

PRODUCT SAFETY DATA SHEET

1. PRODUCTS AND COMPANY IDENTIFICATION

Product Name : Alkaline Battery LR20, LR14, LR6, LR03, LR1
Alkaline Battery (EVOLTA/EVOIA)LR20, LR14, LR6, LR03

Company Identification

Name : Energy Company
Panasonic Corporation
Energy Device Business Unit Product Engineering Group

Address : 1-1 Matsushita-cho, Moriguchi City, Osaka 570-8511 ,JAPAN

Tel : +81-6-6994-4560

Fax : +81-6-6998-3271

Emergency Tel : +81-6-6994-4560 (Working hours)
+81-6-6991-1141 (Holiday)

2. HAZARDS IDENTIFICATION

Most Important Hazardous

Adverse Human Health Effects : When the leaked liquid adheres to the skin, it may cause the damage of the skin. When it is gotten in eye, it may cause the damage of eye such as losing sight.

Physical And Chemical Hazard : There is the risk of explosion if batteries are disposed in fire, heated above 100 degree C. Stacking or jumbling batteries may cause external short circuits, heat generation and explosion.

Specific Hazards : Not Applicable.

Class Name Of Hazardous Chemicals : Not Applicable.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Substance Name : Alkaline Battery

CAS Number : Not Specified

Composition

COMPONENT	CONCENTRATION (Wt %)	FORMULA	CAS NO.
<Positive Electrode> Manganese dioxide Graphite	20-45 1.0-4.5	MnO ₂ C	1313-13-9 7782-42-5
<Negative Electrode> Zinc	10-20	Zn	7440-66-6
<Electrolyte> Potassium Hydroxide Water	3-10 1-15	KOH H ₂ O	1310-58-3 —

4. FIRST AID MEASURES (If leaked solution will contact.)

- Skin Contact : Wash the affected area under tepid running water using a mild soap. If appropriate procedures are not taken, this may cause sores on the skin. Get medical attention if irritation develops or persists.
- Eye Contact : Do not rub eyes. Wash immediately with large amount of clean water such as tap water 15 minutes or more then receive the ophthalmologist's treatment promptly. It may cause such as losing sight when the right procedure is not taken.
- Ingestion : Arrange for transport to the nearest medical facility for examination and treatment by a physician as soon as possible.

5. FIRE FIGHTING MEASURES

- Extinguishing Media : Dry chemical, carbon dioxide, great deal of water.
- Specific Fire-Fighting Methods : Be sure on the windward to extinguish the fire, since vapor from burning batteries 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)

- Health Considerations : Wear proper protective equipment.
- And Protective Equipment
- Environmental Precautions : Prevent spills from entering sewers, watercourses.
- Spill Clean-Up Procedures : Collect material to minimize dust generation ; use wet mop, damp sponge. Place collected material into a suitable container for disposal.

7. HANDLING AND STORAGE

Handling

- Technical Measures : No exposure limits exist for the battery.
- Precaution : When packing the batteries, do not allow battery terminals to contact each other, or contact with electrically conductive materials. Be sure to pack batteries by providing partitions in packaging boxes, or in separate plastic bags to avoid they are mixed together. Use strong material for packaging boxes to avoid damage by vibration, impact, dropping and stacking during transportation. Do not recharge batteries. Do not deform batteries. Do not mix different types of batteries. Do not solder directly onto batteries.

Storage

- Storage Condition : Do not let water penetrate into packaging boxes during their storage and transportation. Do not store the batteries in the high temperature exceeding 35 degree C, under direct sunlight or near heat source. Also avoid high humidity. Be sure not to expose the batteries to condensation, water drop or not to store them under frozen condition.
- Safe Packaging Materials : Carton boxes, Wooden boxes.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION (in case of electrolyte leakage from the battery)

- Engineering Measures : Make available in the work area and storage place emergency shower and eyes wash.
- Occupational Exposure Limits (OELs) : Not specified in ACGIH and OSHA

Protective Equipments

- Respiratory Protection : For most condition no respiratory protection.
- Hand Protection : Safety gloves.
- Eye Protection : Safety glasses with side shields must be worn when handling this product.
- Skin and Body Protection : To prevent any contact, wear impervious clothing such as boots or whole body suits as appropriate.

