

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 Product and Company Identification

Name of Product : Manganese dioxide lithium battery
Name of Company : Panasonic Corporation, Automotive & Industrial Systems Company
Address : 1-1 Matsushita-cho, Moriguchi City, Osaka, 570-8511, Japan
Division : Energy Device Division
Department : Engineering Department
Telephone number : +81-6-6994-4537

2 Hazards Identification

GHS Classification : Not applicable

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.

Toxicity : Vapor generated from burning batteries, may irritate eyes, skin and throat.

3 Composition/Information of Ingredients

Component	Material	CAS No.	Content
Positive electrode	Manganese dioxide	1313-13-9	12 ~ 50wt%
Negative electrode	Lithium metal	7439-93-2	0.5 ~ 6wt%
Electrolyte	1,2-dimethoxyethane	110-71-4	1.5 ~ 3.5wt%
	Lithium Perchlorate	7791-03-9	0.2 ~ 0.7wt%
	Organic electrolyte	-	2.5 ~ 7wt%
Others (Steel or Plastic parts)	Steel	7439-89-6, 7440-47-3	30 ~ 85wt%
	Polypropylene	9003-07-0	0.5 ~ 10wt%

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	CR1620	0.02	CR2330	0.08	CR2412	0.03
CR1216	0.008	CR1632	0.04	CR2354	0.17	CR2430	0.09
CR1220	0.01	CR2012	0.02			CR2450	0.18
CR1612	0.01	CR2016	0.03			CR2450A	0.17
CR1616	0.02	CR2025	0.05			CR2477	0.29
		CR2032	0.07			CR3032	0.15
		CR2050B	0.10				

4 First Aid Measures

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

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 Fire Fighting Measures

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.

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

6 Accidental Release Measures (in case of electrolyte leakage from the battery)

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

7 Handling and Storage

- I 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.
- I Use strong material for packaging boxes so that they will not be damaged by vibration, impact, dropping and stacking during their transportation.
- I Do not recharge batteries. Do not deform batteries.
- I Do not mix different type of batteries.
- I Do not solder directly onto batteries.
- I Do not let water penetrate into packaging boxes during their storage and transportation.
- I Do not store the battery in places of the high temperature or under direct sunlight.
- I 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 (in case of electrolyte leakage from the battery)

- Acceptable concentration : Not specified in ACGIH.
Facilities : Provide appropriate ventilation system such as local ventilator in the storage place.
Protective clothing : Self-Contained Breathing Apparatus for organic gases, safety goggle, and safety glove.

9 Physical and Chemical Properties

- Appearance : Coin shape
Voltage : 3 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 (in case of electrolyte leakage from the battery)

- Acute toxicity : Oral(rat) LD50 > 2,000mg/kg (estimated)
Irritation : Irritating to eye and skin.
Mutagenicity : Not specified.
Chronic toxicity : Not specified.

12 Ecological Information

In case the worn-out battery is disposed of on land, the battery case may corrode and leak electrolyte.

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 metal batteries

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

: Exemption (for the Marine transport and the Air transport by Section II of PI 968, 969 or 970)

Even though the cells are classified as lithium metal batteries (UN3090 or 3091), 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 0.3g;
2. each cell is of the type proven to meet the requirements of each test in the UN Manual of Tests and Criteria, Part , sub-section 38.3.
3. each cell is manufactured in ISO9001 certified factory.

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 (2)(5)	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, not more than one package in any single consignment; net quantity per package Max. 2.5kg
		PI 969 Section	Cells packed with equipment
		PI 970 Section	Cells contained in equipment, button cell batteries
Marine transport	IMDG (3)	SP 188	

15 Regulatory Information

IATA Dangerous Goods Regulations

IMO International Maritime Dangerous Goods Code

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 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.

References

- (1) UN Recommendations on the Transportation of Dangerous Goods, Model Regulations
- (2) IATA Dangerous Goods Regulations 57th Edition (2016)
- (3) IMO International Maritime Dangerous Goods Code 2014 Edition
- (4) UN Recommendations on the Transportation of Dangerous Goods, Manual of Tests and Criteria
- (5) IATA Dangerous Goods Regulations 57th edition Effective 1 January 2016
ADDENDUM

(END)

