

**13/625/757 - Lithium-ion battery**

Material number 013/625/757

Page: 1 of 10

**1. Product and company identification****Product identifier**

Trade name: 13/625/757 - Lithium-ion battery

**Relevant identified uses of the substance or mixture and uses advised against**General use: Lithium-ion battery for orthopedic procedures  
For commercial user only.**Details of the supplier of the safety data sheet**Company name: Otto Bock Health Care  
Street/POB-No.: 3820 W. Great Lakes Drive  
Postal Code, city: Salt Lake City, UT 84120  
USA

WWW: www.ottobockus.com

Telephone: +1 (801) 956-2400

Telefax: +1 (801) 956-2401

Dept. responsible for information:

Quality Department,  
Telephone: +1 (801) 954-2304 (7 AM – 3 PM, Mountain Time),  
Email: USRegulatory@ottobock.com

Additional information: This safety data sheet pertains to the following products:

13E210 - Power Pack für DynamicArm  
625B11 - Lithium-Ion Akkupack für Kniegelenk  
757B35=3 - MyoEnergy Integral  
757VAB1 - VASI Li-Ion Batterie  
Corporate headquarters:  
Ottobock SE & Co. KGaA  
Max-Näder-Straße 15  
Duderstadt  
Germany**Emergency phone number****CHEMTREC, Telephone: +1 (800) 424-9300****Transport:****CONSULTANK Lutz Harder GmbH (Contract QUALI003)****Telephone: +49 (0)178-4337434 (from USA: 01149 178 4337434)****2. Hazards identification****Emergency overview**

Appearance: Form: solid

Odor: odorless

Classification: This material is classified as not hazardous.

**Regulatory status**

This material is not considered hazardous by the U.S. OSHA Hazard Communication Standard (29 CFR 1910.1200) and SIMDUT in Canada.

**Hazards not otherwise classified**

The battery is hermetically sealed.

danger of releasing ingredients, mentioned in section 3, by damaging the battery

- with strong mechanical action,
- in case of heating and/or Fire,
- with influence of water,
- short circuit.

Hazard statements:

Limited evidence of a carcinogenic effect. May cause sensitization by skin contact.

Electrolyte, organic:

Flammable. Vapors irritate eyes, mucous membranes and respiratory system. Vapors may cause drowsiness and dizziness.

After contact with water: formation of Hydrogen fluoride (Fatal in contact with skin. Fatal if swallowed. Fatal if inhaled. Causes severe skin burns and eye damage.).

see section 11: Toxicological information

**3. Composition / Information on ingredients**

Chemical characterization: Lithium-ion battery - Article.

The chemical materials are stored in a hermetically sealed metal case.

Contains Aluminium (10 - 40%), Graphite (10 - 20%), Carbon (10 - 20%), Copper (5 - 15%).

Relevant ingredients:

CAS No.	Designation	Content	Classification
CAS 12190-79-3	Cobalt lithium dioxide	20 - 40 %	Respiratory Sensitizer - Category 1. Sensitization - skin - Category 1. Carcinogenicity - Category 2. Aquatic toxicity - chronic - Category 4.
CAS -	Electrolyte, organic	5 - 20 %	Flammable Liquid - Category 3.

**4. First aid measures**

General information: In case of damaged battery cases: Release of dangerous ingredients possible.  
In case of heating: Generates dangerous gases or fumes in contact with.

In case of inhalation: In case of damaged battery cases:  
Provide fresh air. Keep victim at rest in half upright position. Seek medical attention.

Following skin contact: In case of damaged battery cases / In case of exposure to hazardous ingredients:  
Clean with plenty of water. If possible, also wash with polyethylene glycol 400.  
Take off immediately all contaminated clothing.

After eye contact: In case of damaged battery cases / In case of exposure to hazardous ingredients:  
Immediately flush eyes with plenty of flowing water for 10 to 15 minutes holding eyelids apart. Afterwards, consult an ophthalmologist immediately.

