Product Safety Data Sheet

This product (a battery) is an "Article" pursuant to 29 CFR 1910.1200 and, as such, is not subject to the OSHA Hazard Communication Standard requirements for preparation of a Safety Data Sheets, (SDS).
This Product Safety Data Sheet is prepared only to provide information to our customers.

1. PRODUCT AND COMPANY IDENTIFICATION

1.1	Product name	Lithium-Ion Battery
1.2	Applicable models	EV-NLR09
1.3	Product use	Hybrid Vehicle Battery
1.4	Name of manufacturer	Primearth EV Energy Co., Ltd.
1.5	Address of manufacturer	20,Okasaki,Kosai-City,Shizuoka, 431-0422 Japan
1.6	Phone number of manufacturer	+81-53-577-6381 (Japan)
1.7	Post in charge	Technical Administration Dept.
1.8	Name of person in charge	Nobuyasu Morishita
1.9	Issue number	P0761

2. HAZARD IDENTIFICATION

This product is not dangerous as long as it is used for prescribed purposes and in accordance with its designated usage.
As the product is a storage device for electricity, it may give the user an electric shock. It has no adverse effect on human health or the environment unless the pack and cell casings are breached.

2.1	Physical and chemical hazard	It may cause heat generation or electrolyte leakage if battery terminals contact with other metals. Electrolyte is flammable. In case of electrolyte leakage, move the battery from fire immediately.
2.2	Hazard to human health	Vapor and the electrolyte generated from burning batteries may irritate eyes, nose, throat and skin.
2.3	Hazard to environment	This product is not hazardous to the environment as long as it is used for prescribed purposes and in accordance with its designated usage. However, the contents of the product may have an adverse effect on the environment in the event of their leakage from the casing due to dismantling or breaching of the battery.

3. COMPOSITION & INGREDIENT INFORMATION

Common chemical name/General name	CAS Number	Concentration Concentration range
Lithium Nickel Manganese Cobalt Oxide	-	10-20wt%
Carbon	7782-42-5	8-18wt%
Aluminum	7429-90-5	20-30wt%
Copper	7440-50-8	15-25wt%
Electrolyte; Organic electrolyte mainly composed of alkyl carbonate	-	15-25wt%
Plastic	-	3-8wt%
Aluminum oxyhydroxide	1318-23-6	1-5wt%
Iron	7439-89-6	1-5wt%

4. FIRST AID MEASURES

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

4.1	Eye contact	Immediately flush eyes with plenty of clean water for at least 15 minutes, holding eyelids open while flushing. Take medical treatment immediately.
4.2	Skin contact	Remove contaminated clothes immediately. Wash the contact areas off immediately with plenty of water and soap or skin cleaner. Take medical treatment if pain stimulation or a skin reaction occurs.
4.3	Inhalation	In severe cases, remove to fresh air. Take a medical treatment.
4.4	Ingestion	Take a medical treatment immediately. If vomiting occurs naturally, avoid aspiration. Do NOT induce vomiting, unless instructed by the doctor.

5. FIREFIGHTING MEASURES

In the event of a battery fire, take the following measures.

5.1	Extinguishing method	Since vapor, generated from burning batteries 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.
5.2	Fire extinguishing agent	Plenty of water and alcohol-resistant foam are effective.
5.3	Special protective equipment for firefighters	Respiratory protection : Positive pressure self-contained breathing apparatus (SCBA) Hand protection : Protective gloves Eye protection : Protective goggle Skin and body protection : Protective clothing

6. ACCIDENTAL RELEASE MEASURES

Take the following measures if the alkaline electrolyte has leaked out of the battery.

6.1		Remove leaked materials with dry absorbent cloth. Move the battery away from the fire. Personal precautions : Wear protective equipment(gas mask for organic gases, protective goggle and protective gloves). Do not inhale the gas as much as possible. Moreover, avoid touching with as much as possible.

7. HANDLING & STORAGE INFORMATION

Observe the following cautions. Handle the battery carefully.

7.1	Cell 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. [(1)(2)(3)] Use strong material for packaging boxes so that they will not be damaged by vibration, impact, dropping and stacking during their transportation. [(1)(2)(3)] Do not let water penetrate into packaging boxes during their storage and transportation.
7.2	Cell Storage	The batteries will be stored at room temperature, charged to about 30－50% of capacity. Do not store the battery in places of the high temperature or under direct sunlight for a long time or in front of a stove. Please also avoid the places of high humidity. Be sure not to expose the battery to condensation, water drop.
7.3	Other	Batteries are sure to be packed in such a way as to prevent short circuits under conditions normally encountered in transport. [(1)(2)(3)]

8. EXPOSURE CONTROLS & PERSONAL PROTECTION

Under normal conditions release of ingredients does not occur. In the event of release of ingredients, the information of the ingredients is as follows.

8.1	Facilities	Lithium Nickel Manganese Cobalt Oxide : TLV-TWA 0.2mg/m^3 (as Insoluble inorganic Nickel compounds), (ACGIH,2007) 0.02mg/m^3 (as Co), (ACGIH,2007) 0.2mg/m^3 (as Mn), (ACGIH,2007) Carbon : TLV-TWA: 2mg/m^3, (as respirable dust), (ACGIH,2001) Aluminum : TLV-TWA: Not specified in ACGIH. Copper : TLV-TWA: Not specified in ACGIH. Organic electrolyte : TLV-TWA: Not specified in ACGIH.[(4)] Plastic : TLV-TWA: Not specified in ACGIH. Aluminum oxyhydroxide : TLV-TWA: Not specified in ACGIH.
8.2	Protective equipment	(in case of electrolyte leakage from the battery) Acceptable concentration : Not Specified in ACGIH. [(4)] Facilities : The storage place should be well ventilated, such as using local ventilator. Protective equipment : Gas mask for organic gases, protective goggle, protective gloves.

