

# ***SAFETY DATA SHEET***

---

## ***Lithium Ion Battery***

### ***6939685***

***Number 6987365***

**cascade<sup>®</sup>**  
**corporation**

2201 NE 201st. Ave.  
Fairview, OR 97024-9718  
1-800-227-2233  
[www.cascorp.com](http://www.cascorp.com)

Cascade is a Registered Trademark of Cascade Corporation

**Model: Secondary Lithium-Ion Cell/Batteries**  
**Number: 6939685**

**NOTE:** The information and data in this Safety Data Sheet was provided to Cascade Corp through Transcell Technologies (Part no. P105550700).

Under normal conditions of use, the battery is hermetically sealed, NOT considered hazardous, Stated from the official reply of U.S. Department of Labor, Lithium-ion batteries have the potential to leak, spill, or break, cannot be considered an article that requires Safety Data Sheet. The SDS meets the requirement of the United States Occupational Safety and Health Administration (OSHA) 2012 Hazard Communication Standard 29 CFR 1910.1200.

## Section I – Identification

### Production Information

<b>Production Identity (As Used on Label and List)</b>	Lithium Ion cell/battery
<b>Recommended use of the chemical and restrictions on use</b>	

### Supplier Information

<b>Supplier's Name</b> Cascade Corporation	<b>Emergency Telephone Number</b> 1-800-227-2233
<b>Address (Number, Street, City, State, and ZIP Code)</b> 2201 NE 201st Ave, Fairview, Oregon, 97024	<b>Telephone Number for Information</b> 1-800-227-2233

### Recommended use of the chemicals:

Don't directly connect (+) and (-) of a battery to make a short circuit. Do not disassemble, heat or put the battery into fire.

## Section II – Identification

### Classification:

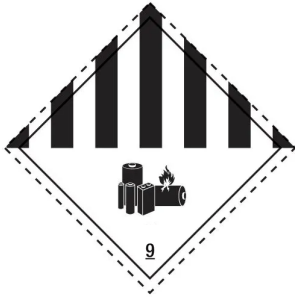

**Under normal conditions of use**, the battery is hermetically sealed, NOT considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200). It does not pose a physical hazard or health risk.

### GHS Label elements, including precautionary statements:

- i) Under normal conditions of use, the battery is hermetically sealed, no hazards are available.

GHS Label: Not applicable under normal use.

IATA Label:

	
<p><i>Class 9 Lithium Batteries DG Label</i></p>	<p><i>Lithium Battery Mark</i></p>

**Hazard Statements: Not applicable under normal use.**

### Precautionary Statements

#### Prevention:

Obtain special instructions before use

Do not handle until all safety precautions have been read and understood

Wash face, hands and any exposed skin thoroughly after handling

Keep away from heat/ sparks/ open flames/ hot surfaces. - No smoking

Do not short circuit, puncture, disassemble, incinerate, crush, immerse, force discharge or expose to temperatures above the declared operating temperature range of the product

#### Response:

In considering the potential to leak, spill or break, refer to Section IV – First aid measures

#### Storage:

Refer to Section VII – Handling and storage

#### Disposal:

The battery cell remains in the environment. Do not throw it out into the environment. Disposal of contents/ container in accordance with local regulation. Refer to section XIII - Disposal Considerations

#### Specific Hazards:

Not Available

### Section III – Composition/Information on Ingredients

Materials/Ingredients	CAS #	Approximate % of total weight
Aluminum	7429-90-5	3-6%
Copper	7440-50-8	7-13%
Carbon	7440-44-0	10-30%
Lithium Cobalt Oxide (LiCoO <sub>2</sub> )	12190-79-3	0-45%
Lithium Manganese Oxide (LiMnO <sub>2</sub> )	12057-17-9	0-20%
Lithium Nickel Manganese Cobalt Oxide(NMC)	346417-97-8	0-45%
Lithium Iron Phosphate (LiFePO <sub>4</sub> )	15365-14-7	0-55%
Lithium Nickel Cobalt Aluminum Oxide (NCA)	193214-24-3	0-45%
Ethyl methyl carbonate	96-49-1	0-10%
Dimethyl carbonate	616-38-6	1-15%
Ethylene carbonate	623-53-0	1-10%
Lithium Hexafluorophosphate (LiPF <sub>6</sub> )	21324-40-3	0.1-5%
Silicone	7440-21-3	0-1.5%
Silicone Oxide	7631-86-9	0-0.5%

### Section IV – First-aid Measures

<b>Inhalation</b>	If electrolyte vapors are inhaled, remove from exposure and provide fresh air, seek medical attention if respiratory irritation develops. Ventilate the contaminated area.
<b>Skin Contact</b>	If electrolyte leakage occurs and makes contact with skin, wash with plenty of water immediately. Remove contaminated clothing and wash before reuse. In severe cases obtain medical attention.
<b>Eye Contact</b>	If electrolyte comes into contact with eyes, wash with copious amounts of water for fifteen (15) minutes, and contact a physician.
<b>Ingestion</b>	Wash out mouth thoroughly with water and give plenty of water to drink. Obtain medical attention.

