SAFETY DATA SHEET

1. Product and Company Identification

Product Category: Lithium Manganese Dioxide Primary Battery, Nonrechargeable

Nominal Voltage: 3.6 V

Product Name

Type	Lithium (gr.)	Type	Lithium (gr.)
CR123A	**0.49**	**CR17335E-R**	**0.60**
CR2	**0.30**	**CR17450E-R**	**0.99**
CR14505	**0.56**	**CR-P2**	**0.98**
CR17450	**0.74**	**2CR5**	**0.98**
CR14250	**0.30**	**CR-V3**	**1.12**
CR17335	**0.49**		

Supplier's Name: Tenergy Corporation

Supplier's Address: 436 Kato Terrace, Fremont, CA 94539, United States

Post Code: 94539

Telephone: (510)687-0388

Fax: (510)687-0328

Note: The battery is neither substance nor mixture but product and having no risk to life and health under normal use or transportation because ingredients of battery is not leaked out by virtue of hermetical sealing with metal case.

This sheet notifies possible risk of our battery under abnormal use but mainly aim to provide information about ingredients, notification of handling and transportation regulations as a useful reference.

2. Hazards identification

The important hazards and adverse effects of the chemical product	No information available
Chemical product – specific hazards	No information available
Outline of an anticipated emergency	Chemical contents are seal in metal can. Therefore, risk of exposure never occurs unless battery is mechanically or electrically abused. Risk of explosion by fire is anticipated if batteries are dispose of in fire or heated above 100 degree Celsius. Stacking or jumbling of batteries may cause external short circuits, heat generation, in some case, allowing fire or explosion.

3. Composition/Information on Ingredient

Component	Material	CAS#	Contents
Positive Electrode	Manganese Dioxide	1313-13-9	20 ~ 40 wt%
Negative Electrode	Lithium metal	7439-93-2	1 ~ 6 wt%
Electrolyte	1,2-dimethoxyethane	110-71-4	3 ~ 5 wt%
	organic solvent	-	8 ~ 16 wt%
Others (steel or plastic parts)	Steel	7439-89-6	0.5 ~ 45 wt%
	Polypropylene	9003-07-0	1 ~ 10 wt%

4. First-aid measures

Inhalation	If ingredient leaked out from inside of a battery and if inhaled it, move to a place where fresh air is provided. Refer for medical attention.
Skin contact	If ingredient leaked out from inside of a battery and stuck on skin, wash the contact areas off immediately with plenty of water and soap. If appropriate procedures are not taken, this may cause sores on the skin. Refer for medical attention.
Eyes contact	If ingredient leaked out from inside of a battery and came into eyes, flush the eyes with plenty of water for at least 15 minutes immediately without rubbing. Take a medical treatment. If appropriate procedures are not taken, this may cause an eye irritation.
Swallowing	In case of swallowing of battery, immediately refer for medical attention.

5. Fire-fighting Measures

Fire extinguishing agent:

Dry chemical, alcohol-resistant foam, powder, atomized water, carbon dioxide and dry sand are effective.

Extinguishing method:

Escape batteries to safe place prevent from ignition by spreading fire.

Because of packing material of battery is paper, use water extinguisher, CO2 extinguisher or powder extinguisher as normal extinguisher.

Since vapor, generated from burning batteries may make eyes, nose and throat irritate, be sure to extinguish the fire on the windward side. Wear the respiratory protection equipment in some cases.

6. Accidental Release Measures

Chemical contents are sealed in metal can. But if the battery is mechanically or electrically abused, contents may leak out. In such case, take action as shown below.

Personal precautions: Temporary inhalation of odor and attaching of electrolyte to skin does not cause serious health hazard. Be sure the ventilation and washing out of electrolyte quickly.

Environmental precautions: Clean up it quickly. Specific environmental precaution is not necessary.

Method and materials for containment and methods and materials for cleaning up:
Contain and collect spillage and place in container for disposal according to local regulations.

