperatures. Install batteries in accordance with equipment instructions. Replace all batteries in equipment at the same time. Do not carry batteries loose in a pocket or bag.

Storage: Store batteries in a dry place at normal room temperature.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

The following occupational exposure limits are provided for informational purposes. No exposure to the battery components should occur during normal consumer use.

Chemical Name	Exposure Limits
Manganese Dioxide	5 mg/m ³ Ceiling OSHA PEL 0.2 mg/m ³ TWA ACGIH TLV
Propylene Carbonate	2 mg/m ³ Ceiling ACGIH TLV
Lithium	None established
Graphite (synthetic non-fibrous))	5 mg/m ³ TWA (respirable dust), 15 mg/m ³ TWA (total dust) OSHA PEL 2 mg/m ³ TWA (respirable dust) ACGIH TLV
1,2-Dimethoxyethane	None established.
Lithium Perchlorate	None established

Ventilation: No special ventilation is needed for normal use.

Respiratory Protection: None required for normal use.

Skin Protection: None required for normal use. Use butyl rubber gloves when handling leaking batteries.

Eye Protection: None required for normal use. Wear safety goggles when handling leaking batteries.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor: Coin cells.

Specific Gravity: Not applicable

Water Solubility: Insoluble

Vapor Pressure: Not applicable

Vapor Density: Not applicable

Boiling Point: Not applicable

Melting Point: Not applicable

Flash Point: 29°F (-2°C) (1,2-Dimethoxyethane)

Autoignition Point: Not applicable

SECTION 10: STABILITY AND REACTIVITY

Stability: This product is stable.

Incompatibility/Conditions to Avoid: Contents are incompatible with strong oxidizing agents. Do not heat, crush, disassemble, short circuit or recharge.

Hazardous Decomposition Products: Thermal decomposition may produce hazardous fumes of lithium and manganese; oxides of carbon and other toxic by-products.

Hazardous Polymerization: Will not occur

SECTION 11: TOXICOLOGICAL INFORMATION

Acute Toxicity Data:

Manganese Dioxide: LD50 oral rat >3478 mg/kg

Propylene Carbonate: LD50 oral rat 29100 uL/kg; LD50 dermal rabbit >20 mL/kg; LC50 inhalation rat >5 g/m³

1,2-Dimethoxyethane: LDLo oral rat 1000 mg/kg, LCLo inhalation rat 63 g/m³/6 hr

Chronic Effects: The chemicals in this product are contained in a sealed can and exposure does not occur during normal handling and use. No chronic effects would be expected from handling a leaking battery.

Target Organs: Skin, eyes and respiratory system.

Carcinogenicity: None of the components of this product are listed as carcinogens by ACGIH, IARC, NTP or OSHA

SECTION 12: ECOLOGICAL INFORMATION

No ecotoxicity data is available. This product is not expected to present an environmental hazard.

SECTION 13: DISPOSAL INFORMATION

Disposal should be in accordance with Federal, state/provincial and local regulations. Large quantities of open batteries should be treated as hazardous waste. Do not incinerate except for disposal in a controlled environment.

Some communities offer recycling or collection of batteries – contact your local government for disposal practices in your area

In California, packages that contain lithium manganese dioxide coin cells and the owner/operating instructions of products that contain lithium manganese dioxide coin cells must include the following statement: **“Perchlorate Material – Special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate.”**

SECTION 14: TRANSPORT INFORMATION

Emergency Phone Number:

**CHEMTREC 24-Hour Emergency Response Hotline
+703-527-3887 (United States of America)**

The information in this section is provided for informational purposes only.

DURACELL lithium metal batteries are produced and delivered in accordance with IATA 56th ICAO, IMO and US DOT Regulations. DURACELL lithium metal cells and 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 appropriate regulations.

All persons who prepare or offer lithium batteries for transport are required by regulation to be sufficiently trained and aware of all applicable regulations. Regulatory guidance for safe packaging requires that batteries be packaged in a manner that prevents short circuits, prevent battery movement within the package and that prevents spillage of contents.

DURACELL Primary Lithium Metal Batteries
UN3090 Primary lithium metal batteries UN3091 Primary lithium metal batteries packed with or contained in equipment
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 and the batteries were
US DOT: Special Provision 49CFR-173.185,
Air Transport IATA/ICAO: Special Provisions A88, A99, A154, A164, A183, A201 PI 968 – Lithium metal batteries only PI 969 – Lithium metal batteries packed with equipment PI 970 – Lithium metal batteries contained in equipment
Marine/Water Transport (IMDG): Special Provision 188, 230, 310, 957
ADR: Special Provisions: 188, 230, 310, 957
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.