After swallowing: Induce vomiting when the affected person is not unconscious.

In case of damaged battery cases / In case of exposure to hazardous ingredients:  
Drink large quantities of water.

Do not induce vomiting. Risk of perforation in case of vomiting!  
Immediately get medical attention. Do not try to neutralize.

**13/625/757 - Lithium-ion battery**

Material number 013/625/757

Page: 3 of 10

**Most important symptoms/effects, acute and delayed**

No hazardous reaction when handled and stored according to provisions.  
In case of damaged battery cases / In case of exposure to hazardous ingredients:  
May cause an allergic skin reaction. Irritation. May cause drowsiness or dizziness.

**Information to physician**

Treat symptomatically.

**5. Fire fighting measures**

Flash point/flash point range:

No data available

Auto-ignition temperature: No data available

Suitable extinguishing media:

Dry chemical powder, Extinguishing agent on the basis of sodium chloride, sodium hydrogen carbonate, limestone, or with metal extinguishing powder.

Extinguishing media which must not be used for safety reasons:

Water, foam.

**Specific hazards arising from the chemical**

In case of fire may be liberated: hydrogen fluoride, carbon monoxide and carbon dioxide.

Protective equipment and precautions for firefighters:

Wear a self-contained breathing apparatus and chemical protective clothing.

**6. Accidental release measures**

Personal precautions: In case of damaged battery cases:

Remove all sources of ignition.

Provide fresh air. Avoid contact with skin and eyes.

Wear suitable gloves.

In case of development of vapors or dust:

Do not inhale vapors or dust particles.

Environmental precautions:

Discharge into the environment must be avoided.

Methods for clean-up:

Take up mechanically. Dispose of waste according to applicable legislation.

Electrolyte, organic: Absorb with liquid-binding material (e.g. sand, diatomaceous earth, acid- or universal binding agents) and place in closed containers for disposal. Final cleaning.

**7. Handling and storage****Handling**

Advices on safe handling: Provide adequate ventilation, and local exhaust as needed.

Avoid damage to the battery casing.

In case of damaged battery cases: Avoid exposure.

Precautions against fire and explosion:

Avoid short circuit. Avoid damage to the battery casing.

In case of damaged battery cases: Remove all sources of ignition.

**Storage**

Requirements for storerooms and containers:

- Provide adequate ventilation. Store in a dry place.
- Protect from: humidity, heat, UV-radiation/sunlight.
- Storage temperature: -68 °F up to 95 °F.
- Air humidity: 45% up to 85%.

Hints on joint storage: Do not store together with strong acids, strong oxidizing agents.

**8. Exposure controls / personal protection**

**Exposure guidelines**

Occupational exposure limit values:

CAS No.	Designation	Type	Limit value
12190-79-3	Cobalt lithium dioxide	USA: ACGIH: TWA	0.005 ppm
		USA: ACGIH: TWA	0.02 mg/m <sup>3</sup>
		USA: NIOSH: TWA	0.05 mg/m <sup>3</sup>
		USA: OSHA: TWA	0.1 mg/m <sup>3</sup>
7429-90-5	Aluminium	NIOSH: Ceiling	5 mg/m <sup>3</sup>
		USA: ACGIH: TWA	1 mg/m <sup>3</sup>
		USA: NIOSH: TWA	10 mg/m <sup>3</sup>
		USA: NIOSH: TWA	5 mg/m <sup>3</sup>
		USA: OSHA: TWA	15 mg/m <sup>3</sup>
7782-42-5	Graphite	USA: OSHA: TWA	5 mg/m <sup>3</sup>
		USA: ACGIH: TWA	2 mg/m <sup>3</sup>
		USA: NIOSH: TWA	2.5 mg/m <sup>3</sup>
		USA: OSHA: TWA	15 mg/m <sup>3</sup>
		USA: OSHA: TWA	15 mppcf
7440-44-0	Carbon	USA: OSHA: TWA	5 mg/m <sup>3</sup>
		USA: OSHA: TWA	15 mg/m <sup>3</sup>
		USA: OSHA: TWA	5 mg/m <sup>3</sup>
7440-50-8	Copper	USA: ACGIH: TWA	0.2 mg/m <sup>3</sup>
		USA: ACGIH: TWA	1 mg/m <sup>3</sup>
		USA: NIOSH: TWA	1 mg/m <sup>3</sup>
		USA: OSHA: TWA	0.1 mg/m <sup>3</sup>
		USA: OSHA: TWA	1 mg/m <sup>3</sup>