9. PHYSICAL AND CHEMICAL PROPERTIES**Physical Style**

- Appearance : Cylindrical shape.
- Color : Depend on the design.
- Odor : Odorless~Characteristic odor
- pH : Not Applicable.
- Specific temperatures / Temperature range at which changes in physical state occur : Not Applicable.
- Flash Point : Not Applicable.
- Explosion Properties : No Data.
- Specific Gravity (g/cm³) : No Data.
- Solubility : Not Applicable.
- Voltage : 1.5 Volts.

10. STABILITY AND REACTIVITY (Physical Hazard)

- Stability** : Stable under normal conditions.
- When batteries are short—circuited : There is the possibility that stacking or jumbling batteries cause short circuits, heat generation, leakage or explosion.
- When batteries are recharge : Risk of swelling leakage or explosion, contents may protrude.
- When batteries are heated or disposed in fire : Risk of leakage or explosion.
- When batteries are disassembled : Risk of short circuits. Electrolyte may cause skin itching.
- Reactivity** : Stable under normal conditions.
- Hazardous Decomposition Products** : No information.

11. TOXICOLOGICAL INFORMATION

- Acute Toxicity : No information as a battery.
- Local Effects : No information as a battery.

12. ECOLOGICAL INFORMATION

In case of the worn out battery was disposed in land, the battery case may be corroded, and leak electrolyte. But, we have no ecological information. Heavy metal quantity in a cell

- Hg < 1 ppm : Reducing Vaporization Atomic Absorption Spectrometer
- Cd < 10 ppm : Inductively Coupled Plasma Atomic Emission Spectroscopy
- Pb < 10 ppm : Inductively Coupled Plasma Atomic Emission Spectroscopy

13. DISPOSAL CONSIDERATIONS

When the battery is worn out, dispose of it under the ordinance of each local government or the law issued by the relevant government.

14. TRANSPORT INFORMATION

As an alkaline battery is listed in Special Provision A123 of IATA Dangerous Goods Regulations when it is shipped by air, an alkaline battery is not a regulated substance in the hazardous substance shipping regulations. In addition, this battery requires the following attentions.

- ① Protect the terminals of batteries and prevent them from short circuit so as not to cause dangerous heat generation.
- ② 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 dew condensation.
- ③ Avoid transportation with the possibility of the collapse of cargo piles and the packing damage.

15. REGULATORY INFORMATION

No information. (Follow all regulations in your country.)

This PSDS is described on the basis of present materials, information and data. So, please notice that it will be revised by new information. Also this is supplied to entrepreneurs as reference information in order to handle batteries safely. Please notice that entrepreneurs have to deal with batteries, as they think fit.

This product is a consumer product which 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 : Alkaline Battery LR20XJ, LR14XJ, LR6XJ, LR03XJ, 6LR61XJ
 Alkaline Battery (EVOLTA)LR20EJ, LR14EJ, LR6EJ, LR03EJ

Name of Company : Panasonic Corporation Automotive & Industrial Systems Company

Address : 1-1 Matsushita-cho, Moriguchi City, Osaka, 570-8511, Japan

Division : Energy Device Business Division

Department : Engineering Department

Tel : +81-6-6994-4560

Emergency Tel : +81-6-6994-4560 (Working hours)
 +81-6-6991-1141 (Holiday)

Reference No. : ALMN-PSDS-5E-01

2. Hazards identification

GHS Classification : Not applicable

Hazard : There is the risk of explosion if batteries are disposed in fire, heated above 100 degree C. Stacking or jumbling batteries may cause external short circuits, heat generation and explosion.

Toxicity : When the leaked liquid adheres to the skin, it may cause the damage of the skin. When it is gotten in eye, it may cause the damage of eye such as losing sight.

3. Composition/information of ingredients

Component	Material	Content (wt %)	Chemical formula	CAS No.
Positive electrode	Manganese dioxide	30-46	MnO ₂	1313-13-9
	Graphite	2-4	C	7782-42-5
Negative electrode	Zinc	10-17	Zn	7440-66-6
Electrolyte	Potassium Hydroxide	4-7	KOH	1310-58-3
	Water	7-13	H ₂ O	-
Component parts (Nonhazardous)	Steel	12-34	Fe	7439-89-6
	Plastic, etc.	3-11	-	-

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

- Skin contact by electrolyte : Wash the affected area under tepid running water using a mild soap. If appropriate procedures are not taken, this may cause sores on the skin. Get medical attention if irritation develops or persists.
- Eye contact by electrolyte : Do not rub eyes. Wash immediately with large amount of clean water such as tap water 15 minutes or more then receive the ophthalmologist's treatment promptly. It may cause such as losing sight when the right procedure is not taken.
- Ingestion of electrolyte : Arrange for transport to the nearest medical facility for examination and treatment by a physician as soon as possible.
- Inhalation of electrolyte fume : Remove to fresh air immediately. Take a medical treatment

