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**PRIMARY Lithium batteries**

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**1. Identification of the substance/mixture and of the company/undertaking**

**Product names:** KODAK Lithium batteries;

**Sizes:** CR1025, CR1220, CR1616, CR1620, CR1632, CR2430, CR2450, CR2016, CR2025, CR2032, CR2, K123LA

**Supplier:** Strand Europe Ltd., Strand House, Galway Road, Yateley, Hampshire, GU46 6GE, United Kingdom

For Hazardous Materials [or Dangerous Goods] Incident  
Spill, Leak, Fire, Exposure, or Accident  
Call CHEMTREC Day or Night  
1-800-424-9300 / +1 703-527-3887 CCN696626

For other information or to request an MSDS, contact;

Kodak Batteries - Technology Department  
Tel. +44 (0) 1252 861000  
Email: [kodakbatteries@strandeurope.com](mailto:kodakbatteries@strandeurope.com)

**Synonyms:** None.

**Product Use:** Battery, for consumer and industrial use.

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**2. Hazards identification**

Classification of the chemical in accordance with paragraph (d) of 29 CFR 1910.1200 :

Components	Hazard Class	Hazard Category	Hazard Statement codes	Route of exposure
Manganese dioxide	Acute Toxicity	Category 4	H302 H332	Harmful if swallowed Harmful if inhaled
Lithium	Water reactant	Category 1	H260	In contact with water releases flammable gases which may ignite spontaneously
	Skin irritation	Category 1B	H314	Causes severe skin burns and eye damage
Perchloric acid, lithium salt	Oxidizing Solids Skin irritation Serious eye irritation STOT SE	Category 2 Category 2 Category 2A Category 3	H272 H315 H319 H335	May intensify fire; Oxidiser Causes skin irritation. Causes serious eye irritation May cause respiratory irritation

**GHS-Labeling**

**CONTAINS:** Manganese dioxide (1313-13-9), Organic Electrolyte (proprietary), Lithium (7439-93-2), Perchloric acid, lithium salt (7791-03-9)

**Symbol(s) :**



**Signal Word :** Warning

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**Hazard Statements:** Harmful if swallowed. Harmful if inhaled. In contact with water releases flammable gases which may ignite spontaneously. Causes severe skin burns and eye damage. May intensify fire; Oxidiser Causes skin irritation. Causes serious eye irritation. May cause respiratory irritation.

**Precautionary statements:**

**Prevention:** If battery has been damaged, do not breathe fumes or vapours. Do not get battery contents in eyes, on skin, on clothing. wear impervious gloves.

**Response:** IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/ attention. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/ physician. IF SWALLOWED: All batteries may be harmful if swallowed. Call a physician/ doctor or POISON CENTER immediately for any actual or suspected ingestion. If swallowed, DO NOT induce vomiting. Batteries may lodge in the throat or digestive tract and fragment. If battery was leaking or was chewed, rinse mouth thoroughly with water. IF ON SKIN: Wash with plenty of soap and water. Call a POISON CENTER or doctor/ physician if you feel unwell. If skin irritation occurs: Get medical advice/ Attention. Remove/ Take off immediately all contaminated clothing and wash it before reuse. IF exposed or concerned. Get medical advice/ Attention.

**Storage:** Keep in a dry, cool place. Keep away from direct sunlight and sources of heat. Do not freeze. Keep away from water. Do not short circuit.

**Disposal :** Dispose of batteries in accordance with local/regional/national/International regulation.

**HMIS III Hazard Ratings:** Health – 0, Flammability- 0, Reactivity-2.

**NFPA Hazard Ratings:** Health – 0, Flammability- 0, Reactivity-2.

NOTE: HMIS III and NFPA 704 hazard indexes involve data review and interpretation that may vary among companies. They are intended only for rapid, general identification of the magnitude of the potential hazards. To adequately address safe handling. ALL information in this SDS must be considered.



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**3. Composition/information on ingredients**

Weight percent %	Components	CAS-No
20 - 40	Manganese dioxide	1313-13-9
2-15	Organic Electrolyte (proprietary)	
1 - 5	Lithium	7439-93-2
< 1	Perchloric acid, lithium salt	7791-03-9

Contains < 0.3 gram of lithium per cell.

Weight percent listed is based on approximate percent of the average weight of the battery.

The components in this section may only represent a hazard if the integrity of the battery is compromised.

**4. First aid measures**

The routine handling and use of intact, non-damaged batteries is not expected to result in situations that require first-aid measures. If battery is damaged due to opening, cutting, crushing, overheating, improper installation, exposure to fire or high temperatures, or recharging, battery contents may be released.