Biological limit values:

CAS No.	Designation	Type	Limit value	Parameter	Sampling
12190-79-3	Cobalt lithium dioxide	USA: ACGIH-BEI, urine	15 µg/L	Cobalt; not combined with Tungsten Carbide	end of shift at end of workweek

Additional information: The chemical materials are stored in a sealed battery case.

**Engineering controls**

- In case of damaged battery cases: Provide adequate ventilation.
- In case of development of vapors or dust: The use of local exhaust ventilation is recommended.
- See also information in chapter 7, section storage.

**Personal protection equipment (PPE)**

- Eye/face protection     In case of damaged battery cases:  
Tightly sealed goggles according to OSHA Standard - 29 CFR: 1910.133 or ANSI Z87.1-2010.
- Skin protection         In case of damaged battery cases:  
Protective gloves according to OSHA Standard - 29 CFR: 1910.138.  
Glove material: rubber - breakthrough time >480 min.  
Observe glove manufacturer's instructions concerning penetrability and breakthrough time.
- Respiratory protection: In case of damaged battery cases:  
Respiratory protection must be worn whenever the TLV (WEL) levels have been exceeded.  
Half mask with particle filter P according to OSHA Standard - 29 CFR: 1910.134 or ANSI Z88.2.  
If necessary: When vapors form combination filter Use filter type A, B, K according to OSHA Standard - 29 CFR: 1910.134 or ANSI Z88.2.
- General hygiene considerations:  
In case of damaged battery cases:  
Do not inhale vapors or dust particles.  
Avoid contact with skin and eyes.  
Keep away from sources of ignition - No smoking.  
Wash hands before breaks and after work.

**9. Physical and chemical properties**

**Information on basic physical and chemical properties**

- Appearance:                     Form: solid
- Odor:                                odorless
- Odor threshold:                 No data available
  
- pH value:                         No data available
- Melting point/freezing point: No data available
- Initial boiling point and boiling range: No data available
- Flash point/flash point range: No data available
- Evaporation rate:                No data available
- Flammability:                    No data available
- Explosion limits:                 No data available
- Vapor pressure:                 No data available
- Vapor density:                  No data available
- Density:                          No data available
- Solubility:                        No data available
- Partition coefficient: n-octanol/water: No data available
- Auto-ignition temperature:    No data available
- Thermal decomposition:        No data available
  
- Additional information:         No data available

**10. Stability and reactivity**

- Reactivity:                        No data available

Chemical stability: Stable under recommended storage conditions.

Possibility of hazardous reactions

Fire hazard in case of technical defects.  
 In case of damaged battery cases:  
 Electrolyte, organic: Flammable.  
 After contact with water: formation of Hydrogen fluoride.

Conditions to avoid:

> 212 °F: Generation of heat. Ignition.  
 Protect from: humidity, water, marine water, heat, UV-radiation/sunlight  
 Avoid short circuit. Avoid damage to the battery casing.  
 In case of damaged battery cases:  
 Keep away from sources of ignition - No smoking. Protect from: water.

Incompatible materials:

Keep away from strong acids and strong oxidizing agents.  
 In case of damaged battery cases:  
 Electrolyte, organic: Keep away from water.

