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 : Lithium ion batteries (Pin Shape)
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 is 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	Lithium cobalt-oxide	12190-79-3	15 - 30
Negative electrode	Graphite	7440-44-0	15 - 30
Electrolyte	Ethylene Carbonate Ethyl Methyl Carbonate Dimethyl Carbonate	96-49-1 623-53-0 616-38-6	Total 5 - 15
Others (Steel or Plastic parts)	Steel	7439-89-6, 7440-47-3	25 - 60
	Polypropylene	9003-07-0	2 - 10

Watt-hour rating per cell

Model Number	Watt-hour (Wh)	Model Number	Watt-hour (Wh)	Model Number	Watt-hour (Wh)	Model Number	Watt-hour (Wh)
CG-320A	0.057	CG-320B	0.061	CG-420A	0.087	CG-425A	0.114
				CG-420B	0.110		

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 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. Get medical treatment immediately.

5 Firefighting measures

Fire extinguishing agent : Alcohol-resistant foam and dry sand are effective.

Extinguishing method : Since vapor, generated from burning batteries may make eyes, nose and throat irritates, be sure to extinguish the fire on the windward side. 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, deform, throw into fire or disassemble.
- Charge according to the conditions specified.
- Do not mix different type of batteries.
- Do not solder directly onto batteries.
- Insert the battery correctly in electrical equipment.

Storage :

- The batteries will be stored at room temperature, charged to about 30-50% of capacity.
- 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 : Pin shape
Nominal Voltage : 3.8 volts

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

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.

Proper shipping name : Lithium ion batteries

UN Number, UN Class : UN3480, Class9 (for the Air transport by PI965 Section IA or IB)

: Exemption (for the Marine transport SP188 and the Air transport by Section II of PI 966 or 967)
Even though the cells are classified as lithium-ion batteries (UN3480 or UN3481), they are not subject to some requirements of Dangerous Goods Regulations because they meet the following:
1. for cells, the Watt-hour rating is not more than 20 Wh ;
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://industrial.panasonic.com/ww/downloads/battery-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 965 SectionⅠA	Cells; SOC≦30%, Cargo Aircraft only, Net quantity per package Max. 35 kg
		PI 965 SectionⅠB	Cells; SOC≦30%, Cargo Aircraft only, Net quantity per package Max. 10 kg
		PI 966 SectionⅡ	Cells packed with equipment
		PI 967 SectionⅡ	Cells contained in equipment
Marine transport	IMDG Code	SP 188	

15. Regulatory information

- IATA Dangerous Goods Regulations Edition 65 (IATA DGR)
- IMO International Maritime Dangerous Goods Code 2022 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 Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)
- 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.

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