**Inhalation:** If vapours or fumes from vented or leaking battery are irritating to respiratory tract, move to fresh air. Get medical attention if symptoms occur.

**Eyes:** In case of contact with battery contents (liquid or metal), immediately flush with plenty of water for at least 15 minutes. Get medical attention immediately.

**Skin:** In case of contact with battery contents (liquid or metal), immediately remove metal fragments and flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash contaminated clothing before re-use. Destroy or thoroughly clean contaminated shoes. Get medical attention immediately.

**Ingestion:** All batteries may be harmful if swallowed. Call a physician or poison control center immediately for any actual or suspected ingestion. If swallowed, DO NOT induce vomiting. Batteries may lodge in the throat or digestive tract and fragment. If battery was leaking or was chewed, rinse mouth thoroughly with water.

**Notes to physician:**

**Hazards:** Battery ingestions should not be managed in the same way as other small metallic object ingestions, eg., coins. The position and integrity of the battery in the gastrointestinal tract should be assessed and monitored by x-ray. Leaking batteries may cause necrosis and tissue damage. Larger batteries or batteries that lodge in the gastrointestinal tract may have to be removed endoscopically or surgically.

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**5. Fire-fighting measures**

**Extinguishing Media:** Flood with water. Do not use carbon dioxide or Halon type extinguisher.

**Special Fire-Fighting Procedures:** Wear self-contained breathing apparatus and protective clothing. Fire or excessive heat may produce hazardous decomposition products.

**Hazardous Combustion Products:** oxides of lithium, oxides of manganese, Carbon oxides, (see also Hazardous Decomposition Products sections.)

**Unusual Fire and Explosion Hazards:** Fire or high temperatures may cause battery to flame or leak flammable and hazardous vapours. Damaged or opened batteries can result in rapid heating and the release of flammable and hazardous vapours.

**6. Accidental release measures**

Dispose of in accordance with local regulations (see Section 13. Disposal considerations).

**For Large Spills:** None should be needed.

**7. Handling and storage**

**Personal precautions:** If battery has been damaged, do not breathe fumes or vapours. Do not get battery contents in eyes, on skin, on clothing. Wash thoroughly after handling.

**Prevention of Fire and Explosion:** DO NOT DISASSEMBLE. Keep away from heat and flame. Do not short circuit. Avoid the use of old and new batteries or batteries of varying sizes and types in the same battery assembly. The batteries electrical characteristics and capabilities may vary and damage may result to the batteries or electrical equipment. DO NOT RECHARGE. Charging may result in electrolyte leakage, explosion and/or cause the battery to flame. Avoid reversing polarity within a device or a battery assembly. To do so may cause leakage, explosion, and/or flame.

**Storage:** Do not store in a manner that allows terminals to short circuit. Keep in a dry, cool place. Keep away from direct sunlight. Storage above 21°C (70°F) may affect product quality. Do not freeze. Keep away from water. Short circuiting may reduce battery service life. Extended short circuiting creates high temperatures in the battery. High temperatures can cause leakage, explosion, and/or flame. Keep away from incompatible substances (see Incompatibility section.)

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**8. Exposure controls/personal protection****Occupational exposure controls**

Chemical Name	Regulatory List	Value Type	Value
Manganese dioxide	ACGIH	Time weighted average	0.2 mg/m <sup>3</sup> Expressed <i>Mn</i>
	OSHA	Ceiling Limit Value	5 mg/m <sup>3</sup> Expressed <i>Mn</i>
	NIOSH	Time weighted average	1 mg/m <sup>3</sup> (ST) 3 mg/m <sup>3</sup>
	CAL/OSHA	Time weighted average	0.02 mg/m <sup>3</sup> (resp.) 0.1 mg/m <sup>3</sup> (IHL)

**EU Community Occupational Exposure Limits (OELs)**

Components	CAS-No	Country	Limit Value-Eight Hours		Limit Value-Short term	
			ppm	mg/m <sup>3</sup>	ppm	mg/m <sup>3</sup>
Manganese dioxide	1313-13-9	Finland	None	0.2(1)(2) 0.02(1)(3)	None	None
		Latvia	None	0.3(4)	None	None
Lithium	7439-93-2	Germany	None	0.2(2)	None	0.2(2)(5)
		Sweden	None	None	None	0.02(2)(5)
		Switzerland	None	0.2(2)	None	0.2(2)

(1) calculated as Mn (2) Inhalable fraction (3) Respirable fraction. (4) Disintegration aerosol. (5) 15 minutes average value.

