420219

MATERIAL SAFETY DATA SHEET

Manufacturer

Name of Company	: SHUNWO NEW POWER ELECTRONICS (SHEN ZHEN) CO.,LTD
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Ref. No.	: LI/CB/SPEC.
Issued	: 01/JAN/2015

Name of Product	: Lithium Metal Cell.
Chemical System	: MnO_2/Li
Volts	: 3V.
Model no. & Composition	: PLEASE SEE PAGE 7

Substance Identification

Substance	: Lithium Metal Cell.
UN Class	: Even classified as Lithium Metal Cell, 2015 IATA dangerous Goods Regulations 56th Edition Packing Instruction (PI) 968 - Psection II / UN3090 is complied. The product is handled as Non-Dangerous Goods by meeting the following requirements.

1) for Cells, the aggregate lithium content is not more than 1g,
2) each cell is of the type proven to meet the requirement of each test in the UN Manual of Test and Criteria Part III subsection 38.3.
3) they are out of scope for IATA SP A154 and comply with IATA SP A164

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Cells must be packed in strong outer packagings that conform to 4.1.1.1,1.1.3.1 and 1.1.10 (except 1.1.10.1)

Hazardous and Toxicity Class

Class Name	: Not applicable for regulated class.
Hazard	: It may cause heat generation or electrolyte leakage If battery terminate contact with other metals, Electrolyte is flammable. In case of electrolyte Leakage, move the cell from fire immediately.
Toxicity	: Vapor generated from burning cells, may make Eyes, skin and throat irritate.

First Aid Measures

The product contains organic electrolyte, in case of electrolyte leakage from the cell, actions described below are required.

Eye contact	: Flush the eyes with plenty of clean 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.
Skin contact	: Wash this contact areas off immediately with plenty of water and soap. If appropriate procedures are not taken, this may cause sores on the skin.
Inhalation	: Remove to fresh air immediately. Taken a medical treatment.

Fire Fighting Measures

Extinguishing method	: Since vapor, generated from burning cells 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.

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Fire extinguishing agent : Dry chemical, alcohol-resistant form, carbon dioxide and plenty of water area effective.

Measures for electrolyte leakage from cell

- Take up with absorbent cloth.
- Move the cell away from the fire.

Handling and Storage

1. When packing the cells, do not allow cell terminates to contact each other, or contact with other metals. Be sure to pack cells by providing in the packaging box, or in a separate plastic bag so that the single cells are not mixed together.
2. Use strong materials for packaging boxes so that they will not be damaged by vibration, impact, dropping and stacking during their transportation. (1) (2) (3)
3. Do not let water penetrate into packaging boxes during their storage and transportation.
4. The cells will be stored at room temperature.
5. Do not store the cell in places of the high temperature exceeding 35 deg. C or under direct sunlight or in front of a stove. Please also avoid the places of high humidity. Be sure not to expose the cell to condensation, water drop or not to store it under frozen condition.
6. Cells are sure to be packed in such a way to prevent short circuits under conditions normally encountered in transport. (1) (2) (3)
7. Please avoid storing the cell in the places where it is exposed to the electricity so that no damage will not be caused to the protection circuit of the cell pack.

Accidental release measures

Personal precautions: Notify safety personnel of large spills. Caustic potassium hydroxide may be released from leaking or ruptured cells. Avoid eye or skin contact and inhalation of vapours.

Increase ventilation. Clean up personnel should wear appropriate protective gear.

Environmental precautions: Not applicable

Methods for cleaning up: Not applicable

Physical and chemical properties

Form and Colour: Lithium Metal Cell. Contents dark in colour.
Odour: Not applicable
Change in physical state
Melting point/melting range: Not available
Boiling point/boiling range: Not available
Flash point: Not applicable
Explosion limits: Not available
Ignition temperature: Not available
Vapour pressure: Not available
Specific Gravity: Not available
% Volatiles: Not available
Solubility in water: Not applicable
Solubility in other solvents: Not applicable
pH value: Not applicable
Octanol/water partition coefficient (log POW): Not available
Viscosity: Not available

Toxicological information

Toxicity information is available on the cell ingredients noted in Substance Identification
but, generally not applicable to intact cells.
Chronic Health Effects: Not applicable to intact cell.

