Lithium Battery Safety Document – Section II or Section IB Shipments

AWB or Tracking Number: SEE BILL OF LADING (BOL) FOR TRACKING INFORMATION

This document may be used to comply with the additional documentation requirements of the IATA DGR.

WARNING: LITHIUM BATTERIES THAT HAVE BEEN RECALLED BY THE MANUFACTURER FOR SAFETY REASONS **MUST NOT** BE SHIPPED BY AIR.

Terminology:

- Cell – *electrochemical unit, consisting of an anode and a cathode, capable of generating electrical current*
- Battery – *assembly of cells*
- Lithium ion cells/batteries – *generally rechargeable – includes lithium polymer cells/batteries*
- Lithium metal cells/batteries – *non-rechargeable*

This shipment contains lithium cells or batteries in the following configuration (check applicable description):

Lithium Ion - Maximum of • **20 Watt-hours per cell or** • **100 Watt-hours per battery**	**Lithium Metal – Maximum of** • **1 gram of lithium metal per cell or** • **2 grams of lithium metal per battery**
☐ **Cells or batteries only (Lithium ion batteries in compliance with Section II of PI 965, UN 3480) -** *Cells or batteries in a package, without electronic equipment:* **Package Limit:** ≤2.7 Wh = 2.5 kg; or >2.7 Wh but ≤ 20 Wh = 8 cells; or >2.7 Wh but ≤ 100 Wh = 2 batteries	☐ **Cells or batteries only (Lithium metal batteries in compliance with Section II of PI 968, UN 3090) -** *Cells or batteries in a package, without electronic equipment.* **Package Limit:** ≤0.3 g = 2.5 kg; or >0.3 g but ≤ 1 g = 8 cells; or >0.3 g but ≤ 2g = 2 batteries
☐ **Cells or batteries only (Lithium ion batteries in compliance with Section IB of PI 965, UN 3480) -** *Cells or batteries in a package, without electronic equipment* *Packages must be limited to 10 kg net weight of batteries.*	☐ **Cells or batteries only (Lithium metal batteries in compliance with Section IB of PI 968, UN 3090) -** *Cells or batteries in a package, without electronic equipment* *Packages must be limited to 2.5 kg net weight of batteries.***.**
☐ **Packed with equipment (Lithium ion batteries in compliance with Section II of PI 966, UN 3481) -** *Cells or batteries contained in a package with associated electronic equipment.* *Packages must be limited to 5 kg net weight of batteries.*	☐ **Packed with equipment (Lithium metal batteries in compliance with Section II of PI 969, UN 3091) -** *Cells or batteries contained in a package with associated battery-powered equipment – with the batteries not installed in the equipment.* *Packages must be limited to 5 kg net weight of batteries.*
☐ **Contained in equipment (Lithium ion batteries in compliance with Section II of PI 967, UN 3481) -** *Cells or batteries installed in equipment.* *Packages must be limited to 5 kg net weight of batteries.*	☒ **Contained in equipment (Lithium metal batteries in compliance with Section II of PI 970, UN 3091) -** *Cells or batteries installed in equipment.* *Packages must be limited to 5 kg net weight of batteries.*

- This package must be handled with care. A flammability hazard exists if the package is damaged.
- If this package is damaged in transportation, it must not be loaded until the condition of the contents can be verified. The batteries contained in this package must be inspected for damage and may only be repacked if they are intact and protected against short circuits.
- For more information about the batteries contained in this package, call the following telephone number:

CHEMTREC for Lithium Battery Information Number:
For EMERGENCY information call 800-424-9300 or outside the United States call 703-527-3887

This product is used in a hermetically sealed state. So, it is not an object of the SDS system. This document is provided to customers as reference information for the safe handling of the product. The information and recommendations set forth are made in good faith and are believed to be accurate at the date of preparation. Panasonic Corporation makes no warranty expressed or implied.

PRODUCT SAFETY DATA SHEET

1 Chemical product and company identification

Name of Product : Manganese dioxide lithium battery
Name of Company : Panasonic Energy Co., Ltd.
Address : 1-1 Matsushita-cho, Moriguchi-city, Osaka, 570-8511, Japan
Emergency Contact : +81-80-9932-3190 (JST Working hours)
+81-6-6991-1141 (Holiday)

2 Hazards identification

GHS Classification : No applicable
Toxicity : Vapor generated from burning batteries, may irritate eyes, skin and throat.
Hazard : Electrolyte and lithium metal are inflammable.
Risk of explosion by fire if batteries are disposed in fire or heated above 100 degrees C.
Stacking or jumbling batteries may cause external short circuits, heat generation, fire or explosion.