Lixing Batteries

材料安全资料表 Material Safety Data Sheet

1 化学品及企业标识(Chemical Product and Company Identification)		
产品名称 Product Name	锂-二氧化锰扣式电池 Lithium manganese dioxide coin battery	
制造商名称 Manufacturers Name	武汉力兴（火炬）电源有限公司 WUHAN LIXING (TORCH)POWER SOURCES CO.,LTD.	
地址 Address	武汉市东湖高新技术开发区关东工业园 430074 The Guandong industrialized country of East Lake high and new technology development zone , Wuhan 430074	
紧急联络电话 Emergency Number	86-27-87531527	
传真 Fax	86-27-87414024	
2 成分/组成信息(Composition/Information on Ingredients)		
名称 Description	含量 Approximate Percent (wt %)	化学文摘号 CAS No.
二氧化锰 Manganese dioxide	26.8	1313-13-9
碳 Graphite	2.2	7782-42-5
Teflon (PTFE)	1.5	9002-84-0
PP 塑料 Plastic	4.7	9003-07-0
不锈钢 Stainless Steel	53.6	7439-89-6
锂 Lithium	2.1	7439-93-2
高氯酸锂 Lithium Perchlorate	0.9	7791-03-9
碳酸丙烯酯 Propylene carbonate	6.5	108-32-7
乙二醇二甲醚 1,2 Dimethoxyethane	1.7	110-71-4
总计 Total	100	-
3 危险性概述(Haxards Summarizing)		
锂 Lithium	与水接触剧烈反应,易燃烧。只能用苏打粉,沙子等灭火。 It reacts violently when in contact with water,and it is flammable.Use only soda ash or sand to extinguish flame.	
二氧化锰 Manganese dioxide	强氧化剂,具腐蚀性,摄入有毒。可用 CO ₂ 灭火。 A toxic material also an corrosive and an oxidising agent.Use only CO ₂ or halon to extinguish flame.	
碳酸丙烯酯 Propylene carbonate	可腐蚀眼睛和皮肤。 可用 CO ₂ 灭火。 Will irritate the eyes and the skin by absorpion,harmful if	

	ingested or inhaled. Use only CO ₂ or halon to extinguish flame.
乙二醇二甲醚 1,2 Dimethoxyethane	极易燃。吸入和摄入有害。可用 CO ₂ 灭火。 Highly flammable. Harmful if ingested or inhaled. Use only CO ₂ or halon to extinguish flame.
其他组分不活泼,或者危害较小。 Other materials are either inert or have low hazard associated with their exposure.	
4 急救措施(First-aid Measures)	
眼睛:用水冲洗,立即就医。 Eyes:irrigate thoroughly with water.Obtain medical attention.	
皮肤:用水彻底冲洗,脱掉受污染的衣物并清洗。除非少量接触,否则就医。 Skin:drench the skin thoroughly with water.Remove contaminated clothing and wash before re-use.Unless contact has been slight,obtain medical attention.	
吸入:离开污染场所,休息并保暖。严重时就医。 Inhalation:remove from exposure,rest and keep warm.In severe cases,obtain medical attention.	
食入:用水彻底冲洗口部后大量饮水。就医。 Ingestion:wash out mouth thoroughly with water and give plenty of water to drink.Obtain medical attention.	
5 消防措施(Fire-fighting Measures)	
大量电池燃烧,可能发生爆炸。适合的灭火介质为 CO ₂ ,干粉灭火器和沙子。不可用水灭火。消防人员应配戴空气呼吸器,防护头盔,眼镜等。 There would be explosion in the case where significant quantities of lithium-manganese dioxide batteries have been involved in a fire. Applicable extinguishing media: CO ₂ fire extinguisher , ABC dry powder extinguisher , sand ,etc.Do not use water as extinguishing agent. Firemen should wear the air breathe machine, helmet, glasses ,etc.	
6 泄露应急处理(Accidental Release Measures)	
不可呼吸泄漏液蒸汽,或用手接触液体。若皮肤已接触电解质,立即用大量水冲洗。可用泥土和沙子吸收泄漏液。将漏液电池和沙子按特殊废弃物处理。 Do not breath vapours or touch liquid with bare hands.If the skin has come into contact with the electrolyte it should be washed thoroughly with water.Earth or sand should be used to absorb the exudation.Seal leaking battery and earth in a heavy-duty Polythene bag and dispose of as special waste.	
7 操作处置与储存(Handling and Storage)	
保证电池包装完整,避免短路。 Pack the batteries well,and avoid short circuit.	
不要拆卸电池。 Never disassemble batteries.	
不要吸入电池蒸汽或用光手接触电池内部物质。 Do not breathe cell vapors or touch internal material with bare hands.	
将电池储存在阴凉通风的地方,避免阳光直射。 Store batteries in cool well-ventilated area,keep out of direct sunlight.	
8 接触控制/个体防护(Exposure Controls/Personal Protection)	
外部含镍壳盖的腐蚀可能生成有毒产物。避免吞咽电池。接触后洗手。 External corrosion of the nickle can could result in theformation of toxic metal salts.Avoid ingestion,Wash hands after contact.	

