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

Product names: KODAK Zinc Chloride Battery types;

EXTRA HEAVY DUTY: AA, AAA, C, D and 9V
HEAVY DUTY: AA, AAA, C, D and 9V

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

Emergency telephone number: +44 (0) 1252 864533

For other information or to request an MSDS, contact;

Kodak Batteries - Technology Department
Tel. +44 (0) 1252 864520
Email: kodakbatteries@strandeurope.com

Synonyms: None.

Product Use: Battery, for consumer and industrial use.

2. Hazards identification

CONTAINS: Manganese dioxide (1313-13-9), Zinc (7440-66-6), Carbon (7440-44-0), Zinc chloride (ZnCl2) (7646-85-7), Ammonium chloride ((NH4)Cl) (12125-02-9)

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

3. Composition/information on ingredients

Weight percent	Components - (CAS-No.)
25 - 30	Manganese dioxide (1313-13-9)
25 - 30	Zinc (7440-66-6)
5 - 10	Carbon (7440-44-0)
> 7	Zinc chloride (ZnCl2) (7646-85-7)
> 7	Ammonium chloride ((NH4)Cl) (12125-02-9)

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.

5. Fire-fighting measures

Extinguishing Media: Flood with water. Do not use carbon dioxide or Halon type extinguisher. Use caution during water application as burning pieces of lithium may be ejected from fire.

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 zinc, 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.)

8. Exposure controls/personal protection

Occupational exposure controls

Chemical Name	Regulatory List	Value Type	Value
Manganese dioxide	ACGIH	time weighted average	0.2 mg/m3
			Expressed as Mn
	OSHA	Ceiling Limit Value	5 mg/m3
			Expressed as Mn
Zinc chloride (ZnCl2)	ACGIH	time weighted average	1 mg/m3
			Form of exposure: fume
		Short term exposure limit	2 mg/m3
			Form of exposure: fume
	OSHA	time weighted average	1 mg/m3
			Form of exposure: fume
Ammonium chloride ((NH4)Cl)	ACGIH	time weighted average	10 mg/m3
			Form of exposure: fume
		Short term exposure limit	20 mg/m3
			Form of exposure: fume

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.

9. Physical and chemical properties

Physical form: solid

Colour: not applicable

Odour: odourless

Specific gravity: not applicable

Vapour pressure: negligible

Vapour density: not applicable

Volatile fraction by weight: 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 polymerisation does not occur.

11. Toxicological information

Effects of Exposure

General advice: Since the materials in this battery are sealed in the battery case, the potential for exposure to the components of the battery is negligible when the battery is used as directed. However, technical or electrical abuse of the battery may result in the release of battery contents.

Contains: Manganese dioxide. Can cause nervous system damage.

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 swallowed.

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

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

Data for Carbon (CAS 7440-44-0):

Acute Toxicity Data:
Oral LD50 (rat): > 10,000 mg/kg

Data for Zinc chloride (ZnCl2) (CAS 7646-85-7):

Acute Toxicity Data:
Oral LD50 (rat): 350 mg/kg

Data for Ammonium chloride ((NH4)Cl) (CAS 12125-02-9):

Acute Toxicity Data:
Oral LD50 (rat): 1,410 mg/kg

- Skin irritation: none
- Eye irritation: Irritating to eyes.

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

These batteries are not regulated by international agencies as hazardous materials or dangerous goods when shipped. A shipping name of ñZinc-Chloride Batteries ï Non-hazardousòmay be used on all domestic and international bills of lading.

Kodak batteries follow the regulatory concerns on batteries from all agencies for safe packaging which require that batteries be packaged in a manner that prevents short circuits and be contained in ñstrong outer packagingòthat prevents spillage of contents.

15. Regulatory information

Notification status

Regulatory List	Notification status
TSCA	All listed
DSL	All listed
NDSL	None listed
EINECS	All listed
ELINCS	None listed
NLP	None listed
AICS	All listed
IECS	All listed
ENCS	Not all listed
ECI	All listed
NZIoC	All listed
PICCS	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.

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):	Ammonium chloride ((NH4)Cl), Zinc, Zinc chloride (ZnCl2)
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):	Ammonium chloride ((NH4)Cl), Manganese dioxide, Zinc, Zinc chloride (ZnCl2)
U.S. - California - 8 CCR Section 339 - Director's List of Hazardous Substances:	Ammonium chloride ((NH4)Cl), Manganese dioxide, Zinc, Zinc chloride (ZnCl2)
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):	Ammonium chloride ((NH4)Cl), Zinc, Zinc chloride (ZnCl2)
U.S. - Minnesota Employee Right-to-Know (5206.0400, Subpart 5. List of Hazardous Substances):	Ammonium chloride ((NH4)Cl), Manganese dioxide, Zinc chloride (ZnCl2)
U.S. - New Jersey - Worker and Community Right to Know Act (N.J.S.A. 34:5A-1):	Ammonium chloride ((NH4)Cl), Manganese dioxide, Zinc, Zinc chloride (ZnCl2)
U.S. - Pennsylvania - Part XIII. Worker and Community Right-to-Know Act (Chapters 301-323):	Ammonium chloride ((NH4)Cl), Manganese dioxide, Carbon, Zinc, Zinc chloride (ZnCl2)

U.S. - Rhode Island - Title 28 Labor and Labor Relations (Chapters 28-21 Hazardous Substance Right-to-Know Act):	Ammonium chloride ((NH4)Cl), Carbon, Zinc, Zinc chloride (ZnCl2)

16. Other information

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 Zinc Chloride Battery
CONTAINS: Manganese dioxide (1313-13-9), Zinc (7440-66-6), Carbon (7440-44-0), Zinc chloride (ZnCl2) (7646-85-7), Ammonium chloride ((NH4)Cl) (12125-02-9).
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. Use caution during water application as burning pieces of lithium may be ejected from fire.

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.