3 Composition/information of ingredients

Component	Material	CAS RN	Content (%)
Positive electrode	Manganese dioxide	1313-13-9	12 - 50
Negative electrode	Lithium metal	7439-93-2	0.5 - 6
Electrolyte	1,2-dimethoxyethane	110-71-4	1.5 - 3.5
	Lithium Perchlorate	7791-03-9	0.2 - 0.7
	Propylene Carbonate	108-32-7	2.5 - 7
Others (Steel or Plastic parts)	Steel	7439-89-6, 7440-47-3	30 - 85
	Polypropylene	9003-07-0	0.5 - 10

Lithium content per cell

Model Number	Lithium content(g)	Model Number	Lithium content(g)	Model Number	Lithium content(g)	Model Number	Lithium content(g)
CR1025	0.008	CR2012	0.02	CR2330	0.08	CR2412	0.03
CR1216	0.008	CR2016	0.03	CR2354	0.17	CR2430	0.09
CR1220	0.01	CR2025	0.05			CR2450	0.18
CR1612	0.01	CR2032	0.07			CR2477	0.29
CR1616	0.02						
CR1620	0.02					CR3032	0.15
CR1632	0.04						

210-06679+L0

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4 First aid measures (in case of electrolyte leakage from the battery)

Eye contact	:	Flush the eyes with plenty of clean water for at least 15 minutes immediately, without rubbing. Get immediate medical treatment. If appropriate procedures are not taken, this may cause eye injury.
Skin contact	:	Wash the affected area under tepid running water using a mild soap. If appropriates procedures are not taken, this may cause sores on the skin. Get medical attention if irritation develops or persists.
Inhalation	:	Remove to fresh air immediately. Get medical treatment immediately.

5 Firefighting measures

Fire extinguishing agent	:	Alcohol-resistant foam and dry sand are effective.
Extinguishing method	:	Be sure on the windward to extinguish the fire, since vapor may make eyes, nose and throat irritate, Wear the respiratory protection equipment in some cases.

6 Accidental release measures (in case of electrolyte leakage from the battery)

Take up with absorbent cloth, treat cloth as inflammable.
Move the battery away from the fire.

7 Handling and storage

Handling :

- When packing the batteries, do not allow battery terminals to contact each other, or contact with other metals. Be sure to pack batteries by providing partitions in the packaging box, or in a separate plastic bag so that the single batteries are not mixed together.
- Use strong material for packaging boxes so that they will not be damaged by vibration, impact, dropping and stacking during their transportation.
- Do not short-circuit, recharge, deform, throw into fire or disassemble.
- Do not mix different type of batteries.
- Do not solder directly onto batteries.
- Insert the battery correctly in electrical equipment.

Storage :

- Do not let water penetrate into packaging boxes during their storage and transportation.
- Do not store the battery in places of the high temperature or under direct sunlight.
- Please also avoid the places of high humidity. Be sure not to expose the battery to condensation, rain or frozen condition

8. Exposure controls and personal protection

Acceptable concentration : Not specified about Lithium Battery.
Facilities : Nothing in particular.

Protective Equipment (in case of electrolyte leakage from the battery)
Respiratory Protection : For most condition no respiratory protection.
Hand Protection : Safety gloves.
Eye Protection : Safety goggle

9. Physical and chemical properties

Appearance : Coin shape
Nominal Voltage : 3 V

10. Stability and reactivity

Since batteries utilize a chemical reaction they are actually considered a chemical product.
As such, battery 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 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 battery is used may be damaged by electrolyte leakage.

11. Toxicological information

Swallowing can lead to chemical bums, perforation of soft tissue, and death. Severe bums can occur within 2 hours of ingestion. Seek medical attention immediately.

12. Ecological information

In case of the worn out battery was disposed in land, the battery case may be corroded, and leak electrolyte. However, there is no environmental impact information.
Mercury (Hg), Cadmium (Cd) and Lead (Pb) are not used in cell.

13. Disposal considerations

When the battery is worn out, dispose of it under the ordinance of each local government.

14. Transport information

Handling

During the transportation of a large amount of batteries by ship, trailer or railway, do not leave them in the places of high temperatures and do not allow them to be exposed to condensation.
During the transportation do not allow packages to be dropped or damaged.

