

S *AFETY DATA SHEET*

Lithium Ion Battery 8303151

Number 6915328-R1

**cascade[®]
corporation**

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Fairview, OR 97024-9718
1-800-227-2233
www.cascorp.com

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**Model: Lithium Ion Battery – Rechargeable
 Number: 8303151**

Prepared by	Approved by
Steve Wittkop	Greg Nagle
Date: October 30, 2018	Date: October 30, 2018

Section I – Identification

Information of Product

Product Identity (As Used on Label and List)	Lithium Ion cell
Recommended use of the chemical and restrictions on use	

Information of Manufacturer

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

Section II – Hazards Identification

During normal use, no physical danger of ignition or explosion and chemical danger of leakage of hazardous material. In the condition of over-abusive use, the safety vent will open. Hence, hazardous materials may come out.

If the electrolyte reacts with water, it will generate hydrogen fluoride. Do not expose to fire, as the leaked electrolyte is inflammable substance.

Section III – Composition/Information on Ingredients

Chemistry: Lithium Cobalt oxide

Material/Ingredients	CAS #	Approximate % of total weight
Aluminum	7429-90-5	3-6%
Artificial Graphite	7740-44-0	10-20%
Copper	7440-50-8	7-10%
Iron	7439-89-6	0-25%
Lithium Cobaltate (LiCoO ₂)	12190-79-3	35-55%
Organic electrolyte (ethylene carbonate, ethyl methyl carbonate)	623-53-0, 96-49-1	10-20%

Material/Ingredients	CAS #	Approximate % of total weight
Aluminum	7429-90-5	3-6%
Artificial Graphite	7740-44-0	16-20%
Copper	7440-50-8	7-10%
Iron	7439-89-6	0-25%
Lithium Mixed Metal Oxide (LiMO ₂)	N.A.	30-50%
Lithium Cobaltate (LiCoO ₂)	12190-79-3	0-10%
Lithium Manganate (LiMn ₂ O ₄)	12057-17-9	0-10%
Organic electrolyte (ethylene carbonate, ethyl methyl carbonate)	623-53-0, 96-49-1	10-20%

M = One metal or a combination of metals (Co, Mn, Ni or Al)

Chemistry: Lithium Iron Phosphate

Material/Ingredients	CAS #	Approximate % of total weight
Aluminum	7429-90-5	3-6%
Artificial Graphite	7740-44-0	10-20%
Copper	7440-50-8	7-10%
Iron	7439-89-6	0-25%
Lithium Iron Phosphate	15365-14-17	35-55%
Organic electrolyte (ethylene carbonate, ethyl methyl carbonate)	623-53-0, 96-49-1	10-20%

Section IV – First-aid Measures

Inhalation	If electrolyte vapors are inhaled, remove from exposure and provide fresh air, seek medical attention if respiratory irritation develops. Ventilate the contaminated area.
Skin Contact	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.
Eye Contact	If electrolyte comes into contact with eyes, wash with copious amounts of water for fifteen (15) minutes, and contact a physician.
Ingestion	Wash out mouth thoroughly with water and give plenty of water to drink. Obtain medical attention.

Section V – Fire-fighting Measures

Extinguishing Media	Carbon Dioxide, Dry Chemical or Foam extinguishers can be used for battery BUT water extinguisher is not suitable.
Unusual Fire and Explosion Hazards	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.
Special Protective equipment and Precautions for fire-fighters	Fire fighters should wear self-contained breathing apparatus.

Section VI – Accidental Release Measures

Personal Precautions, protective equipment, emergency procedures	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.
Containment and Clean Up	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

Precautions for Safe Handling	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.
Conditions for Safe Storage	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

Common chemical name / General name	ACGIH (2002)	
	TLV-TWA	BEI
Aluminum	10mg/m ³ (metal coarse particulate) 5mg/m ³ (flammable powder) 5mg/m ³ (weld fume)	N.A.
Carbon (Artificial graphite)	2mg/m ³ (inhalant coarse particulate)	N.A.
Copper	0.2mg/m ³ (fume) 1.0mg/m ³ (a coarse particulate, mist)	N.A.
Lithium cobaltate (LiCoO ₂)	0.02mg/m ³ (as cobalt)	N.A.
Organic electrolyte	N.A.	N.A.

ACGIH: American Conference of Governmental Industrial Hygienists, Inc.

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

BEI: Biological Exposure Indices

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.

Personal Protective Equipment

Respiratory protection: Respirator with air cylinder, dust mask

Hand protection: Protective gloves

Eye protection: Goggle or protective glasses designed to protect against liquid splashes

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

Section IX – Physical and Chemical Properties

Appearance Cylindrical or prismatic shape	Odor Odorless Odor Threshold
pH	Melting point/freezing point
Initial boiling point and boiling range N.A.	Flash point N.A.
Evaporation rate N.A. N.A.	Flammability (solid, gas) N.A.
Partition coefficient: n-octanol/water	Auto-ignition temperature N.A.
Decomposition temperature	Viscosity N.A.

Section X – Stability and Reactivity

Reactivity	
Chemical stability	Stable
Possibility of hazardous reactions	
Conditions to avoid	
Incompatible materials	
Hazardous decomposition products	Will Not Occur

Section XI – Toxicological Information

Routes of Exposure

Inhalation	may cause irritation of the upper respiratory tract and lungs
Ingestion	In contact with electrolyte can cause severe irritation and chemical burns
Skin	skin will be itchy when contaminated with electrolyte
Eye Contact	In case of electrolyte vapor or splash, eye contact causes inflammation.

Symptoms and Effects

N.A.

Section XII – Ecological Information (Non-mandatory)

Do not bury or throw out into the environment as a cell and the internal materials remain in the environment.

Section XIII – Disposal Considerations (Non-mandatory)

Dispose of cells according to government regulations.

Section XIV – Transport Information (Non-mandatory)

UN No.	Shipping modes	Regulations	Packing instructions	Limit of Wh	Classification	Lithium handling label	Class 9 DG label
UN3480	USA	US Department of Transportation of Hazardous Substances (HMR)		<=20Wh(cell) <=100Wh(battery)	Non-dangerous goods	Needed	Not necessary
	Air	ICAO/IATA DGR 56 th edition	PI965 Section IB	IB: 2.7 to <20Wh (>8 cells) (cell) IB: 2.7 to <100Wh (>2 batteries) (battery)	Dangerous goods	Needed	Necessary
	Sea	IMO/IMDG Code 36-12	P903 SP188	<=20Wh(cell) <=100Wh(battery)	Non-dangerous goods	Needed	Not necessary
	Road/Rail	ADR / RID	P903 P903a P903b	<=20Wh(cell) <=100Wh(battery)	Non-dangerous goods	Needed	Not necessary

Section XV – Regulatory Information (Non-mandatory)

Special requirement be according to the local regulatoryies.

Section XVI – Other Information (Non-mandatory)

The data in this Material Safety Data Sheet relates only to the specific material designated herein.

Do you have questions you need answered right now?

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