The gram weight of lithium metal in Duracell lithium metal cells & batteries is:

Catalog Number	Lithium Content grams
DL 1616	.02 g
DL 1620	.02 g
DL 2016	.02 g
DL 2032	.07 g
DL 2430	.07 g
DL 2450	.15 g

SECTION 15: REGULATORY INFORMATION

United States

OSHA Status: While the finished product(s) is considered an article and not covered by the OSHA Hazard Communication Standard, 29 CFR 1910.1200, this PSDS contains valuable information critical to the safe handling and proper use of the product".

EPA TSCA Status: All intentionally-added components of this product are listed on the US TSCA Inventory.

SARA 313/302/304/311/312 chemicals: Manganese compounds 65-75%

California: This product has been evaluated and certain products require a warning labeling for perchlorate under California Proposition 65.

State Right-to-Know and CERCLA:

The following ingredients present in the finished product are listed on state right-to-know lists or state worker exposure lists

Ingredient	CAS #	Level	CERCLA RQ	State				
				IL	MA	NJ	PA	RI
Manganese Dioxide	1313-13-9	65-75%	None	Y	Y	N	Y	Y
Propylene Carbonate	108-32-7	10-15%	None	Y	Y	Y	Y	Y
Lithium	7439-93-2	5-10%	None	Y	Y	Y	Y	Y
Graphite	7782-42-5 7440-44-0	5-10%	None	Y	Y	N	Y	Y
1,2-Dimethoxyethane	110-71-4	1-10%	None	Y	Y	Y	Y	N
Lithium Perchlorate	7791-03-9	<1.5%	None	N	N	N	N	N

Canada All intentionally-added components of this product are listed on the Canadian DSL. This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and this PSDS contains all information required by the Controlled Products Regulations.

SECTION 16: OTHER INFORMATION

P&G Hazard Rating: Health: 0 Fire: 0 Reactivity: 0

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Data supplied is for use only in connection with occupational safety and health.

DISCLAIMER: This PSDS 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 P&G 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. P&G assumed no responsibility for injury to the recipient or third persons, or for any damage to any property resulting from misuse of the product.



Product Safety Data Sheet (PSDS)

The battery products referenced in this PSDS document are consumer products. Batteries are considered "articles" under the Global Harmonized System and are exempted from the GHS labeling and SDS classification criteria. This PSDS document is provided as service in response to requests for information on battery use, safety and regulatory compliance.

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

Product Name: DURACELL LITHIUM MANGANESE DIOXIDE COIN CELLS

Product Identification: Lithium Manganese Dioxide Coin Cells – (lithium metal battery)

Duracell Designations: DL1216; DL1616; DL1620; DL1632; DL2016; DL2025; DL2032; DL2430; DL2450

Product Use: Energy Source

PSDS Date of Preparation: April 24, 2009 **Reaffirmed:** 4/08/2011; **Updated:** December 11, 2014

Document ID: Lithium Coin-NA

Company Identification

US Office

Duracell, a P&G business
Berkshire Corporate Park
14 Research Drive
Bethel, CT USA 06401
(203) 796-4000

Canadian Office

Duracell, a P&G business
4711 Yonge Street
Toronto, Ontario
Canada M2N 6K8
(416) 730-4711

SECTION 2: HAZARDS IDENTIFICATION

Physical Appearance: Coin cells.

EMERGENCY OVERVIEW

CAUTION: For information on treatment, call the NATIONAL BUTTON BATTERY INGESTION HOTLINE collect, day or night, at (202) 625-3333. Ingestion may lead to serious injury or death. Battery 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. Keep batteries away from children. If swallowed, consult a physician at once. Under certain misuse conditions and by abusively opening the battery, exposed lithium can react with water or moisture in the air causing potential thermal burns or fire.

Potential Health Effects:

The chemicals and metals in this product are contained in a sealed can. Exposure to the contents will not occur unless the battery leaks, is exposed to high temperatures or is mechanically, physically, or electrically abused.

Eye Contact: Contact with battery contents may cause irritation.

Skin Contact: Contact with battery contents may cause irritation.

Inhalation: Inhalation of vapors or fumes released due to heat or a large number of leaking batteries may cause respiratory and eye irritation.

Ingestion: Seek immediate medical advice. Batteries lodged in the esophagus should be removed immediately since leakage, caustic burns and perforation can occur as soon as two hours after ingestion. Irritation to the internal/external mouth areas, may occur following exposure to a leaking battery.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	Amount
Manganese Dioxide	1313-13-9	65-75%
Propylene Carbonate	108-32-7	10-15%
Lithium	7439-93-2	5-10%
Graphite, synthetic	7440-44-0	5-10%
1,2-Dimethoxyethane	110-71-4	1-10%
Lithium Perchlorate	7791-03-9	<1.5%

SECTION 4: FIRST AID MEASURES

Eye Contact: If battery is leaking and material contacts the eye, flush thoroughly with copious amounts of running water for 30 minutes. Seek immediate medical attention.

Skin Contact: If battery is leaking and material contacts the skin, remove any contaminated clothing and flush exposed skin with copious amounts of running water for at least 15 minutes. If irritation, injury or pain persists, seek medical attention.