Ecological information

None available regarding product. The cells are non-dangerous goods (Non-hazardous & Non-flammable).

Exposure Control (in case of electrolyte leakage from the battery)

Acceptable concentration	: Not specified in ACGIH (4)
Facilities	: Provide appropriate ventilation system such as local ventilator in the storage place.

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Protective : Gas mask for organic gases, safety goggle, safety gloves.

Stability and Reactivity

Since cells utilize a chemical reaction they are actually considered a chemical product. As such, cell performance will deteriorate over time even if stored for a long period of time without being used. In addition, the various usage conditions such as charge, discharge, ambient temperature etc are not maintained within the specified ranges the life expectancy of the battery may be shortened or the device in which the cell is used may be damaged by electrolyte leakage.

Disposal Considerations (Precautions for recycling)

- When the cell is worn out, dispose of it under the ordinance of each local government or the low issued by relating government.
- Disposal of the worn-out cell may be subjected to Collection and Recycling Regulation.

Transportation Information

- During the transportation of a large amount of cells by ship, trailer or railway, do not leave them in the place of high temperatures and do not allow them to be exposed to condensation.
- During the transportation do not allow packages to be fallen down or damaged.
- Lithium metal cells identified by manufacturer as being defective for safety reasons, or that have been damaged, that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport (e.g. those being returned to the manufacturer for safety reasons).
- Except when installed in equipment, for air shipment that contain one or more cells, they are necessary to meet the following items
  1. Each consignment must be accompanied with a document such as air waybill with an indication that:

- the package contains lithium metal cell.
- the package must be handled with care and that a flammability hazard exists if the package is damaged:
- special procedures should be followed in the event the package is damaged, to include inspection and repacking necessary: and
- a telephone number for additional information.

2. Each package must be labeled with a lithium metal cell handling label and a cargo aircraft only label.
   *The width 120mm*length 110mm sized lithium metal cell handling label must be labeled onto the side of a package without bending it.
3. Each package must be capable of withstanding a 1.2m drop test in any orientation.

- damage to cells contained therein:
- shifting of the contents so as to allow cell to cell contact:
- release of contents.

4. Quantity per package shall not exceed 2.5 kg.
5. Each package containing more than four cells installed in equipment must be complied with above item 1 and 2.

- each cell is of the type proven to meet the requirement of each test in the UN Manual of Test and Criteria Part III subsection 38.3. The goods are packaged according to the packaging instruction 968 section II on Cargo Aircraft Only.
- Recommendations on the transport of dangerous goods –Model Regulations, IATA-DGR (56th Edition – PI968) or IMDG Special Provision 188 :

Regulatory Information

- IATA DANGEROUS GOODS REGULATIONS 56th Edition 2015.
- IMDG Dangerous Goods Regulations
- ICAO Technical Instructions for the safe transport of dangerous goods by air, 2015 edition.

Others

References

1. UN Recommendations on the Transportation of Dangerous Model Regulations (ST/SG/AC.10/1/Rev.11)

2. Federal Register/Vol.65, No. 174/ Thursday, September 7, 2000/ Notice.
3. IATA DANGEROUS GOODS REGULATIONS 56th Edition 2015,
4. TLVs and BELs 1999 ACGIH

If transport condition accords with special provision A154 & A164 of IATA-DGR or special provision 188 of IMO-IMDG, it is not recognized as Dangerous Goods,
This shipment does not contain recalled/defective battery or cell and meeting special provision A154 & A164 of DGR.