### Section V – Fire-fighting Measures

<b>Extinguishing Media</b>	Carbon Dioxide, Dry Chemical or Foam extinguishers can be used for battery BUT water extinguisher is not suitable.
<b>Unusual Fire and Explosion Hazards</b>	In case of fire, it is permissible to use Carbon Dioxide, Dry Chemical or Foam extinguishers on these cells or their packing material. Cool exterior of cells if exposed to fire to prevent rupture.
<b>Special Protective equipment and Precautions for fire-fighter</b>	Fire fighters should wear self-contained breathing apparatus.

## Section VI – Accidental Release Measures

<b>Personal Precautions, protective equipment, emergency procedures</b>	Cells that are leakage should be handled with rubber gloves. Avoid direct contact with electrolyte. Wear protective clothing. Remove personnel from area until fumes dissipate. If the skin has come into contact with the electrolyte, it should be washed thoroughly with water.
<b>Containment and Clean Up</b>	Sand or earth should be used to absorb any exuded material. Seal leaking battery and contaminated absorbent material in plastic bag and dispose of as Special Waste in accordance with local regulations.

## Section VII – Handling and Storage

<b>Precautions for Safe Handling</b>	Do not expose the battery to excessive physical shock or vibration. Short-circuiting should be avoided, however, accidental short-circuiting for a few seconds will not seriously affect the battery. Prolonged short circuits will cause the battery to rapidly lose energy, could generate enough heat to burn skin, and may cause the safety release vents of the enclosed cells to open. Sources of short circuits include jumbled batteries in bulk containers, coins, metal jewelry, metal covered tables, or metal belts used for assembly of batteries in devices. To minimize risk of short-circuiting, the protective case supplied with the battery should be used to cover the terminals when transporting or storing the battery. Do not disassemble or deform the battery. Should an individual cell within a battery become ruptured, do not allow contact with water.
<b>Conditions for Safe Storage</b>	Keep cells between -20°C and 35°C for prolong storage. When the cells are closed to fully charged, the storage temperature should be between -20°C and 30°C and should be controlled at 10°-20°C during transportation and packed with efficient air ventilation. Do not store in disorderly fashion, or allow metal objects to be mixed with stored cells.

## Section VIII – Exposure Controls/Personal Protection

**Exposure Control Limit** - Only for reference when electrolyte is leaked.

Common Chemical Name / General Name	OSHA PEL	ACGIH TLV
Aluminum metal (as Al)	TWA 15 mg/m <sup>3</sup> (total) TWA 5 mg/m <sup>3</sup> (resp)	-
Cobalt metal (As Co)	TWA 0.1 mg/m <sup>3</sup>	TWA 0.02 mg/m <sup>3</sup>
Carbon (Artificial graphite)	15 mg/m <sup>3</sup> (total) 5 mg/m <sup>3</sup> (respirable)	-
Manganese compounds (as Mn)	(Ceiling) 5 mg/m <sup>3</sup>	TWA 0.02 mg/m <sup>3</sup> (resp.)
Nickel, metal and insoluble compounds (as Ni)	TWA 1 mg/m <sup>3</sup>	Elemental: 1.5mg/m <sup>3</sup> (IHL); Insoluble inorganic compounds: 0.2mg/m <sup>3</sup> (IHL)
Copper	0.2mg/m <sup>3</sup> (fume) 1.0mg/m <sup>3</sup> (a coarse particulate, mist)	-
Organic electrolyte	-	-

TWA - Time Weighted Average

ACGIH TLV: American Conference of Governmental Industrial Hygienists Threshold Limit Value

OSHA PEL: Occupational Safety & Health Administration Permissible Exposure Limit

### Personal protective equipment

Required when electrolyte is leaked.

Respiratory protection: Protective mask

Hand protection: Protective gloves

Eye protection: Protective glasses designed to protect against liquid splashes

Skin and body protection: Working clothes with long sleeve and long trousers

### Engineering Control

No engineering measure is necessary during normal use. In case of internal leakage of cell materials, operate the local exhaust or enhance ventilation

The contents of cell are hermetically sealed.