Inhaled: If battery is leaking, contents may be irritating to respiratory passages. Move to fresh air. If irritation persists, seek medical attention.

Swallowed: If battery is swallowed seek immediate medical advice. Batteries lodged in the esophagus should be removed immediately since leakage, caustic burns and perforation can occur as soon as two hours after ingestion. If mouth area irritation or burning has occurred, rinse the mouth and surrounding area with tepid water for at least 15 minutes. Do not give ipecac.

Note to Physician: Published reports recommend removal from the esophagus be done endoscopically (under direct visualization). Batteries beyond the esophagus need not be retrieved unless there are signs of injury to the GI tract or a large diameter battery fails to pass the pylorus. If asymptomatic, follow-up x-rays are necessary only to confirm the passage of larger batteries. Confirmation by stool inspection is preferable under most circumstances. For information on treatment, telephone (202) 625-3333, collect day or night. Potential leakage of less than 50 milligrams of dimethoxyethane and propylene carbonate. Dimethoxyethane rapidly evaporates. Do not give ipecac.

SECTION 5: FIRE FIGHTING MEASURES

Fire and Explosion Hazards: Batteries may burst and release hazardous decomposition products when exposed to a fire situation.

Extinguishing Media: Use dry chemical, alcohol foam, water or carbon dioxide as appropriate for the surrounding fire. For incipient fires, carbon dioxide extinguishers are more effective than water.

Special Fire Fighting Procedures: Firefighters should wear positive pressure self-contained breathing apparatus and full protective clothing. Fight fire from a distance or protected area. Cool fire exposed batteries to prevent rupture. Use caution when handling fire-exposed containers (batteries may explode in heat of fire).

Hazardous Combustion Products: Thermal degradation may produce hazardous fumes of lithium and manganese; oxides of carbon and other toxic by-products.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Notify safety personnel of large spills. Irritating vapors and flammable vapors may be released from leaking or ruptured batteries. Eliminate all ignition sources. Evacuate the area and allow the vapors to dissipate. Clean-up personnel should wear appropriate protective clothing to avoid eye and skin contact and inhalation of vapors or fumes. Increase

ventilation. Carefully collect batteries and place in an appropriate container for disposal. Remove spilled liquid with absorbent and contain for disposal.

SECTION 7: HANDLING AND STORAGE

Avoid mechanical or electrical abuse. DO NOT short circuit or install incorrectly. Batteries may explode, pyrolyze or vent if disassembled, crushed, recharged or exposed to high temperatures. Install batteries in accordance with equipment instructions. Replace all batteries in equipment at the same time. Do not carry batteries loose in a pocket or bag.

Storage: Store batteries in a dry place at normal room temperature.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

The following occupational exposure limits are provided for informational purposes. No exposure to the battery components should occur during normal consumer use.

Chemical Name	Exposure Limits
Manganese Dioxide	5 mg/m ³ Ceiling OSHA PEL 0.2 mg/m ³ TWA ACGIH TLV
Propylene Carbonate	2 mg/m ³ Ceiling ACGIH TLV
Lithium	None established
Graphite (synthetic non-fibrous))	5 mg/m ³ TWA (respirable dust), 15 mg/m ³ TWA (total dust) OSHA PEL 2 mg/m ³ TWA (respirable dust) ACGIH TLV
1,2-Dimethoxyethane	None established.
Lithium Perchlorate	None established

Ventilation: No special ventilation is needed for normal use.

Respiratory Protection: None required for normal use.

Skin Protection: None required for normal use. Use butyl rubber gloves when handling leaking batteries.

Eye Protection: None required for normal use. Wear safety goggles when handling leaking batteries.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor: Coin cells.

Specific Gravity: Not applicable

Water Solubility: Insoluble

Vapor Pressure: Not applicable

Vapor Density: Not applicable

Boiling Point: Not applicable

Melting Point: Not applicable

Flash Point: 29°F (-2°C) (1,2-Dimethoxyethane)

Autoignition Point: Not applicable

SECTION 10: STABILITY AND REACTIVITY

Stability: This product is stable.

Incompatibility/Conditions to Avoid: Contents are incompatible with strong oxidizing agents. Do not heat, crush, disassemble, short circuit or recharge.

Hazardous Decomposition Products: Thermal decomposition may produce hazardous fumes of lithium and manganese; oxides of carbon and other toxic by-products.

Hazardous Polymerization: Will not occur

SECTION 11: TOXICOLOGICAL INFORMATION

Acute Toxicity Data:

Manganese Dioxide: LD50 oral rat >3478 mg/kg

Propylene Carbonate: LD50 oral rat 29100 uL/kg; LD50 dermal rabbit >20 mL/kg; LC50 inhalation rat >5 g/m³

1,2-Dimethoxyethane: LDLo oral rat 1000 mg/kg, LCLo inhalation rat 63 g/m³/6 hr

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