9 理化特性(Physical and Chemical Properties)
本品为固态,无味。其他指标不适用。 This battery is solid state , and inodorous.The other items are not applicable.
10 稳定性和反应性(Stability and Reactivity)
有害物质被密封在壳体内,在正常情况下本产品稳定,无害。 Hazardous materials are housed within a sealed unit,under normal conditions this unit is stable and non-hazardous.
若电池密封被损坏,金属锂会与水反应放出可燃性气体。 Lithium will react with water and produce flammable gas if the seal of battery is damaged.
11 毒理学资料(Toxicological Information)
若电池不损坏,无毒。 No toxicity unless the battery is damaged.
12 生态学资料(Ecological Information)
不适用。 Not Applicable.
13 废弃处置(Disposal)
不要焚烧电池或将电池加热超过 80℃。根据当地法规处理电池。 Do not incinerate or subject cells to temperature in excess of 80℃.Dispose of in accordance with local regulations.
14 运输信息(Transport Information)
<p>国际运送规定: 锂电池国际运输规程 World transports and stipulates : Lithium battery international transportation rules Effective October 1, 2008 all LIXING lithium batteries are not subject to the requirements of the U.S. Department of Transportation (DOT), Subchapter C, Hazardous Material Regulations if shipped in compliance with 49 CFR 173.185 and Special Provision 188.Currently all LIXING lithium batteries can be transported under the International Civil Aviation Organization (ICAO) and the Packing Instructions (PI) 968 (Batteries), PI 969 (Batteries, packed with equipment) and PI 970(Batteries, contained in equipment).</p> <p>They are considered to be non-dangerous by the IATA Dangerous Goods regulations as below:</p> <ul style="list-style-type: none"> ● The goods with lithium metal cells and should complies with IATA Dangerous Goods Regulations. ● The substance is not restricted to IMO IMDG code according to special provision 188. ● Section II of PI968 、PI969 、PI970 ● A lithium metal cell, the lithium content is not more than 1g. ● For these lithium cells/batteries contained in equipment, the equipment is equipped and protected with an effective means to prevent short circuits, dangerous reverse current flow and accidental activation.

- This consignment does not contain any recalled and/or defective batteries that have the potential of producing a dangerous evolution of heat, fire or short circuit.
- Each package of batteries must be capable of withstanding a 1.2m-drop test in any orientation without damage to cells or batteries contained therein, shifting of the contents so as to allow battery to battery(or cell to cell) contact and/or release of contents.
- Each cell or battery is of the type proven to meet the requirements of each test in the UN Manual of Tests and Criteria, Part III, subsection 38.3 as of the Material Safety Data Sheet Reference Number LX-QR-824-38.

The only requirement for shipping these batteries, in all modes of transportation, are that they must be separated to prevent short-circuits and to prevent movement that could lead to short-circuits. They must also be packed in strong packaging that can withstand the rigors normal to transportation.

运输时,应避免电池短路。

The batteries being transported must be protected from shorting-circuiting and protected from movement that could lead to short-circuiting.

15 法规信息(Regulatory Information)

特殊要求依据当地法规。

Special requirement be according to the local regulations.

16 其他信息(Other Information)

填表时间 Date of Issue	2015.1.1
填表部门 Dept. of Issue	名称:武汉力兴(火炬)电源有限公司 Name: the R&S dept. of wuhan lixing (torch) power sources co.,ltd.
文件号 Document Number	LX-QR-824-38
备注 Remarks	以上数据只基于对产品目前状态的了解。 The above information is given based on the present state of our knowledge of this product.

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1 Product and Company Identification

Name of Product : Manganese dioxide lithium battery
Name of Company : Panasonic Corporation, Automotive & Industrial Systems Company
Address : 1-1 Matsushita-cho, Moriguchi City, Osaka, 570-8511, Japan
Division : Energy Device Division
Department : Engineering Department
Telephone number : +81-6-6994-4537

2 Hazards Identification

GHS Classification : Not applicable

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.

Toxicity : Vapor generated from burning batteries, may irritate eyes, skin and throat.