**Ventilation:** Supplemental ventilation may be needed in special circumstances to control fumes/vapours to an acceptable level.

**Respiratory protection:** None should be needed.

**Eye protection:** When handling a damaged battery, wear safety glasses with side shields (or goggles).

**Hand protection:** When handling a damaged battery, wear impervious gloves.

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**9. Physical and chemical properties**

**Physical form:** solid

**Colour:** not applicable

**Odour:** odourless

**Specific gravity:** not applicable

**Vapour pressure:** negligible

**Vapour density:** not applicable

**Melting point/range:** not

applicable

**Water solubility:** insoluble

**pH:** not applicable

**Flash point:** not applicable

**10. Stability and reactivity**

**Stability:** Stable under normal conditions.

**Incompatibility:** Water.

**Hazardous decomposition products:** None under normal conditions of use.

**Hazardous Polymerization:** Hazardous polymerization does not occur.

**11. Toxicological information****Effects of Exposure**

**Inhalation:** Intact battery: Expected to be a low hazard for recommended handling. Damaged battery: Harmful if inhaled. May cause irritation to the mucous membranes and upper respiratory tract.

**Eyes:** Intact battery: Expected to be a low hazard for recommended handling. Damaged battery: Contact with electrolyte (liquid) causes burns. Airborne dust/mist/vapor irritating. Contact with metal fragments may cause burns or mechanical injury.

**Skin:** Intact battery: Expected to be a low hazard for recommended handling. Damaged battery: Contact with electrolyte (liquid) causes burns. Contact with metal fragments may cause burns or mechanical injury. Harmful if absorbed through skin. Vapors or fumes may cause irritation.

**Ingestion:** All batteries may be harmful if swallowed. May cause burns of the gastrointestinal tract if

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swallowed.

**Data for Manganese dioxide (CAS 1313-13-9):**

**Acute Toxicity Data:**

Oral LD50 (rat): > 3,478 mg/kg

## 12. Ecological information

This material is not expected to be harmful to aquatic life.

## 13. Disposal considerations

DO NOT INCINERATE or expose to fire. Discharge, treatment, or disposal may be subject to federal, state, commonwealth, provincial, or local laws.

## 14. Transport information

Kodak button cell lithium batteries (Lithium Metal Battery) shown in this MSDS comply to the necessary requirements under the UN Recommendations on the Transport of Dangerous Goods Model Regulations and UN Manual of Tests and Criteria as referenced in the following transportation regulations:

### USA

Primary lithium batteries are forbidden for transport aboard passenger aircraft. Each package of primary lithium batteries should be marked "PRIMARY LITHIUM BATTERIES-FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT" on a contrasting background.

UN no.	Shipping mode	Regulations	Packing instructions	Limit of Aggregated lithium content	Lithium handling label	Class 9 DG label
UN 3090	USA	DOT 49 CFR	173.185	≤1g (cell) / ≤2 g (battery)	Yes	Yes
	Air	ICAP/IATA DGR 60 <sup>th</sup> edition	PI968 Section II PI968 Section IB	1 Package ≤0.3g=2.5kg max  Net weight of batteries = 2.5kg max	Yes	Yes
	Sea	IMO/IMDG Code 2017	SP188	1 g (cell) / 2 g (battery)	Yes	Yes
	Road/Rail	ADR / RID	P903 P903a P903b SP188	1 g (cell) / 2 g (battery)	Yes	Yes



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As KODAK Lithium button cells have under 0.3g of lithium they adhere to the regulations indicated above.

**15. Regulatory information****Notification status**

<b>Regulatory List</b>	<b>Notification status</b>
TSCA	Not all listed
DSL	Not all listed
NDSL	None listed
EINECS	Not all listed
ELINCS	None listed
NLP	None listed
AICS	Not all listed
IECS	Not all listed
ENCS	Not all listed
ECI	Not all listed
NZIoC	Not all listed
PICCS	Not all listed

"Not all listed" indicates one or more component is either not on the public Inventory or is subject to exemption requirements. If additional information is needed contact Strand Europe.

