PRODUCT INFORMATION AND DATA SHEET

This product is a manufactured article as described in 29 CFR 1910.1200 and is not subject to OSHA's Hazard Communication Standard requirements for preparation of material safety data sheets (MSDS).

SANYO Batteries	**Manufacturer's Name**	**In case of emergency contact:**
SANYO Energy (USA Corp.) 2055 Sanyo Ave. San Diego, CA 92154 Telephone No.: (619) 661-4888 www.sanyobatteries.com	SANYO Electric Co., Ltd. Tokonabe-Cho Kasai-City Hyogo, 675-2332, Japan Telephone No.: 0790-43-2043	CHEMTREC at (800) 424-9300

Section I – Product Information

Product: Lithium Battery

Designated for Recharge? ___Yes _X_ No

Chemical System: Manganese Dioxide Lithium Primary

Model: Cylindrical (Crimp) Type Cells

Nominal Voltage: 3.0V

Section II – Composition / Information on Ingredients

The ingredients are contained in a hermetically sealed case, designed to withstand temperatures and pressures encountered during normal use. As a result, during normal use, hazardous materials are fully contained inside the battery. The battery should not be opened or exposed to heat because exposure to the following ingredients contained within could be harmful under some circumstances. The following information is provided for the user's information only.

Chemical Name	CAS No.	Concentration/ Concentration range	Classification and Hazard labeling
Manganese Dioxide	1313-13-9	35-45%	Specific hazards
Lithium metal	7439-93-2	3%*	Water prohibited
Mixture solvent of carbonate and ether	—	10-15%	Inflammability
Lithium Trifluoro methane sulphonate ($LiCF_3SO_3$)	33454-82-9		—

* Weight of lithium per cell or battery: See table page 4.

Section III – Physical Data

Boiling Point (°C): EC:248, BC:240, DME:85
Specific Gravity: (H20=1): Mn02:5.03, EC:1.32, BC:1.15, DME:0.87
Li-0.54, LiCF3S03:0.5~0.6 (bulk)
Vapor Pressure (mmHg): EC, BC<0.1, DME:61
Vapor Density (Air=1): EC-3.0, BC-4.0, DME:3.1
Melting Point (°C): Li-179, Mn02:decomposes at 535, LiCF3S03:430
Evaporation Rate (Butyl Acet.=1): DME:4.99
Solubility in Water: EC, BC:moderate, DME:complete

Appearance and Odor: Lithium is a soft, silvery metal. Mn02 is a black powder. EC, BC is a colorless, odorless liquid. DME is a colorless liquid with a sweet odor.

Section IV – Fire and Explosion Hazard Data

Flash Point (°C): DME: -1

Extinguishing Media: CO 2 or dry chemicals

Flammable Limits: Not available

Section V – Health Hazard Data

Routes of Entry:
Inhalation - Yes
Skin - Yes
Ingestion - Yes

Health Hazards (Acute and Chronic):
These chemicals are contained in a sealed can. Risk of exposure occurs only if the battery is mechanically or electrically abused. The most likely risk is acute exposure when a cell vents. DME is believed to be slightly to moderately toxic, and EC and BC are considered to be non-toxic but moderately irritating to the eyes. LiCF3S03 is irritating to skin, eyes and mucous membranes. Contact of electrolyte and extruded lithium with skin and eyes should be avoided.

Carcinogenicity: NTP: None IARC Monograph: None OSHA Regulated: None

Signs / Symptoms of Exposure: DME may be a reproductive hazard. Lithium can cause thermal and chemical burns upon contact with the skin.

Medical Conditions Generally Aggravated by Exposure: An acute exposure will not generally aggravate any medical condition.

Emergency and First Aid Procedures: In case of skin contact with contents of battery, flush immediately with water. For eye contact, flush with copious amounts of water for 15 minutes. Do not inhale leaked material. If irritation persists, get medical help.

Section VI – Reactivity Data

Stability: Stable
Conditions to Avoid: Do not heat, disassemble or charge.
Hazardous Decomposition or By-products: N/A
Hazardous polymerization will not occur.

Section VII – Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled: The preferred response is to leave the area and allow the batteries to cool and the vapors to dissipate. Avoid skin and eye contact or inhalation of vapors. Remove spilled liquid with absorbent and incinerate.