UN Number, UN Class : UN3090, Class9 (for the Air transport by PI968 Section IA or IB)

: Exemption (for the Marine transport SP188 and the Air transport by Section II of PI 969 or 970)
Even though the cells are classified as lithium metal batteries (UN3090 or UN3091), they are not subject to some requirements of Dangerous Goods Regulations because they meet the following:

1. for cells, the lithium content is not more than 1 g ;
2. each cell is of the type proven to meet the requirements of each test

in the UN Manual of Tests and Criteria, PartIII, sub-section 38.3 ;
3. each cell is manufactured in ISO9001 certified factory ;
4. the test summary is available from ;
https://energy.panasonic.com/global/business/e/na/downloads/test-summary

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.

Information of reference

	Reference	Packing Instruction(PI)/ Special provision(SP)	Note
Air transport	IATA DGR	PI 968 Section I A	Cells, Cargo Aircraft only; Net quantity per package Max. 35kg
		PI 968 Section I B	Cells, Cargo Aircraft only; net quantity per package Max. 2.5kg
		PI 969 Section II	Cells packed with equipment
		PI 970 Section II	Cells contained in equipment, button cell batteries
Marine transport	IMDG Code	SP 188	

15. Regulatory information

- IATA Dangerous Goods Regulations Edition 66 (IATA DGR)
- IMO International Maritime Dangerous Goods Code 2022 and 2024 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)
- EU Battery Regulation (Regulation (EU) 2023/1542 of the European Parliament and of the Council)
- EU REACH Regulation (Regulation (EC) No. 1907/2006 on the Registration, Evaluation, Authorization and Restriction of Chemicals)
- State of California Regulations - Best management practices for Perchlorate Materials
- Act on Preventing Environmental Pollution of Mercury (Japan)

16. Other information

This PSDS is provided to customers as reference information in order to handle batteries safely.
It is necessary for the customer to take appropriate measures depending on the actual situation such as the individual handling, based on this information.

In California only, packages that contain CR lithium coin cells and the Owners/Operating Instructions of products that contain CR lithium coin cells must include the following statement: "Perchlorate Material - special handling may apply,
See http://www.dtsc.ca.gov/hazardouswaste/perchlorate".
The effective date for this Perchlorate label is July 1, 2006 for non-consumer products and January 1, 2007 for consumer products.

Prepared by : Engineering Department
Energy Device Business Division
Panasonic Energy Co., Ltd.

Panasonic

No. 2019-0000003483

Lithium Battery Test Summary / UN38.3 試験結果要約

Product manufacturer Panasonic Corporation

Address/住所 1-1 Matsushita-cho, Moriguchi City, Osaka 570-8511, Japan
Telephone/電話番号 +81-6-6994-4560
e-mail un38.3_microbattery@ml.jp.panasonic.com
URL https://www.panasonic.com/global/home.html

Test laboratory Panasonic Corporation

Address/住所 1-1 Matsushita-cho, Moriguchi City, Osaka 570-8511, Japan
Telephone/電話番号 +81-6-6994-4560
e-mail un38.3_microbattery@ml.jp.panasonic.com
URL https://www.panasonic.com/global/home.html

Description of Product / 製品情報

Model Number/品番 CR2032
Type/タイプ Lithium metal cell
Physical description/物理特性 Non-rechargeable, Coin
Mass/質量 2.9 g
Lithium content/リチウム含有量 0.07 g
Watt-hour rating/ワット時定格値 Not applicable
Nominal Voltage/公称電圧 3.0 V
Nominal Capacity/公称容量 225 mAh

Test Results / 結果

Identification number/番号 CP0008-10
Date of test report/レポート発行日 2008/08/05
Reference edition/参照 UN Manual of Tests and Criteria 4th Amendment 1 edition

UN Manual of Tests and Criteria 国連勧告テスト判定基準	Results 結果	Remarks 備考
T1 : Altitude simulation /高度ｼｭﾐﾚｰｼｮﾝ	Pass / 合格	
T2 : Thermal Test / 温度試験	Pass / 合格	
T3 : Vibration / 振動	Pass / 合格	
T4 : Shock / 衝撃	Pass / 合格	
T5 : External short circuit / 外部短絡	Pass / 合格	
T6 : Impact / 衝突、Crush / 圧壊	Pass / 合格	Impact / 衝突
T7 : Overcharge / 過充電	-	for rechargeable batteries only / 充電式電池のみ
T8 : Forced discharge / 強制放電	Pass / 合格	

Hereby we certify that this model of Lithium battery meets the requirements of each test in theUN Manual of Tests and Criteria Part III, sub-section 38.3.
上記テストは国連勧告テスト(Manual of Tests and Criteria, Part III, sub-section 38.3.)に従い確認された結果であることを証明致します。

Signature: K. Amano

Name and Title: Kazuyuki Amano / Manager
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210-06829+A1

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