3 Composition/Information of Ingredients

Component	Material	CAS No.	Content
Positive electrode	Manganese dioxide	1313-13-9	12 ~ 50wt%
Negative electrode	Lithium metal	7439-93-2	0.5 ~ 6wt%
Electrolyte	1,2-dimethoxyethane	110-71-4	1.5 ~ 3.5wt%
	Lithium Perchlorate	7791-03-9	0.2 ~ 0.7wt%
	Organic electrolyte	-	2.5 ~ 7wt%
Others (Steel or Plastic parts)	Steel	7439-89-6, 7440-47-3	30 ~ 85wt%
	Polypropylene	9003-07-0	0.5 ~ 10wt%

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	CR1620	0.02	CR2330	0.08	CR2412	0.03
CR1216	0.008	CR1632	0.04	CR2354	0.17	CR2430	0.09
CR1220	0.01	CR2012	0.02			CR2450	0.18
CR1612	0.01	CR2016	0.03			CR2450A	0.17
CR1616	0.02	CR2025	0.05			CR2477	0.29
		CR2032	0.07			CR3032	0.15
		CR2050B	0.10				

4 First Aid Measures

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

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 Fire Fighting Measures

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.

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

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

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- I 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.
- I Use strong material for packaging boxes so that they will not be damaged by vibration, impact, dropping and stacking during their transportation.
- I Do not recharge batteries. Do not deform batteries.
- I Do not mix different type of batteries.
- I Do not solder directly onto batteries.
- I Do not let water penetrate into packaging boxes during their storage and transportation.
- I Do not store the battery in places of the high temperature or under direct sunlight.
- I 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 (in case of electrolyte leakage from the battery)

- Acceptable concentration : Not specified in ACGIH.
Facilities : Provide appropriate ventilation system such as local ventilator in the storage place.
Protective clothing : Self-Contained Breathing Apparatus for organic gases, safety goggle, and safety glove.

9 Physical and Chemical Properties

- Appearance : Coin shape
Voltage : 3 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 (in case of electrolyte leakage from the battery)

- Acute toxicity : Oral(rat) LD50 > 2,000mg/kg (estimated)
Irritation : Irritating to eye and skin.
Mutagenicity : Not specified.
Chronic toxicity : Not specified.

12 Ecological Information

In case the worn-out battery is disposed of on land, the battery case may corrode and leak electrolyte.

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 metal batteries

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

: Exemption (for the Marine transport and the Air transport by Section II of PI 968, 969 or 970)

Even though the cells are classified as lithium metal batteries (UN3090 or 3091), 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 0.3g;
2. each cell is of the type proven to meet the requirements of each test in the UN Manual of Tests and Criteria, Part , sub-section 38.3.
3. each cell is manufactured in ISO9001 certified factory.

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
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		PI 968 Section B	Cells, Cargo Aircraft only; net quantity per package Max. 2.5kg
		PI 968 Section	Cells, Cargo Aircraft only, not more than one package in any single consignment; net quantity per package Max. 2.5kg
		PI 969 Section	Cells packed with equipment
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The effective date for this Perchlorate label is July 1, 2006 for non-consumer products and January 1, 2007 for consumer products.

References

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ADDENDUM

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Lixing Batteries

材料安全资料表 Material Safety Data Sheet

1 化学品及企业标识(Chemical Product and Company Identification)		
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制造商名称 Manufacturers Name	武汉力兴（火炬）电源有限公司 WUHAN LIXING (TORCH)POWER SOURCES CO.,LTD.	
地址 Address	武汉市东湖高新技术开发区关东工业园 430074 The Guandong industrialized country of East Lake high and new technology development zone , Wuhan 430074	
紧急联络电话 Emergency Number	86-27-87531527	
传真 Fax	86-27-87414024	
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不锈钢 Stainless Steel	53.6	7439-89-6
锂 Lithium	2.1	7439-93-2
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乙二醇二甲醚 1,2 Dimethoxyethane	1.7	110-71-4
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二氧化锰 Manganese dioxide	强氧化剂,具腐蚀性,摄入有毒。可用 CO ₂ 灭火。 A toxic material also an corrosive and an oxidising agent.Use only CO ₂ or halon to extinguish flame.	
碳酸丙烯酯 Propylene carbonate	可腐蚀眼睛和皮肤。 可用 CO ₂ 灭火。 Will irritate the eyes and the skin by absorption,harmful if	