## Section IX – Physical and Chemical Properties

<b>Appearance</b> Cylindrical or prismatic shape	<b>Odor</b> Odorless
	<b>Odor Threshold</b> NA
<b>pH</b> NA	<b>Melting Point</b> NA
<b>Initial boiling point and boiling range</b> NA	<b>Flash point</b> NA
<b>Evaporation rate</b>	<b>Flammability (solid, gas)</b> NA
	<b>Upper/lower flammability or explosive limits</b> NA
<b>Vapor pressure</b> NA	<b>Vapor density</b> NA
<b>Relative density</b> NA	<b>Solubility</b> NA
<b>Partition coefficient: n-octanol/water</b> NA	<b>Auto-ignition temperature</b> NA
<b>Decomposition temperature</b> NA	<b>Viscosity</b> NA

## Section X – Stability and Reactivity

<b>Reactivity</b>	NA
<b>Chemical stability</b>	Stable under normal use
<b>Possibility of hazardous reactions</b>	By misuse of a battery cell or the like, gas accumulates in the cell and the internal pressure rises. These gases may be emitted through the gas release vent. When fire is near, these gases may take fire. When a battery cell is heated strongly by the surrounding fire, acrid or harmful fume may be emitted.
<b>Conditions to avoid</b>	Direct sunlight, high temperature and high humidity
<b>Materials to avoid</b>	Conductive materials, water, seawater, strong oxidizers and strong acids
<b>Hazardous decomposition products</b>	Acid or harmful fume is emitted during fire.

**NOTE:** “NA” is indicated is not applicable.

## Section XI – Toxicological Information

### Route of Entry

Inhalation	NA
Skin	NA
Ingestion	Ingestion of a battery can be harmful.

### Health Hazard (Acute and Chronic)/ Toxicological Information

There is no toxicity data for Battery. The battery is nontoxic because the chemical mixture from battery is sealed by the metal container.

In case of electrolyte leakage, skin will be itchy when contaminated with electrolyte.

In contact with electrolyte can cause severe irritation and chemical burns.

Inhalation of electrolyte vapors may cause irritation of the upper respiratory tract and lungs.

## Section XII – 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.

## Section XIII – Disposal Considerations

Recommended methods for safe and environmentally preferred disposal :

### Product (waste from residues)

Do not throw out a used battery cell. Recycle it through the recycling company.

### Contaminated packaging

Neither a container nor packing is contaminated during normal use. When internal materials leaked from a battery cell contaminates them, dispose them as industrial wastes subject to special control.

**NOTE:** “NA” is indicated is not applicable.



## Section XIV – Transport Information

<b>UN Number:</b> UN3480						
<b>UN Proper Shipping Name:</b> Lithium ion batteries						
<b>UN:</b> The Transport of Dangerous Goods, Manual of Tests and Criteria 38.3 Lithium batteries						
Shipping mode	Regulation	Packing Group/ Special Provision	Limit of watt hour (Wh)	Transport Hazard Class	Environmental Hazards	Special Precautions
USA	US DOT 49 CFR Section 173-185 Lithium batteries and cells		>20Wh(cell) >100Wh(battery)	Dangerous goods, Class 9	No marine pollutant	Lithium handling label needed
			<=20Wh(cell) <=100Wh(battery)	Non-dangerous goods	No marine pollutant	Lithium handling label needed
Air	ICAO/IATA DGR 61 <sup>st</sup> edition	- PI 965 Section IA	>20Wh (cell) >100Wh (battery)	Dangerous goods, Class 9	No marine pollutant	DG Label, CAO Label needed
		- PI 965 Section IB	<=2.7, 2.7 to 20Wh (Cell); <=2.7, 2.7 to 100Wh (battery) (for that exceed allowance in Section II)			Lithium handling label, DG label, CAO label needed
		- PI 965 Section II	<=2.7, 2.7 to 20Wh (Cell); <=2.7, 2.7 to 100Wh (battery) (Only allow one package prepared per consignment)	Partially- regulated dangerous goods	No marine pollutant	Lithium handling label, CAO label needed
Sea	IMO/IMDG CODE 39-18	P9D3 SP188	>20Wh(cell) >100Wh(battery)	Dangerous goods, Class 9	No marine pollutant	Lithium handling label needed
			<=20Wh(cell) <=100Wh(battery)	Non-dangerous goods	No marine pollutant	Lithium handling label needed
Road/Rail	ADR/RID	P903 P903a	>20Wh(cell) >100Wh(battery)	Dangerous goods, Class 9	No marine pollutant	Lithium handling label needed
		P903b	<=20Wh(cell) <=100Wh(battery)	Non-dangerous goods	No marine pollutant	Lithium handling label needed

- a) In general, all batteries in all forms of transportation (ground, air, or ocean) must be packaged in a safe and responsible manner. Regulatory concerns from all agencies for safe packaging require that batteries be packaged in a manner that prevents short circuits and be contained in “strong outer packaging” that prevents spillage of contents. All original packaging for GP Lithium ion batteries (sometimes referred to as “Lithium ion battery”) has been designed to be compliant with these regulatory concerns.

