

PRODUCT SAFETY DATA SHEET

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1. Product and Company Identification

Name of product : Lithium-Ion battery

Model name : G9280-47170 G9280-47190 G9510-47100

Manufacturer Name of Company : TOYOTA MOTOR CORPORATION
Address : 1, Toyota-cho, Toyota, Aichi, 471-8571 JAPAN
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Product information	G9280-47170	G9510-47100
	G9280-47190	
Rated voltage :	201.6(V)	201.6(V)
Watt-hour rating :	1008(Wh)	1008(Wh)
Mass :	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 vapor of the electrolyte 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.
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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.
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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)
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12. Others

References

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