	ingested or inhaled. Use only CO ₂ or halon to extinguish flame.
乙二醇二甲醚 1,2 Dimethoxyethane	极易燃。吸入和摄入有害。可用 CO ₂ 灭火。 Highly flammable. Harmful if ingested or inhaled. Use only CO ₂ or halon to extinguish flame.
其他组分不活泼,或者危害较小。 Other materials are either inert or have low hazard associated with their exposure.	
4 急救措施(First-aid Measures)	
眼睛:用水冲洗,立即就医。 Eyes:irrigate thoroughly with water.Obtain medical attention.	
皮肤:用水彻底冲洗,脱掉受污染的衣物并清洗。除非少量接触,否则就医。 Skin:drench the skin thoroughly with water.Remove contaminated clothing and wash before re-use.Unless contact has been slight,obtain medical attention.	
吸入:离开污染场所,休息并保暖。严重时就医。 Inhalation:remove from exposure,rest and keep warm.In severe cases,obtain medical attention.	
食入:用水彻底冲洗口部后大量饮水。就医。 Ingestion:wash out mouth thoroughly with water and give plenty of water to drink.Obtain medical attention.	
5 消防措施(Fire-fighting Measures)	
大量电池燃烧,可能发生爆炸。适合的灭火介质为 CO ₂ ,干粉灭火器和沙子。不可用水灭火。消防人员应配戴空气呼吸器,防护头盔,眼镜等。 There would be explosion in the case where significant quantities of lithium-manganese dioxide batteries have been involved in a fire. Applicable extinguishing media: CO ₂ fire extinguisher , ABC dry powder extinguisher , sand ,etc.Do not use water as extinguishing agent. Firemen should wear the air breathe machine, helmet, glasses ,etc.	
6 泄露应急处理(Accidental Release Measures)	
不可呼吸泄漏液蒸汽,或用手接触液体。若皮肤已接触电解质,立即用大量水冲洗。可用泥土和沙子吸收泄漏液。将漏液电池和沙子按特殊废弃物处理。 Do not breath vapours or touch liquid with bare hands.If the skin has come into contact with the electrolyte it should be washed thoroughly with water.Earth or sand should be used to absorb the exudation.Seal leaking battery and earth in a heavy-duty Polythene bag and dispose of as special waste.	
7 操作处置与储存(Handling and Storage)	
保证电池包装完整,避免短路。 Pack the batteries well,and avoid short circuit.	
不要拆卸电池。 Never disassemble batteries.	
不要吸入电池蒸汽或用光手接触电池内部物质。 Do not breathe cell vapors or touch internal material with bare hands.	
将电池储存在阴凉通风的地方,避免阳光直射。 Store batteries in cool well-ventilated area,keep out of direct sunlight.	
8 接触控制/个体防护(Exposure Controls/Personal Protection)	
外部含镍壳盖的腐蚀可能生成有毒产物。避免吞咽电池。接触后洗手。 External corrosion of the nickle can could result in theformation of toxic metal salts.Avoid ingestion,Wash hands after contact.	

9 理化特性(Physical and Chemical Properties)
本品为固态,无味。其他指标不适用。 This battery is solid state , and inodorous.The other items are not applicable.
10 稳定性和反应性(Stability and Reactivity)
有害物质被密封在壳体内,在正常情况下本产品稳定,无害。 Hazardous materials are housed within a sealed unit,under normal conditions this unit is stable and non-hazardous.
若电池密封被损坏,金属锂会与水反应放出可燃性气体。 Lithium will react with water and produce flammable gas if the seal of battery is damaged.
11 毒理学资料(Toxicological Information)
若电池不损坏,无毒。 No toxicity unless the battery is damaged.
12 生态学资料(Ecological Information)
不适用。 Not Applicable.
13 废弃处置(Disposal)
不要焚烧电池或将电池加热超过 80℃。根据当地法规处理电池。 Do not incinerate or subject cells to temperature in excess of 80℃.Dispose of in accordance with local regulations.
14 运输信息(Transport Information)
<p>国际运送规定: 锂电池国际运输规程 World transports and stipulates : Lithium battery international transportation rules Effective October 1, 2008 all LIXING lithium batteries are not subject to the requirements of the U.S. Department of Transportation (DOT), Subchapter C, Hazardous Material Regulations if shipped in compliance with 49 CFR 173.185 and Special Provision 188.Currently all LIXING lithium batteries can be transported under the International Civil Aviation Organization (ICAO) and the Packing Instructions (PI) 968 (Batteries), PI 969 (Batteries, packed with equipment) and PI 970(Batteries, contained in equipment).</p> <p>They are considered to be non-dangerous by the IATA Dangerous Goods regulations as below:</p> <ul style="list-style-type: none"> ● The goods with lithium metal cells and should complies with IATA Dangerous Goods Regulations. ● The substance is not restricted to IMO IMDG code according to special provision 188. ● Section II of PI968 、PI969 、PI970 ● A lithium metal cell, the lithium content is not more than 1g. ● For these lithium cells/batteries contained in equipment, the equipment is equipped and protected with an effective means to prevent short circuits, dangerous reverse current flow and accidental activation.

