# Material Safety Data Sheet

OSHA´s Hazard Communication Standard 29 CFR 1910.1200.

IDENTITY

Manganese Dioxide Lithium Primary Batteries
Model: C R 2

**RadioShack SKU 230-267**

## SECTION I

Supplier´s Name:
SANYO Electric Co., Ltd. Japan

Emergency Telephone Number

SANYO Energy (USA) Corporation
2001 Sanyo Ave., San Diego
California 92173, Tel (619)661-6620

SANYO Energy (Europe) Corp. GmbH
Stahlgruberring 4-81829 München,Germany
Tel (+49)89-4600950

Date Prepared: SEP.07,2001

## SECTION II Hazardous Ingredients / Identity Information

| Hazardous Components (Specific Chemical Name/ common Name(s)) | OSHA PEL | ACGIH TLV | CAS# |
|---|---|---|---|
| Manganese Dioxide ($MnO_2$) | 5mg/m³ (as Manganese) | 5mg/m³ (as Manganese) | 1313-13-9 |
| Lithium* | None established | | 7439-93-2 |
| Ethylene Carbonate (EC) | None established | | 96-49-1 |
| Butylene Carbonate (BC) | None established | | 4437-85-8 |
| Dimethoxyethane (DME) | None established | | 110-71-4 |
| Lithium trifluoro methane sulphonate ($LiCF_3SO_3$) | None established | | 33454-82-9 |

* Weight of Lithium per battery :0. 3 3 g

## SECTION III Physical / Chemical Characteristics

| | |
|---|---|
| Boiling point (°C) | EC:248, BC:240, DME:85 |
| Vapor pressure (mmHg) | EC, BC<0.1, DME:61 |
| Vapor Density (Air=1) | EC:3.0, BC:4.0, DME:3.1 |
| Solubility in Water | EC, BC:moderate, DME:complete |
| Specific Gravity ($H_2O$=1) | $MnO_2$:5.03, EC:1.32, BC:1.15, DME:0.87, Li:0.54, $LiCF_3SO_3$:0,5~0,6(bulk) |
| Melting Point (°C) | Li:179, $MnO_2$:decomposes at 535, $LiCF_3SO_3$:430 |
| Evaporation Rate (Butyl Acet.=1) | DME:4.99 |
| Appearance and Odor | Lithium is a soft, silvery metal.<br>$MnO_2$ is a black powder.<br>EC, BC is a colorless, odorless liquid.<br>DME is a colorless liquid with a sweet odor. |

## SECTION IV Fire and Explosion Hazard Data

| | |
|---|---|
| Flash Point (°C) | DME: -1 |
| Extinguishing Media | Water |
| Flammable Limits | Not available |

Special Fire Fighting Procedure: In case of fire in an adjacent area, use water. $CO_2$ or dry chemical extinguishers if cells are packed in their original containers since the fuel of the fire is basically paper products. For bulk quantities of unpackaged cell use LITH-X (Graphite Base). In this case, use no water.

## Section V — Reactivity Data

| | | | |
|---|---|---|---|
| Stability | Unstable | | Conditions to Avoid N/A |
| | Stable | | |

Incompatibility (*Materials to Avoid*) N/A

Hazardous Decomposition or Byproducts N/A

| | | | |
|---|---|---|---|
| Hazardous Polymerization | May Occur | | Conditions to Avoid N/A |
| | Will Not Occur | | |

## Section VI — Health Hazard Data

Route(s) of Entry: Inhalation? Skin? Ingestion?

Health Hazards (*Acute and Chronic*) N/A

Carcinogenicity: N/A NTP? IARC Monographs? OSHA Regulated?

Signs and Symptoms of Exposure N/A

Medical Conditions Generally Aggravated by Exposure N/A

Emergency and First Aid Procedures
EYES/SKIN: Wash out the eyes/skin with water promptly.

## Section VII — Precautions for Safe Handling and Use

Steps to Be Taken in Case Material Is Released or Spilled
If the battery is accidently broken and organic electrolyte (Propylene Carbonate, D.M.E. and Li $CF_3SO_3$ as a solute) leaks out, wipe it up with a cloth, and dispose of it in a plastic bag and put into a steel can.

Waste Disposal Method
It is recommended to discharge the battery to the end, to use up the metal lithium inside the battery, and to bury the discharged battery in soil.

Precautions to Be Taken in Handling and Storing
Unusual Fire and Explosion Hazard: In the abnormal case, example: Charge to higher than 5 volts at high amperage, the top may pop up.

Other Precautions
Do not recharge, disassemble, heat above 212F (100°C) or incinerate. Never put battery in mouth.

## Section VIII — Control Measures

Respiratory Protection (*Specify Type*) N/A

| | | | | |
|---|---|---|---|---|
| Ventilation | Local Exhaust | N/A | Special | N/A |
| | Mechanical (*General*) | N/A | Other | N/A |
| Protective Gloves | | N/A | Eye Protection | N/A |

Other Protective Clothing or Equipment N/A

Work/Hygienic Practices N/A