7. Handling and Storage

Handing	Do not charge, short-circuit, disassemble, deform, heat above 100℃ or incinerate. Do not pile up or mingle battery with each other. Do not place battery on metal case, metal plate or antistatic material. In case of multi cell application, replace all batteries to new at once when replacing used batteries.
Storage	Be sure to store batteries in well-ventilated, dry and cool conditions. Keep away from water, rain, snow, frost or dew condensation. Do not store batteries near source of heat or nozzle of hot air. Do not store batteries in direct sunshine. Take care not to get wet packing by dew condensation when packing is removed from cold to warm and humid condition. Enough number of fire fighting apparatuses should be installed in warehouse

8. Exposure Controls and Personal Protection

There is no need of personal protective equipment on regular handling and storage. In the event, however, a large amount of electrolyte should be released by mechanical or electrical abuse, use the protection as shown below.
Respiratory protection: Mask (with a filter preferably)
Hand protection : Synthetic rubber gloves
Eye protection : Goggles or glasses

9. Physical and Chemical Properties

State：Solid
Shape: Cylindrical、Prismatic

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 100 degree C (may cause heat generation and ignition), direct sunlight, high humidity.
Materials to avoid: Substances that cause short circuit.

11. Toxicological Information

Inhalation, skin contact and eye contact are possible when the battery is opened. Exposure to internal contents, the corrosive fumes will be very irritating to skin, eyes and mucous membranes. Overexposure can cause symptoms of non-fibrotic lung injury and membrane irritation.

12. Ecological Information

Persistence and degradability	No information available
Mobility in soil	No information available

13. Disposal Considerations

Dispose of batteries in accordance with applicable federal, state and local regulations.
For safety precaution, battery should be insulated in proper manner; covering both terminals by tape, wrapping of battery in insulative bag or packing battery in original package is recommended in order to prevent ignition due to short-circuit.

14. Transport Information

During the transportation of a large amount of batteries by ship, trailer or railway, do not expose them to high temperature or high humidity/condensation.

During transporation, do not allow packages to be dropped or damaged.

UN Number: UN3090 (only for Air transport, over 8 cells per package):
Even though these cells are classified as lithium metal batteries (UN3090 or UN3091), they are exempted from being classified as Dangerous Goods because they meet the following requirements:
1. For cells, the lithium content is less than 1g;
2. Each cell is of the type proven to meet the requirements of every test in the UN Manual of Tests and Criteria, Part III, sub-section 38.3;
3. Each cell is manufactured at a ISO9001 certified factory.

Proper shipping name: Lithium metal batteries

UN Class : Class 9 (Only for Air transport, over 8 cells per package)
: Not Applicable (for Air transport by Section II and the Marine transport)

Please refer to the following reference information about concrete ways of transportation. Actual content of packaging label and shipping documents varies by shipping companies. Make sure to confirm in advance with your shipping company.

Passenger Aircraft Ban (for batteries only)

Effective December 29, 2004, all primary lithium batteries are banned as on passenger aircraft. In addition to rule requires that the outside of each package that contains primary lithium batteries, regardless of size or number of batteries, be labeled with the following statement: **"PRIMARY LITHIUM BATTERIES-FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT".**

Information of reference

Method of Transportation	Reference (Reference Number)	Packing Instruction (PI) / Special Provision (SP)	Note
Air transport	IATA DGR	PI 968 Section A	Cells, Cargo Aircraft only; Net quantity per package Max. 35kg
		PI 968 Section B	Cells, Cargo Aircraft only; Net quantity per package Max. 2.5kg
		PI 968 Section	Cells, Cargo Aircraft only, no more than one package in any single consignment. Max number of cells per package: 8 cells
		PI 969 Section	Cells packed with equipment
		PI 970 Section	Cells contained in equipment
Marine transport	IMDG Code	SP 188	

15. Regulatory Information

- IATA Dangerous Goods Regulations 59th Edition (IATA DGR)
- IMO International Maritime Dangerous Goods Code 2014 Edition (IMDG Code)
- UN Recommendations on the Transportation of Dangerous Goods, Model Regulations
- UN Recommendations on the Transportation of Dangerous Goods, Manual of Tests and Criteria
- EU Battery Directive (2006/66/EC, 2013/56/EU)
- Regulation (EC) No. 1907/2006 on the Regulation, Evaluation, Authorization and Restriction of Chemicals (REACH)
- State of California Regulations – Best management practices of Perchlorate Materials.

16. Other information

Revision Information:
Date of this revision: 2018.2.01
Training advice:
Provide adequate information, instruction and training for operators.
Abbreviations and acronyms:

GHS:	Globally Harmonized System of Classification Labeling of Chemicals.
CAS:	Chemical Abstracts Service registration number.
NIOSH:	US National Institute for Occupational Safety and Health
OSHA:	US Occupational Safety and Health
LD50:	Lethal Dose, 50 percent kill
ITAT	International Air Transport Association
IMDG:	International Maritime Dangerous Goods
TSCA:	Toxic Substances Control Act,
IECSC:	Inventory of existing chemical substances in China