- This consignment does not contain any recalled and/or defective batteries that have the potential of producing a dangerous evolution of heat, fire or short circuit.
- Each package of batteries must be capable of withstanding a 1.2m-drop test in any orientation without damage to cells or batteries contained therein, shifting of the contents so as to allow battery to battery(or cell to cell) contact and/or release of contents.
- Each cell or battery is of the type proven to meet the requirements of each test in the UN Manual of Tests and Criteria, Part III, subsection 38.3 as of the Material Safety Data Sheet Reference Number LX-QR-824-38.

The only requirement for shipping these batteries, in all modes of transportation, are that they must be separated to prevent short-circuits and to prevent movement that could lead to short-circuits. They must also be packed in strong packaging that can withstand the rigors normal to transportation.

运输时,应避免电池短路。

The batteries being transported must be protected from shorting-circuiting and protected from movement that could lead to short-circuiting.

15 法规信息(Regulatory Information)

特殊要求依据当地法规。

Special requirement be according to the local regulations.

16 其他信息(Other Information)

填表时间 Date of Issue	2015.1.1
填表部门 Dept. of Issue	名称:武汉力兴(火炬)电源有限公司 Name: the R&S dept. of wuhan lixing (torch) power sources co.,ltd.
文件号 Document Number	LX-QR-824-38
备注 Remarks	以上数据只基于对产品目前状态的了解。 The above information is given based on the present state of our knowledge of this product.

FDK

SAFETY DATA SHEET

Alkaline Manganese Battery

FILE NO.: AC2014E2
SDS DATE: 08/07/2014

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Alkaline Manganese Battery
SYNONYMUS: Dry Battery
PRODUCT CODES: LR20, LR14, LR6, LR03, LR1, 6LR61(6LF22)

MANUFACTURER: FDK CORPORATION
DIVISION: Battery Quality Assurance Dept.
ADDRESS: 5-36-11 Shimbashi, Minato-ku, 105-8677, Tokyo, Japan

EMERGENCY PHONE: +81-33434-2238
CHEMTREC PHONE: 800-424-9300
OTHER CALLS: +81-53-576-5141
FAX PHONE: +81-53-576-4183

CHEMICAL NAME: Not chemical/ Article
CHEMICAL FAMILY: N/A
CHEMICAL FORMULA: N/A

PRODUCT USE: Supplying electricity (1.5V or 9V/DC) to many applications
PREPARED BY: FDK CORPORATION

SECTION 1 NOTES:

The battery has no risk to life and health under normal use or transportation because ingredients of battery are not leaked out by virtue of hermetical sealing with metal case. Under OSHA regulations, batteries are considered "articles" and are not subject to the OSHA Hazard Communication Standard MSDS/SDS requirements which apply for "hazardous chemicals in the workplace." Additionally, batteries are considered "articles" under the Global Harmonized System and are exempted from the GHS labeling and SDS classification criteria.

This SDS 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.

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT:

Chemical Name	CAS No.	Composition Range	LD50/LC50	Exposure Limits
Manganese Dioxide	1313-13-9	40 – 60 %	LD50 oral rat>3478 mg/kg	5 mg/m3 Ceiling OSHA PEL 0.2 mg/m3 TWA ACGIH TLV
Graphite	7782-42-5	1 – 5 %		Natural: 15 mppcf TWA OSHA PEL
Zinc	7440-55-6	10 – 25 %		None established for zinc metal
Sodium Hydroxide	1310-58-3	5 – 10 %	LD50 oral rat 273 mg/kg	2 mg/m3 Ceiling ACGIH TLV

OSHA PEL-TWA: N/A
OSHA PEL STEL : N/A
OSHA PEL CEILING: N/A

SECTION 2 NOTES:

The chemicals and metals in this product are contained in a sealed can. Exposure to the contents will not occur unless the battery leaks, is exposed to high temperatures or is mechanically, physically, or electrically abused. Hazardous Ingredients as defined by OSHA, 29 CFR 1910.1200. and/or WHMIS under the HPA:

SECTION 3: HAZARDS IDENTIFICATION

CAUTION:

Batteries may explode or leak, and cause burn injury, if recharged, disposed of in fire, mixed with a different battery type, inserted backwards in equipment or disassembled. Replace all used batteries at the same time. Do not carry batteries loose in your pocket or purse. Do not remove the battery label. Keep small batteries (i.e., AAA) away from children. If swallowed, consult a physician at once. For information on treatment, call (202) 625-3333 collect.