REMARK: Consignments have to be handled with care. Flammability Hazard exists if the package is damaged, to include inspection and repacking if necessary;
Special Procedure should be followed in the event the package is damaged. In case of fire in an adjacent area, use water, CO2 or dry chemical. (Measures for electrolyte leakage from cell : take up with absorbent cloth & move the cell away from the fire)

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Composition

Model no.	Propylene carbonate (g)	Manganese dioxide (g)	Dimethoxyethane (g)	Lithium perchlorate (g)	Graphite (g)	Stainless Steel (g)	Plastic (g)	Teflon (g)	Lithium (g)	Approx. Weight (total g)	Dimensions	Capacity
CAS No.	108-32-7	1313-13-9	110-71-4	7791-03-9	7782-42-5	12597-68-1	9003-07-0	9002-84-0	14809-39-3			
CR1025	0.036	0.247	0.034	0.018	0.024	0.456	0.064	0.002	0.019	0.90	φ10 x 2.5mm.	30mAh
CR1216	0.034	0.14	0.019	0.005	0.014	0.456	0.022	0.002	0.008	0.70	φ12.5 x 1.6mm.	25mAh
CR1220	0.047	0.225	0.033	0.01	0.027	0.504	0.036	0.003	0.015	0.90	φ12.5 x 2.0mm.	38mAh
CR1225	0.044	0.279	0.042	0.021	0.027	0.52	0.05	0.002	0.015	1.00	φ12.5 x 2.5mm.	50mAh
CR1616	0.055	0.198	0.031	0.009	0.025	0.726	0.034	0.003	0.019	1.10	φ16 x 1.6mm.	50mAh
CR1620	0.055	0.326	0.052	0.026	0.03	0.731	0.06	0.003	0.017	1.30	φ16 x 2.0mm.	70mAh
CR1632	0.108	0.729	0.097	0.05	0.071	1.069	0.127	0.007	0.042	2.30	φ16 x 3.2mm.	120mAh
CR2016	0.083	0.457	0.074	0.039	0.056	0.993	0.074	0.004	0.02	1.80	φ20 x 1.6mm.	75mAh
CR2025	0.113	0.655	0.1	0.052	0.063	1.385	0.085	0.005	0.042	2.50	φ20 x 2.5mm.	150mAh
CR2032	0.183	0.87	0.126	0.027	0.102	1.5	0.123	0.009	0.06	3.00	φ20 x 3.2mm.	210mAh
CR2320	0.138	0.942	0.123	0.045	0.093	1.497	0.114	0.009	0.039	3.00	φ23 x 2.0mm.	130mAh
CR2325	0.161	1.033	0.144	0.052	0.105	1.799	0.136	0.007	0.063	3.50	φ23 x 2.5mm.	180mAh
CR2330	0.228	1.236	0.16	0.072	0.12	1.916	0.196	0.008	0.064	4.00	φ23 x 3.0mm.	260mAh
CR2335	0.221	1.316	0.158	0.069	0.127	1.923	0.192	0.012	0.082	4.10	φ23 x 3.5mm.	300mAh
CR2354	0.29	2.929	0.202	0.095	0.296	2.142	0.189	0.025	0.132	6.30	φ23 x 5.4mm.	530mAh
CR2430	0.189	1.378	0.134	0.059	0.135	2.079	0.151	0.008	0.067	4.20	φ24 x 3.0mm.	270mAh
CR2450	0.308	2.72	0.188	0.121	0.261	2.667	0.275	0.02	0.14	6.70	φ24 x 5.0mm.	550mAh
CR2450C	0.33	3.15	0.2	0.13	0.31	2.21	0.21	0.02	0.14	6.70	φ24 x 5.0mm.	600mAh
CR2477	0.59	5.49	0.36	0.23	0.55	2.7	0.23	0.04	0.29	10.48	φ24 x 7.7mm.	950mAh
CR3032	0.237	2.071	0.237	0.053	0.225	3.52	0.211	0.144	0.162	6.86	φ30 x 3.2mm.	550mAh