5. Fire fighting measures

- Extinguishing Media : Dry chemical, carbon dioxide, great deal of water.
- Specific Fire-Fighting Methods : Be sure on the windward to extinguish the fire, since vapor from burning batteries 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)

- Health Considerations : Wear proper protective equipment.
- And Protective Equipment
- Environmental Precautions : Prevent spills from entering sewers, watercourses.
- Spill Clean-Up Procedures : Collect material to minimize dust generation ; use wet mop, damp sponge. Place collected material into a suitable container for disposal.

7. Handling and storage

Handling

- Technical Measures : No exposure limits exist for the battery.
- Precaution : When packing the batteries, do not allow battery terminals to contact each other, or contact with electrically conductive materials. Be sure to pack batteries by providing partitions in packaging boxes, or in separate plastic bags to avoid they are mixed together. Use strong material for packaging boxes to avoid damage by vibration, impact, dropping and stacking during transportation. Do not recharge batteries. Do not deform batteries. Do not mix different types of batteries. Do not solder directly onto batteries.

Storage

Storage Condition : Do not let water penetrate into packaging boxes during their storage and transportation. Do not store the batteries in the high temperature exceeding 35 degree C, under direct sunlight or near heat source. Also avoid high humidity. Be sure not to expose the batteries to condensation, water drop or not to store them under frozen condition.

Safe Packaging Materials : Carton boxes, Wooden boxes.

8. Exposure controls and personal protection

Acceptable concentration : Not specified about Alkaline Battery.

Facilities : Nothing in particular.

Protective Equipments (in case of electrolyte leakage from the battery)

Respiratory Protection : For most condition no respiratory protection.

Hand Protection : Safety gloves.

Eye Protection : Safety glasses with side shields must be worn when handling this product.

Skin and Body Protection : To prevent any contact, wear impervious clothing such as boots or whole body suits as appropriate.

9. Physical and chemical properties

Physical Style

Appearance : Cylindrical shape. (LR20XJ, LR14XJ, LR6XJ, LR03XJ, LR20EJ, LR14EJ, LR6EJ, LR03EJ)

Rectangular shape (6LR61XJ)

Color : Depend on the design.

Voltage : 1.5 Volts. (LR20XJ, LR14XJ, LR6XJ, LR03XJ, LR20EJ, LR14EJ, LR6EJ, LR03EJ)

9 Volts. (6LR61XJ)

10. Stability and reactivity

Reactivity : Stable under normal conditions.

Chemical Stability : Stable under normal conditions.

Conditions to be avoided : Be careful not to be as follows.

- Short – circuited : There is the possibility that stacking or jumbling batteries cause short circuits, heat generation, leakage or explosion.

- Charged : Risk of swelling leakage or explosion, contents may protrude.

- Heated or disposed in fire : Risk of leakage or explosion.

- Disassembled : Risk of short circuits. Electrolyte may cause skin itching.

11. Toxicological information (contents information of Alkaline Battery)

- Acute Toxicity : No information as a battery.
Local Effects : No information as a battery.

12. Ecological information

In case of the worn out battery was disposed in land, the battery case may be corroded, and leak electrolyte. But, we have no ecological information. Heavy metal quantity in a cell

- Hg < 1 ppm : Reducing Vaporization Atomic Absorption Spectrometer
Cd < 10 ppm : Inductively Coupled Plasma Atomic Emission Spectroscopy
Pb < 10 ppm : Inductively Coupled Plasma Atomic Emission Spectroscopy

13. Disposal considerations

When the battery is worn out, dispose of it under the ordinance of each local government or the law issued by relating government.

14. Transport information

This battery requires the following attentions.

- (1) Protect the terminals of batteries and prevent them from short circuit so as not to cause dangerous heat generation.
- (2) 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 dew condensation.
- (3) Avoid transportation with the possibility of the collapse of cargo piles and the packing damage.

UN Number and UN Class; Not applicable

Not Dangerous Goods. For air transportation, the words "Not Restricted, as per Special Provision A123" must be included in the description of the substance on the Air Waybill, when an Air Waybill is issued.

15. Regulatory information

No information. (Follow all regulations in your country.)

16. Other information

Handling instructions : 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.

References : IATA Dangerous Goods Regulations 57th Edition (2016)
IMO International Maritime Dangerous Goods Code 2014 Edition