

Safety data sheet for chemical products

1.PRODUCT AND COMPANY IDENTIFICATION

- Product name: Manganese Dioxide Lithium Primary Battery
 - Model: CR123A
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- Company name: Sanyo Electric Co.,Ltd. Soft Energy Company
 - Address: 222-1, Kaminaizen , Sumoto City ,Hyogo ,Japan
 - Telephone number +81-799-24-4111
 - Telefax number: +81-799-24-4129
 - Emergency telephone number: [Weekday] +81-799-23-2924
[Night and holiday] +81-799-24-4131

2.COMPOSITION / INFORMATION ON INGREDIENTS

- Substance or preparation: Preparation
- Information about the chemical nature of product:

Common chemical name / General name	CAS number	Concentration / Concentration range	Classification and Hazard labeling
Manganese Dioxide	1313-13-9	30-40%	Specific hazards
Lithium metal	7439-93-2	3.4% *	Water forbiddance
Ethylene Carbonate	96-49-1	10-15%	Combustibility
Butylene Carbonate	4437-85-8		Inflammability
Dimethoxyethane	110-71-4		Inflammability
Lithium trifluoro methane sulphonate (LiCF ₃ SO ₃)	33454-82-9		-

* Weight of Lithium per cell : 0.58g

3.HAZARDS IDENTIFICATION

- Most important hazard and effects: No information is obtained.
- Specific hazards: Since chemicals are contained in a sealed can, there are no hazards.
Lithium metal of contents sets off a chemical burn if it touches a skin.
- Emergency overview may also be given: The time when the battery is mechanically or electrically abused when a battery vents, and when short circuit occurs.

4.FIRST-AID MEASURES

- Inhalation: In case content's vapor caused by blowout of a battery is inhaled, move to a place having fresh air immediately
- Skin contact: In case the content adheres to a skin, wash away with water and soap immediately.
- Eye contact: In case the content goes into an eye, wash away with much water for more than 15 minutes.
- Ingestion: A medical examination of a doctor is received quickly.

5.FIRE-FIGHTING MEASURE

- Suitable extinguishing media: Carbonic acid gas, powder, foam, atomized water
- Specific methods of fire fighting: Take batteries to a safe place not to be burnt down in a spreading fire.
In case batteries packaged in a box burn, since burning material is paper, use a water extinguisher, a CO2 extinguisher, and a powder extinguisher as a normal extinguisher.
- Special equipment for the protection of firefighters:

- Hand protection: a pair of flame-proof groves
 Eye protection: face mask
 Protective wear of skin and/or body: protective clothing

6.ACCIDENTAL RELEASE MEASURES

- Personal precautions: In case release is small and continues for short time, health condition does not turn bad.
- Environmental precautions: Extinguish it quickly, or the bad odor will smoke up because the fire gets left for some time.
- Cleaning method: Solid content gets moved into a container. In case of the scatter, wipe it on a dry towel.
- Prevention of secondary hazards: In case of Lithium metal, it causes fever reacted by water in the air, ignition may occur deal with accidental release quickly.

7.HANDLING AND STORAGE

- Handling
 - Prevention of user exposure: No problem on regular handling
 - Prevention of fire and explosion: No problem on regular handling
 - Precaution for prevention of local emission and powder dust:: No problem on regular handling
- Storage
 - Technical measures: measures to avoid direct rays, high temperature, and high humidity
 - Incompatible products: Combustible things, conductive things (metal: cause of shot circuit)
 - Storage conditions (suitable): Low temperature and low humidity (a cool and dark place)
 - Storage conditions (to be avoid): High temperature and high humidity, and direct rays
 - Packing material (recommended): Excellent flame resisting, incombustible, and insulated material

8.EXPOSURE CONTROLS / PERSONAL PROTECTION

- Engineering measures: regular handling doesn't cause scatters. If it should happen by destruction of batteries and so on, however, operate local emission device, or clear the air well
- Control parameters

Common chemical name / General name	ACGIH	
	TLV-TWA	BEI
Manganese dioxide	Mn: 0.2mg/m ³	-
Lithium metal	-	-
Ethylene Carbonate	-	-
Butylene Carbonate	-	-
Dimethoxyethane	-	-
Lithium trifluoro methane sulphonate (LiCF ₃ SO ₃)	-	-

ACGIH :American Conference of Governmental Industrial Hygienists ,Inc.

TLV-TWA :Threshold Limit Value-time weighted average concentration

BEI :Biological Exposure Indices

- Personal protective equipment
 - There in no need on regular handling. Use the protections shown below when contents leaking out of batteries are dealt with.
 - Respiratory protection: Mask(with a filter preferably)
 - Hand protection: Synthetic rubber grove
 - Eye protection: Goggle or glass
- Specific hygiene measures: Wash a dirty place.

