

PRODUCT SAFETY DATA SHEET

Document number : BVx-11-0005

Issued : June 1, 2011

1. Product and Company Identification

Name of product : Lithium-Ion battery

Model name : G9280-47160 G9510-47070
G9280-47170 G9510-47100

Manufacturer Name of Company : TOYOTA MOTOR CORPORATION
Address : 1, Toyota-cho, Toyota, Aichi, 471-8571 JAPAN
Department : Hybrid Vehicle Battery Unit Development Div.
Representative : Kousuke Suzui
Telephone number : +81-565-94-3352
Facsimile number : +81-565-94-3319
For emergency : +81-565-94-3352

Product information	G9280-47160	G9510-47070	G9280-47170	G9510-47100
Rated voltage :	345.6(V)	345.6(V)	201.6(V)	201.6(V)
Watt-hour rating :	5184(Wh)	5184(Wh)	1008(Wh)	1008(Wh)
Mass :	151(kg)	161(kg)	32.0(kg)	30.7(kg)

G9280-xxxx : Model name for automotive products

G9510-xxxx : Model name for supply parts

2. Composition / Information on Ingredients

The batteries consist of hermetically sealed lithium ion cells that contain a number of chemicals and materials of construction. However, under normal conditions of use there is no risk of exposure.

Composition :

Common chemical name/General name	CAS Number	Concentration Concentration range
Lithium Nickel Oxide	12031-65-1	10-15wt%
Carbon	7782-42-5	8-12wt%
Aluminum	7429-90-5	20-30wt%
Copper	7440-50-8	15-30wt%
Electrolyte; Organic electrolyte mainly composed of alkyl carbonate	-	15-18wt%
Plastic	-	5-15wt%

3. First Aid Measures

The product contains organic electrolyte.

Only a small amount may leak from the batteries which may irritate the eyes, nose, throat, and skin.

- Inhalation : - Contact with the acidic vapor caused by reaction of the electrolyte with moisture may irritate nose and throat. In severe cases such as confined spaces, move exposed patients to a well ventilated area and seek medical treatment.
- Skin contact : - Take up with cloth.
- 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.
- Immediately remove contaminated clothing.
- Eye contact : - Immediately flush eyes with plenty of clean water for at least 15 minutes, holding eyelids open while flushing.
- Take medical treatment immediately.
- Ingestion : - Take a medical treatment immediately.
- If vomiting occurs naturally, avoid aspiration.
- Do NOT induce vomiting, unless instructed by the doctor.

4. Fire Fighting Measures

- 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.
- Fire extinguishing agent : Plenty of water and alcohol-resistant foam are effective.
- Protective clothing : SCBA, safety goggles if not part of the SCBA, full personal protective clothing, and gloves suitable for organic solvents.

5. Measures for electrolyte leakage from the battery

- Take up with dry absorbent cloth.
- Move the battery away from the ignition source to open area.

Protective clothing : Gas mask for organic gases, safety goggle, safety glove suitable for organic solvents.

6. Precaution for Handling and Storage

- Handling
- To prevent serious injury or death, do not remove the cover of battery assembly.
 - Do not let water penetrate into packaging boxes during their storage and transportation.
- 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. 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.

- Lithium Nickel Oxide : TLV-TWA 0.2mg/m³ (as Insoluble inorganic Nickel compounds), (ACGIH) ⁽³⁾
TLV-TWA 0.02mg/m³ (as Co), (ACGIH) ⁽³⁾
- Carbon : TLV-TWA: 2mg/m³, (as respirable dust), (ACGIH) ⁽²⁾
- Aluminum : TLV-TWA: Not specified in ACGIH.
- Copper : TLV-TWA: Not specified in ACGIH.
- Organic electrolyte : TLV-TWA: Not specified in ACGIH⁽¹⁾.
- Plastic : TLV-TWA: Not specified in ACGIH.

(in case of electrolyte leakage from the battery)

Acceptable concentration : Not Specified in ACGIH. ⁽¹⁾

Facilities : The storage place should be well ventilated, such as using local ventilator.

Protective clothing : Gas mask for organic gases, safety goggle, safety glove for organic solvents.

8. Toxicology Information

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

Lithium Nickel Oxide-LiNiO₂

Acute toxicity	: No data available.
Irritation	: Irritating to eyes.
Sensitization	:
Skin sensitization	: Nickel or Nickel compounds may cause skin sensitization. (DFG, 2007) Cobalt or Cobalt compounds may cause skin sensitization. (DFG, 2007)
Respiratory sensitization	: Nickel or Nickel compounds may cause respiratory sensitization. (DFG, 2007) Cobalt or Cobalt compounds may cause respiratory sensitization. (DFG, 2007)
Carcinogenicity	: Nickel compounds, inorganic: A1 Carcinogen (ACGIH, 2001) Cobalt compounds : A3 Carcinogen (ACGIH, 2001)

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.

Copper

Acute toxicity	: Oral (mouse) LD50 >4000mg/kg
Sensitization	: No data available.
Carcinogenicity	: No data available.
Mutagenicity	: No data available.

Organic electrolyte

Acute toxicity	: Oral (rat) LD50 >2000mg/kg(estimated)
Irritation	: Irritating to eyes and skin.
Carcinogenicity	: Not specified.
Mutagenicity	: Not specified.

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

10. Disposal Considerations (Precautions for recycling)

- 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.

11. Transportation Information

- This product is classified as lithium ion batteries UN3480. During the transportation of the battery, it should be subjected to the regulations on the transportation below.

- UN (United Nations): Recommendations on the Transportation of Dangerous Goods Model Regulations
Sixteenth revised edition
- IATA (International Air Transport Organization) : Dangerous Goods Regulations 52nd Edition
Effective 1 January 2011
- IMO (International Maritime Organization) : International Maritime Dangerous Goods (IMDG) Code
2010 Edition (Amendment 35-10)
- Applicable national regulations such as the USA's hazardous materials regulations (49 CFR 173.185).

- Hazard Classification : Class 9 Miscellaneous
- UN Number : 3480
- Proper Shipping Name : Lithium ion batteries
- Packing Group : II (depending on mode of transport and international location)

12. Others

References

- (1) TLVs and BEIs 1999 ACGIH
- (2) TLVs and BEIs 2001 ACGIH
- (3) TLVs and BEIs 2007 ACGIH