Waste Disposal Method: Open cells should be disposed of in accordance with local regulations

Precautions to be Taken in Handling and Storing: Avoid mechanical or electrical abuse. Batteries may explode or cause burns, if disassembled, crushed or exposed to fire or high temperatures. Do not short or install with incorrect polarity.

Section VIII Control Measures

Respiratory Protection (Specify Type): Not necessary under conditions of normal use.
Ventilation: Not necessary under conditions of normal use.
Protective Gloves: Not necessary under conditions of normal use.
Eye Protection: Not necessary under conditions of normal use.
Other Protective Clothing or Equipment: Not necessary under conditions of normal use.

Section IX – Recycling and Disposal

Lithium batteries are best disposed of as a non-hazardous waste when fully or mostly discharged. The Federal Environmental Protection Agency (EPA) does not list or exempt Lithium as a hazardous waste. However, if waste lithium batteries are still fully charged or only partially discharged, they can be considered a reactive hazardous waste because of unreacted, or unconsumed lithium remaining in the spent battery. Such batteries may qualify as "Universal Waste" in many jurisdictions within the U.S. and thus can be shipped for disposal or recycling in accordance with Universal Waste requirements. Use a professional disposal firm for disposal of mass quantities of undischarged lithium batteries.

DO NOT INCINERATE or subject battery cells to temperatures in excess of 212°F. Such treatment can cause cell rupture.

Section X – Transportation

Sanyo lithium cells and batteries are not subject to the requirements of the U.S. hazardous materials regulations pursuant to 49 CFR 173.185(b), IATA Dangerous Goods Regulations pursuant to Special Provision A45, and IMDG Code pursuant to Special Provision 188. Each Sanyo cell or battery has been tested under provisions of the UN Manual of Tests and Criteria, Part III, Sub-section 38.3. **If Sanyo lithium cells are used to construct battery packs, the assembler of that pack is responsible to ensure the battery has been tested in accordance with the requirements contained in the UN Manual of Tests and Criteria and shipped in accordance with applicable regulations.**

Batteries must be packaged and offered for transportation in a manner that prevents the dangerous evolution of heat (for example, by the effective insulation of exposed terminals) and protects against short circuits.

The information and recommendations set forth are made in good faith and believed to be accurate as of the date of preparation. SANYO ENERGY CORP. makes no warranty, expressed or implied, with respect to this information and disclaims all liabilities from reliance on it.

WEIGHT OF LITHIUM FOR LITHIUM BATTERY

Batttery Type		Model	Weight of Battery(g) /cell or Battery	Weight of Lithium(g) /cell or Battery
Primary Batteries	Coin-type	CR1220	0.8	0.01
		CR2016	1.7	0.03
		CR2025	2.5	0.05
		CR2032	3.0	0.06
		CR2430	4.0	0.08
		CR2450	6.9	0.16
	Cylindrical-type	CR-1/3N	3.3	0.06
		2CR-1/3N	9.1	0.12
		CR15270	11.0	0.33
		CR14500	17.4	0.62
		CR15400	17.0	0.54
		CR17335	16.0	0.57
		CR2	11.0	0.33
		CR123A	17.0	0.57
		CR-V3	38.0	1.24
		CR-P2	37.0	1.14
		2CR5 (CR15400x2)	40.0	1.08
		2CR5 (CR17335x2)	38.0	1.14
		CR17335E-R	16.0	0.55
		CR17450E-R	22.0	0.82
		CR17335HE-R	16.0	0.47
		CR17450HE-R	22.0	0.71
	Cylindrical-type (SE series)	CR14250SE (SE-R)	9.0	0.26
		CR12600SE	15.0	0.48
		CR17335SE (SE-R)	17.0	0.49
		CR17450SE (SE-R)	22.0	0.72
		CR23500SE (SE-R)	42.0	1.52
Secondary Batteries	ML series	ML414	0.07	0.0004
		ML414R	0.07	0.0007
		ML414RU	0.08	0.0007
		ML414RU2	0.08	0.0008
		ML421	0.10	0.0009
		ML614	0.16	0.0012
		ML614R	0.19	0.0012
		ML621	0.22	0.0038
		ML1220	0.80	0.009
		ML2016	1.80	0.016
		ML2020	2.20	0.024
		ML2430	4.10	0.048
	NBL series	NBL414	0.07	0.0004
		NBL414R	0.08	0.0007
		NBL621	0.23	0.0038