FDK

SAFETY DATA SHEET

Alkaline Manganese Battery

FILE NO.: AC2014E2
SDS DATE: 08/07/2014

SECTION 4: FIRST AID MEASURES

Inhalation:	Inhalation of fume of released electrolyte may stimulate respiratory organ. Provide fresh air. Refer for medical attention.
Skin contact:	Released contents from battery may cause skin irritation and/or chemical burns. Remove contaminated clothes and rinse skin with plenty of water. If chemical burn occurs or if irritation persists, get medical assistance.
Eyes contact:	If released content from battery is attached on eyes, severe irritation and chemical burns occur. Immediately rinse with plenty of water for several minutes (remove contact lenses if possible), get medical assistance.
Ingestion:	Do not induce vomiting. Seek medical attention immediately. CALL NATIONAL BATTERY INGESTION HOTLINE at (202)-625-3333 collect, day or night.

SECTION 4 NOTES:

Chemical contents are sealed in metal can. Risk of exposure never occurs unless battery is mechanically or electrically abused. First aid shown above may need in such abnormal case only.

SECTION 5: FIRE-FIGHTING MEASURES

FLAMMABLE LIMITS IN AIR: N/A

FLASH POINT: N/A

EXTINGUISHING MEDIA:

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

SPECIAL FIRE FIGHTING PROCEDURES: Protective Equipment and Precautions for Firefighters

Firefighters should wear positive pressure self-contained breathing apparatus and full protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS: N/A

HAZARDOUS DECOMPOSITION PRODUCTS:

Thermal degradation may produce hazardous fumes of zinc and manganese; hydrogen gas, caustic vapors of potassium hydroxide and other toxic by-products.

SECTION 5 NOTES:

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.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions: Be sure the ventilation and washing out of attached 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:

Not applicable. Clean up and dispose of it according to section 13

Prevention of secondary hazards: No need.

SECTION 6 NOTES:

Chemical contents are sealed in metal can. But if the battery is mechanically or electrically abused, contents may leak out. In such case, take clean up measure.

FDK

SAFETY DATA SHEET

Alkaline Manganese Battery

FILE NO.: AC2014E2
SDS DATE: 08/07/2014

SECTION 7: HANDLING AND STORAGE

Transportation and freight handling:	<ol style="list-style-type: none">(1) Prevent wetting of packing by rain or dew condensation.(2) Do not place packing near source of heat.(3) Do not drop packing from more than 1m height and do not press packing allowing deform it.
Handling :	<ol style="list-style-type: none">(1) Do not charge, short-circuit, disassemble, deform or disposed of in fire.(2) Do not pile up or mingle batteries with each other.(3) Do not place battery on metal case, metal plate or antistatic material.(4) In case of multi cell application, replace all battery to new at once when replacement of used batteries.
Storage :	<ol style="list-style-type: none">(1) Be sure to store batteries in well-ventilated, dry and cool conditions.(2) Prevent wetting of packing by rain, snow, frost or dew condensation.(3) Do not store batteries near source of heat or nozzle of hot air.(4) Do not store batteries in direct sunshine.(5) Take care of wetting of packing caused by dew condensation when packing is removed from cold to warm and humid condition.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

VENTILATION : Nessessary

RESPIRATORY PROTECTION: Mask (with filter preferably)

EYE PROTECTION: Goggles or glasses

SKIN PROTECTION: Synthetic rubber gloves

SECTION 8 NOTES:

There is no need of personal protective equipment on regular handling and storage, but lot of electrolyte is released by mechanical or electrical abuse.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Typical appearance of battery as known everyone.

ODOR: No odor

Battery is finished consumer product, pphysical and chemical properties such as pH or boiling point are not applicable.

SECTION 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 85 degree C (may cause leakage and rupture), direct sunlight, high humidity

Materials to avoid: Water, a chain, and a piece of metal that causes short circuit.

Hazardous decomposition product: Emittted acrid or poisonous gases in fire.

SECTION 11: TOXICOLOGICAL INFORMATION

TOXICOLOGICAL INFORMATION:

Chronic Effects: No chronic health effects reported.

Target Organs: No target organs reported.

