

# PRODUCT SAFETY DATA SHEET

Document number : BVx-11-0027

Issued : November 23, 2011

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## 1. Product and Company Identification

Name of product : Lithium-Ion battery

Model name : G9280-47130 G9510-47090

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  
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Product information	G9280-47130	G9510-47090
Rated voltage :	207.2(V)	207.2(V)
Watt-hour rating :	4.4(kWh)	4.4(kWh)
Mass :	77(kg)	77(kg)

G9280-xxxx : Model name for automotive products  
G9510-xxxx : Model name for supply parts

This product is a battery assembly composed of the battery cells identified as below.  
UF261591 HEV Lithium Ion Battery Cell (Sanyo Electric Co., Ltd.)

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## 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.

- Information about the chemical nature of product:

Common chemical name/ General name	CAS number	NIOSH / RTECS number	Concentration / Concentration range
Lithium Metal Oxide	None listed	None listed	15~25%
Aluminum	7429-90-5	BD0330000	20~30%
Graphite	7782-42-5	FF5250100	5~15%
Copper	7440-50-8	GL5325000	10~20%
Organic electrolyte	None listed	None listed	15~25%

- Hazardous Materials Category of organic electrolyte:

Category IV (Inflammable liquids)-Class II petroleum in Japanese fire service law

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## 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.
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## 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.

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## 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.

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## 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.

• Control parameters

Common chemical name / General name	OSHA	ACGIH	
	PEL-TWA	TLV-TWA	BEI
Lithium Metal Oxide	None listed	None listed	None listed
Aluminum	15 mg/ · (as total dust) 5 mg/ · (as respirable fraction)	10 mg/ · (as total dust)	None listed
Graphite	15 mg/ · (as total dust)	10 mg/ · (as inhalation coarse particulate)	None listed
Copper	1 mg/ · (as dust, mist) 0.1 mg/ · (as fume)	1 mg/ · (as dust, mist) 0.2 mg/ · (as fume)	None listed
Organic electrolyte	None listed	None listed	None listed

OSHA: Occupational Safety and Health Administration

PEL-TWA: Permissible Exposure Limit-Time Weighted Average concentration

ACGIH: American Conference of Governmental Industrial Hygienists, Inc.

TLV-TWA: Threshold Limit Value-Time Weighted Average concentration

BEI : Biological Exposure Indices

(in case of electrolyte leakage from the battery)

Acceptable concentration : Not Specified in ACGIH. <sup>(1)</sup>

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 Metal Oxide

- Acute toxicity: Unknown
- Local effects: Unknown
- Sensitization: Unknown
- Chronic toxicity/Long term toxicity: Unknown
- Skin causticity: Unknown

### Aluminum

- Health Rating:0 - None
- Flammability Rating:1 - Slight
- Reactivity Rating:1 - Slight
- Contact Rating:0 - None
- Local effects: Aluminum itself has no toxicity.

### Graphite

- Health Rating:0 - None
- Flammability Rating:0 - None
- Reactivity Rating:0 - None
- Contact Rating:1 - Slight
- Acute toxicity: Unknown.
- Local effects: When it goes into one's eyes, it stimulates one's eyes; conjunctivitis, thickening of corneal epithelium or edematous inflammation palpebra may be caused.
- Chronic toxicity/Long term toxicity: Since the long-term inhalation of high levels of graphite coarse particulate may become a cause of a lung disease or a tracheal disease.
- Carcinogenicity: Graphite is not recognized as a cause of cancer by research organizations and natural toxic substance research organizations of cancer.

### Copper

- Health Rating:3 - Severe (Life)
- Flammability Rating:1 - Slight
- Reactivity Rating:2 - Moderate
- Contract Rating:1 - Slight
- Acute toxicity:  
60-100mg sized coarse particulate causes a gastrointestinal disturbance with nausea and inflammation.  
TDL<sub>0</sub>, hypodermic - Rabbit 375mg/kg
- Local effects:  
Coarse particulate stimulates a nose and a tracheal.  
When it goes into one's eyes, the symptom of the reddening and the pain is caused.
- Sensitization: Sensitization of the skin may be caused by long-term or repetitive contact.
- Reproductive toxicity: TDL<sub>0</sub>, oral - Rat 152mg/kg

### Organic electrolyte

- Acute toxicity: LD<sub>50</sub>, oral - Rat 2,000mg/kg or more
- Local effects: Unknown.
- Skin irritation study: Rabbit - Mild
- eye irritation study: Rabbit - Very severe

## 9. Ecological Information

- Persistence/degradability: Since a battery cell and the internal materials remain in the environment, do not bury or throw out into the environment.
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## 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.
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## 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.
    - 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)
  - This product is adapted to Recommendations on the TRANSPORT OF DANGEROUS GOODS Manual of Tests and Criteria Fifth revised edition (UN : United Nations)
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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