Rechargeable lithium ion batteries (UN 3480), are forbidden for transportation aboard passenger-carrying aircraft. Such batteries transported in accordance with Section IA, 1B & II of Packing Instruction 965 must be labeled with the CARGO AIRCRAFT ONLY label. Lithium ion cells and batteries must be offered for transport at a state of charge (SoC) not exceeding 30% of their rated design capacity.

- b) International Maritime Organization (IMO) IMDG Code regulated these products as UN 3480, Lithium ion batteries, Class 9 dangerous goods with Special Provision 188 and Packing Instruction 903 assigned.

Transport of Lithium ion batteries contained in equipment or Lithium ion batteries packed with equipment have to follow the appropriate regulations for UN3481. PI967, PI966 should be followed accordingly for Air Transport.

## **Section XV – Regulatory Information**

Special requirement be according to the local regulations.

## **Section XVI – Other Information**

The data in this Safety Data Sheet relates only to the specific material designated herein. However, the data is provided without any warranty; expressed or implied, regarding its correctness or accuracy. It is the user's responsibility to assume liability on loss, injury, damage, or expense resulting from improper use of this product. Any previous MSDS of this product mentioned above are hereby replaced with this new document. We urge you to make this information available as appropriate in your organization and to any others with whom you arrange to handle this product.

**Prepared by:**

Cascade Technical Communications

Date: 6/02/2023

BLANK

**Do you have questions you need answered right now?**

Call your nearest Cascade Service Department.

Visit us online at [www.cascorp.com](http://www.cascorp.com)

**AMERICAS**

**Cascade Corporation  
U.S. Headquarters**

2201 NE 201st  
Fairview, OR 97024-9718  
Tel: 800-CASCADE (227-2233)  
Fax: 800-693-3768

**Cascade Canada Inc.**

5570 Timberlea Blvd.  
Mississauga, Ontario  
Canada L4W-4M6  
Tel: 905-629-7777  
Fax: 905-629-7785

**Cascade México**

Almacén Dicex PDN  
Libramiento Noroeste  
4001 Km 27.5  
Parque Industrial Puerta del Norte  
Escobedo N.L 66050  
México  
Tel: 800-CASCADE (227-2233)

**Cascade Brasil**

Av. Casa Grande, 850  
Casa Grande, Diadema SP,  
09961-350  
Tel: +55 11 4930-9800

**Anval – Cascade Distributor**

Av. El Ventisquero 1225,  
Bodega 99,  
Renca – Santiago, Chile  
8661516  
Tel: +56 2 29516907

**EUROPE-AFRICA**

**Cascade Italia S.R.L.  
European Headquarters**

Via Dell'Artigianato 1  
37030 Vago di Lavagno (VR)  
Italy  
Tel: 39-045-8989111  
Fax: 39-045-8989160

**Cascade (Africa) Pty. Ltd.**

PO Box 625, Isando 1600  
60A Steel Road  
Sparton, Kempton Park  
South Africa  
Tel: 27-11-975-9240  
Fax: 27-11-394-1147

**ASIA-PACIFIC**

**Cascade Japan Ltd.**

2-23, 2-Chome,  
Kukuchi Nishimachi  
Amagasaki, Hyogo  
Japan, 661-0978  
Tel: 81-6-6420-9771  
Fax: 81-6-6420-9777

**Cascade Korea**

121B 9L Namdong Ind.  
Complex, 691-8 Gojan-Dong  
Namdong-Ku  
Inchon, Korea  
Tel: +82-32-821-2051  
Fax: +82-32-821-2055

**Cascade-Xiamen**

No. 668 Yangguang Rd.  
Xinyang Industrial Zone  
Haicang, Xiamen City  
Fujian Province  
P.R. China 361026  
Tel: 86-592-651-2500  
Fax: 86-592-651-2571

**Cascade India Material  
Handling Pvt Ltd**

Gat. No. 319/1 & 319/2, Village Kuruli,  
Taluka Khed, Pune 410 501  
Maharashtra, India  
Tel: +91 77200 25745

**Cascade Australia Pty. Ltd.**

36 Kiln Street  
Darra QLD 4076  
Australia  
Tel: 1-800-227-223  
Fax: +61 7 3373-7333

**Cascade New Zealand**

9 Blackburn Rd  
East Tamaki, Auckland  
New Zealand  
Tel: +64-9-273-9136

**Sunstream Industries Pte. Ltd. –  
Cascade Distributor**

18 Tuas South Street 5  
Singapore 637796  
Tel: +65-6795-7555  
Fax: +65-6863-1368