Carcinogenicity: This finished consumer product is not carcinogenic.

SECTION 11 NOTES:

Battery is a finished consumer product. It is classified as an "article" and exempt under the federal OSHA Hazard Communication standard.

FDK

SAFETY DATA SHEET

Alkaline Manganese Battery

FILE NO.: AC2014E2
SDS DATE: 08/07/2014

SECTION 12: ECOLOGICAL INFORMATION

ECOLOGICAL INFORMATION:

Anticipated behavior of chemical product in environment/possible environmental impact/ecotoxicity	No information available
Persistence and degradability	No information available
Bioaccumulative potential	No information available
Mobility in soil	No information available

SECTION 12 NOTES:

Exposure of internal content of battery may occur by corrosion of metal case of battery after batteries are disposed of in ground and kept for long time. But no available information about environmental hazard is reported after evaluation of long term landfill experiment.

Our alkaline batteries do not contain any added mercury, cadmium or lead.

SECTION 13: DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD: Dispose of in compliance with federal, state/provincial and local regulations.

RCRA HAZARD CLASS: Alkaline batteries covered by this SDS, in their original form (finished consumer product), when disposed of as waste, are considered non-hazardous waste according to Federal RCRA regulation (40 CFR 261).

Household Use:

Alkaline batteries can be safely disposed of with normal household. Do not accumulate large quantities used batteries for disposal as accumulation could cause batteries to short-circuit. Do not incinerate. In countries, such as Canada, where there are regulations for the collection and recycling of batteries, consumers should dispose of their used batteries into the collection network at municipal depots, retailers or other appointed place. They should not dispose of them with household waste.

SECTION 14: TRANSPORT INFORMATION

Alkaline batteries (sometimes referred to as "Dry cell" or "household" batteries) are not listed or regulated as dangerous goods under the IATA Dangerous Goods Regulations, ICAO Technical Instructions, IMDG Code, UN Model Regulations or U.S. hazardous regulations (49CFR). However, special regulatory provisions apply that require batteries to be packaged in a manner that prevents the generation of a dangerous quantity of heat by short circuits. Product shipped in its original packaging is compliant with the following packaging special provisions:

Ground Transport (US DOT): 49 CFR172.102 Special Provision 130

Air Transport (IATA)/ICAO: Special Provision A123 (55th Edition – 2014)

The words 'NOT RESTRICTED' and the 'Special Provision A123' must be included on the description of the substance on the Air Waybill, when air waybill is issued.

Sea -Marine/Water Transport (IMDG): NONE (Not Applicable - No Requirements)

SECTION 15: REGULATORY INFORMATION

OSHA: The finished alkaline battery product is considered an article and not covered by the OSHA Hazard Communication Standard, 29 CFR 1910.1200 **CPSIA 2008:** Alkaline batteries are exempt. See CPSC Exemption Letter posted on P&G web site.

EPA Mercury Containing and Rechargeable Battery Management Act of 1996: Compliant

EPA TSCA: All intentionally-added components of this product are listed on the US TSCA Inventory.

EPA SARA 313/302/304/311/312 chemicals: Manganese compounds 40-60%; Zinc 10-25% California: This product has been evaluated and does not require warning labeling under California Proposition 65.

State Right-to-Know and CERCLA: The following ingredients present in the finished product are listed on state right-to-know lists or state worker exposure lists:

Ingredient	CAS No.	Level	CERCLA RQ	State				
				IL	MA	NJ	PA	RI
Manganese Dioxide	1313-13-9	40 – 60 %	None	Y	Y	N	Y	Y
Graphite	7782-42-5	1 – 5 %	1000 lbs	Y	Y	N	Y	Y
Zinc	7440-55-6	10 – 25 %	1000 lbs	Y	Y	Y	Y	N
Sodium Hydroxide	1310-58-3	5 – 10 %	None	Y	Y	Y	Y	Y

FDK

SAFETY DATA SHEET

Alkaline Manganese Battery

FILE NO.:AC2014E2
SDS DATE: 08/07/2014

SECTION 16: OTHER INFORMATION

OTHER INFORMATION:

Reference; IEC 60086-1(2011), 60086-2 (2011), 60086-5 (2011)
Database on TSCA Inventory(EPA) , Ministry of the Environment Japan.
Dangerous Goods Regulations
International Air Transport Association (IATA)

DISCLAIMER:

The information and the recommendations set forth are made in good faith and believed to be accurate to the best of the Company's knowledge. It is not meant to be an all-inclusive document on worldwide hazard communication regulations.