**Other regulations**

American Conference of Governmental Industrial Hygienists (ACGIH):	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
International Agency for Research on Cancer (IARC):	No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
U.S. National Toxicology Program (NTP):	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

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U.S. Occupational Safety and Health Administration (OSHA):	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
California Prop. 65	This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.
U.S. - CERCLA/SARA (40 CFR § 302.4 Designation of hazardous substances):	No components of this product are subject to the SARA Section 302 (40 CFR 302.4) reporting requirements.
U.S. - CERCLA/SARA - Section 302 (40 CFR § 355 Appendices A and B - The List of Extremely Hazardous Substances and Their Threshold Planning Quantities):	No components of this product are subject to the SARA Section 302 (40 CFR 355) reporting requirements.
U.S. - CERCLA/SARA - Section 313 (40 CFR § 372.65 Toxic Chemical Release Reporting):	Manganese dioxide
U.S. - California - 8 CCR Section 339 - Director's List of Hazardous Substances:	Manganese dioxide
U.S. - California - 8 CCR Section 5200-5220 - Specifically Regulated Carcinogens:	No components found on the California Specifically Regulated Carcinogens List.
U.S. - California - 8 CCR Section 5203 Carcinogens:	No components found on the California Section 5203 Carcinogens List.
U.S. - California - 8 CCR Section 5209 Carcinogens:	No components found on the California Section 5209 Carcinogens List.
U.S. - Massachusetts - General Law Chapter 111F (MGL c 111F) - Hazardous Substances Disclosure by Employers (a.k.a. Right to Know Law):	Lithium
U.S. - Minnesota Employee Right-to-Know (5206.0400, Subpart 5. List of Hazardous Substances):	Manganese dioxide
U.S. - New Jersey - Worker and Community Right to Know Act (N.J.S.A. 34:5A-1):	Manganese dioxide, Lithium

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U.S. - Pennsylvania - Part XIII. Worker and Community Right-to-Know Act (Chapter 323 Hazardous Substance List, Appendix A):	Manganese dioxide, Organic Electrolyte, Lithium
U.S. - Rhode Island - Title 28 Labor and Labor Relations (Chapters 28-21 Hazardous Substance Right-to-Know Act):	Lithium

16. Other information

## GHS-Labeling

**CONTAINS:** Manganese dioxide (1313-13-9), Organic Electrolyte (proprietary), Lithium (7439-93-2), Perchloric acid, lithium salt (7791-03-9)

Symbol(s) :



Signal Word : Warning

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The data below reflects current legislative requirements whereas the product in your possession may carry a different version of the label depending on the date of manufacture.

**US/Canadian Label Statements:****Kodak Lithium Battery**

**CONTAINS: Manganese dioxide (1313-13-9), Organic Electrolyte (not applicable), Lithium (7439-93-2), Perchloric acid, lithium salt (7791-03-9).**

**WARNING! MAY FLAME OR LEAK IF OPENED, SHORT CIRCUITED, RECHARGED, CONNECTED IMPROPERLY, OR EXPOSED TO FIRE OR HIGH TEMPERATURES. HARMFUL IF SWALLOWED.**

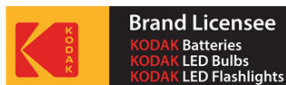
**VAPORS/FUMES FROM DAMAGED BATTERIES MAY CAUSE RESPIRATORY TRACT IRRITATION. DAMAGED BATTERIES MAY CAUSE SKIN AND EYE BURNS.**

**FIRST AID:** If vapours or fumes from vented or leaking battery are irritating to respiratory tract, move to fresh air. Get medical attention if symptoms occur. In case of contact with battery contents (liquid or metal), immediately flush with plenty of water for at least 15 minutes. Get medical attention immediately. In case of contact with battery contents (liquid or metal), immediately remove metal fragments and flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash contaminated clothing before re-use. Destroy or thoroughly clean contaminated shoes. Get medical attention immediately. All batteries may be harmful if swallowed. Call a physician or poison control center immediately for any actual or suspected ingestion. If swallowed, DO NOT induce vomiting. Batteries may lodge in the throat or digestive tract and fragment. If battery was leaking or was chewed, rinse mouth thoroughly with water. Keep out of reach of children. Do not handle or use until safety precautions in Material Safety Data Sheet (MSDS) have been read and understood. Since emptied containers retain product residue, follow label warnings even after container is emptied.

**IN CASE OF FIRE:** Flood with water. Do not use carbon dioxide or Halon type extinguisher.

**IN CASE OF SPILL:** Dispose of in accordance with local regulations (see Section 13. Disposal considerations). For Large Spills: None should be needed. Additional Components Include: Steel casing (not applicable).

The information contained herein is furnished without warranty of any kind. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers and the protection of the environment. The information relating to the working solution is for guidance purposes only, and is based on correct mixing and use of the product according to instructions.



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