9.PHYSICAL AND CHEMICAL PROPERTIES

- Appearance
Physical state: Solid
Form:Cylindrical Type
Smell: odorless
 - PH: Not applicable because of insolubility in water.
 - Specific temperature/humidity at which physical state changes: No information because of mixture.
 - Density: not mentioned because this product is a mixture.
 - Solubility: insolubility in water
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10.STABILITY AND REACTIVITY

- Stability : Stable on regular handling
 - Conditions to avoid: External short circuit of battery , deformation by crush, exposure at high temperature of more than 60 degree C (cause heat generation and ignition) direct ray, high humidity
 - Materials to avoid: Water, a chain, and a piece of metal that causes short circuit.
 - Hazardous decomposition product: Emitted acrid or poisonous gases in fire.
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11.TOXICOLOGICAL INFORMATION

- Since chemicals are contained in a sealed can, there are no hazards.

Components of Chemical substances are shown below.

Manganese Dioxide

Acute toxicity: rabbit *1 : LD₅₀(blue pipe)=45mg/kg, mouse*2: LD₅₀(subcutaneous)=422mg/kg

Local effects: Stimulus to an eye, a nose, a throat, and a skin

Chronic toxicity or long-term toxicity: Inhale powder dust or fume for a long time (at least 3 months), and that may cause specific central nerve symptom like Parkinson's disease.

Reproduction toxicity: Mouse*3 inhalation TCL₀=49mg/m³

Lithium metal

Acute toxicity: No information in a metal state

Local effects: Touching on a skin or an eye causes thermal burn and alkaline's chemical burn.

Ethylene Carbonate

Acute toxicity: No information at present

Local effects: No information at present

Butylene Carbonate

Acute toxicity: No information at present

Local effects: No information at present

Dimethoxyethane

Acute toxicity: Rat*4 oral LD₅₀=700mg/kg

Local effects: Light stimulus to a skin

Lithium trifluoro methane sulphonate (LiCF₃SO₃)

Acute toxicity: No information at present

Local effects: Slight stimulus to mucous membranes

12.ECOLOGICAL INFORMATION

- Possible environment impact/ ecotoxicity: Chemical substances do not influence on an environment because of being sealed in metal container.
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13.DISPOSAL CONSIDERATIONS

- Recommended methods for safe and environmentally preferred disposal
Product(waste from residues): Pack used batteries into an inner box not to tumble down to be short-circuiting. Pack the inner boxes into an outer box besides, and dispose of it by industrial-waste disposal company consignment-constructed.
Contaminated packaging: Container and/or package is/are not contaminated on regular usage.
In case contents leaking out of batteries adhere, deal with that as industrial waste subject to special control.
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14.TRANSPORT INFORMATION

In the case of transportation, confirm no leakage and no overspill from a container. Take in a cargo of them without falling, dropping and breakage. Prevent collapse of cargo piles and wet by rain. The container must be handled carefully. Do not give shocks that result in a mark of hitting on a cell. Please refer to Section 7-HANDLING AND STORAGE also.

- Codes and classifications according to international regulations for transport air:

The UN classification number : Class 9 3090

IATA-DGR : special provision A45

However, since it corresponds to special provision A45 of IATA-DGR, this battery cell can be conveyed normally.

15.REGULATORY INFORMATION

- Regulations specifically applicable to the product :
IATA UN No.3090 (air transportation)
US Department of Transportation 49 Code of Federal Regulations [USA]
Wastes Disposal and Public Cleaning Law [Japan]
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16.OTHER INFORMATION

- This material safety data sheet is offered in order to have handling safe about dangerous detrimental chemicals carried out.
 - The entrepreneur who deals with it needs to consider this material safety data sheet as reference, and needs to devise suitable disposal in an entrepreneur's responsibility.
 - Numerical values, such as a content and the physical-chemistry-characteristic, are not guarantee values among the written contents.
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- Reference

*1 Journal of the D.I Mendeleeva All-Union Chemical Society.

(V/0 Mezhdunarodnaya knija, 113095 Moscow, USSR) V.5-1960

*2 Merck Index; an Encyclopedia of Chemicals, Drugs, and Biologicals, 11st ed.,

Rahway, NJ 07065, Merck & Co., Inc. 1898

*3 Federation of American Societies for Experimental Biology (Bethesda, MD) V.1-46, 1942-87

*4 Ube Industries, LTD Chemical & plastic Division (internal measured data)

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Soft Energy Company

Technology Division

Polymer/Lithium Battery Project

Lithium battery Section No.2