9. PHYSICAL & CHEMICAL PROPERTIES

9.1	Physical state	Solid (Prismatic), Metallic color
9.2	Order	No order
9.3	pH	Not applicable
9.4	Flash point	Not applicable
9.5	Explosion properties	Not applicable (ELECTROLYTE : 100℃; Water)
9.6	Density	Not applicable
9.7	Solubility	Insoluble in water
9.8	Nominal voltage	Single cell 3.7 volts

10. STABILITY & 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 charge, discharge, ambient temperature, etc. are not maintained within the specified ranges the life expectancy of the battery may be shortened or electrolyte leakage.

11. TOXICOLOGICAL INFORMATION

There is no data available on the product itself. The information of the internal cell materials is as follows.

11.1	Lithium Nickel Manganese Cobalt Oxide ($LiNiCoMnO_2$)	Acute toxicity : No data available. Irritation : Irritating to eyes. Sensitization : Respiratory sensitization : Nickel or Nickel compounds may cause respiratory sensitization. (DFG, 2007) Cobalt or Cobalt compounds may cause respiratory sensitization. (DFG, 2007) Skin sensitization : Nickel or Nickel compounds may cause skin sensitization. (DFG, 2007) Cobalt or Cobalt compounds may cause skin sensitization. (DFG, 2007) Carcinogenicity : Nickel compounds, inorganic : A1 Carcinogen (ACGIH, 2001) : Cobalt compounds : A3 Carcinogen (ACGIH, 2001)
11.2	Carbon	Acute toxicity : No data available. Local effects : No data available. Irritation : May cause mild Irritation to eyes and skin. Chronic toxicity : Prolonged inhalation under high concentration of a graphite particulate may become a cause of a lung disease.
11.3	Copper	Acute toxicity : Oral (mouse) LD50 >4000mg/kg Sensitization : No data available. Carcinogenicity : No data available. Mutagenicity : No data available.
11.4	Organic electrolyte	Acute toxicity : Oral (rat) LD50 >2000mg/kg(estimated) Irritation : Irritating to eyes and skin. Mutagenicity : Not specified. Chronic toxicity : Not specified.
11.5	Aluminum oxyhydroxide	Acute toxicity : Rat LDL_0 > 90mg/kg Chronic toxicity : No data available. Local effects : No data available. Carcinogenicity : No data available.

12. ECOLOGICAL INFORMATION

12.1		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 in battery Mercury(Hg) and Cadmium(Cd) are neither contained nor used in battery.

13. DISPOSAL CONSIDERATIONS (Precautions for recycling)

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

14. NOTES IN TRANSPORTATION

Refer to "15. REGULATORY INFORMATION" for applicable laws and regulations.

14.1	Label of contents	The indication of surface of the casing are subjected the regurations. Refer to "15. REGULATORY INFORMATION" for applicable laws and regulations.
14.2	No short-circuit	The battery terminals should be designed so that external short-circuiting can be avoided. Make sure the batteries are not short-circuited during the packaging process.
14.3	No damage and overturn	Use sufficiently strong materials for packaging boxes so that the product is not damaged due to vibration, shocks, falls, stacking, and so on. Pack the product so that the battery does not fall sideways, and is not inverted during transportation.
14.4	Protection from rain water	Avoid contact with rain or other water during storage and transportation.
14.5	Protection from fire and high temperatures	Do not place the product close to fire during storage and transportation. Avoid storage in a high-temperature environment. Example: Avoid leaving batteries for disposal in a parked vehicle under the scorching sun. Take sufficient care to avoid prolonged exposure to high temperature.

15. REGULATORY INFORMATION

15.1	Hazardous materials of transportation	(1) United Nations (Transport of Dangerous Goods) ・UN Number 3480 Classes 9 ・Special Provision 188, 230, 310, 348, 376, 377, 384, 387 ・Packing Requirements P903, P908, P909, P910, P911, LP903, LP904, LP905, LP906
		(2) International Air Transport Association (IATA) ・UN Number 3480 Classes 9 ・Special Provision A88, A99, A154, A164, A183, A201, A206, A213, A331, A334, A802
		(3) International Maritime Dangerous Goods Code (IMDG-Code) ・UN Number 3480 Classes 9 ・Special Provision 188, 230, 310, 348, 376, 377, 384, 387 ・Packing Requirements P903, P908, P909, P910, P911, LP903, LP904, LP905, LP906

16. OTHER INFORMATION

16.1	Cautions	(1)Cautions and prohibited items in this Data Sheet relate to only normal use. Take appropriate safety measures suited for the environment when the product is used for special purposes. (2)This Data Sheet provides only the information of the product, and is not to be taken as a warranty. (3)It is intended for use by persons with technical skills and at their own discretion and risk. (4)The user is responsible for determining that any usage of the data or information in this Data Sheet is in accordance with associated federal, state, and local laws and regulations.
16.2	References	(1) UN (United Nations) : Recommendations on the Transportation of Dangerous Goods Model Regulations 19th revised edition (2) IATA (International Air Transport Organization) : Dangerous Goods Regulations 60th Edition, Effective 1 January 2019. (3) IMO (International Maritime Organization) : International Maritime Dangerous Goods (IMDG) Code 2014 Edition. (4) TLVs and BEIs 1999 ACGIH
16.3	Date of creation/revision	February 7, 2019