Hazardous decomposition products:

In case of fire may be liberated: hydrogen fluoride, carbon monoxide and carbon dioxide.

Thermal decomposition:

No data available

## 11. Toxicological information

### Toxicological tests

Toxicological effects:

Acute toxicity (oral): Lack of data.  
 Acute toxicity (dermal): Lack of data.  
 Acute toxicity (inhalative): Lack of data.  
 Skin corrosion/irritation: Lack of data.  
 Serious eye damage/irritation: Lack of data.  
 Sensitisation to the respiratory tract: Lack of data.  
 Skin sensitisation: Lack of data.  
 Germ cell mutagenicity/Genotoxicity: Lack of data.  
 Carcinogenicity: Lack of data.  
 Reproductive toxicity: Lack of data.  
 Effects on or via lactation: Lack of data.  
 Specific target organ toxicity (single exposure): Lack of data.  
 Specific target organ toxicity (repeated exposure): Lack of data.  
 Aspiration hazard: Lack of data.

Other information:

In case of damaged battery cases:  
 cobalt lithium dioxide:  
 Limited evidence of a carcinogenic effect. May cause sensitization by skin contact.  
 (Cobalt: LDLo Guinea pig oral 20 mg/kg)  
 Electrolyte, organic:  
 Vapors irritate eyes, mucous membranes and respiratory system.  
 Vapors may cause drowsiness and dizziness.  
 After contact with water: formation of Hydrogen fluoride (Fatal in contact with skin. Fatal if swallowed. Fatal if inhaled. Causes severe skin burns and eye damage.).

**13/625/757 - Lithium-ion battery**

Material number 013/625/757

Page: 7 of 10

**12. Ecological information****Ecotoxicity**

Further details: No data available

**Mobility in soil**

No data available

**Persistence and degradability**

Further details: Product is not biodegradable.

**Additional ecological information**

General information: Discharge into the environment must be avoided.

**13. Disposal considerations****Product**

Recommendation: Dispose of waste according to applicable legislation.

**Contaminated packaging**Recommendation: Dispose of waste according to applicable legislation.  
Packing can be recycled or disposed of.**14. Transport information****USA: Department of Transportation (DOT)**

Identification number: UN3090  
Proper shipping name: UN 3090, UN 3090, Lithium metal batteries  
Hazard class or Division: 9  
Labels: 9  
Packaging – Exceptions: 185  
Packaging – Non-bulk: 185  
Packaging – Bulk: 185  
Quantity limitations – Passenger aircraft / rail: Forbidden  
Quantity limitations – Cargo only: 35 kg  
Vessel stowage – Location: A



**13/625/757 - Lithium-ion battery**

Material number 013/625/757

Page: 8 of 10

**Sea transport (IMDG)**

UN number: UN 3480  
Proper shipping name: UN 3480, LITHIUM ION BATTERIES  
Class or division, Subsidiary risk: Class 9, Subrisk -  
Packing Group: -  
EmS: F-A, S-I  
Special provisions: 188, 230, 310, 348, 376, 377, 384  
Limited quantities: 0  
Excepted quantities: E0  
Contaminated packaging - Instructions: P903, P908, P909, P910, LP903, LP904  
Contaminated packaging - Provisions: -  
IBC - Instructions: -  
IBC - Provisions: -  
Tank instructions - IMO: -  
Tank instructions - UN: -  
Tank instructions - Provisions: -  
Stowage and handling: Category A. SW19  
Properties and observations: Electrical batteries containing lithium ion encased in a rigid metallic body. Lithium ion batteries may also be shipped in or packed with equipment. Electrical lithium batteries may cause fire due to an explosive rupture of the body caused by improper construction or reaction with contaminants.  
Marine pollutant: no  
Segregation group: none

**Air transport (IATA)**

UN/ID number: UN 3480  
Proper shipping name: UN 3480, LITHIUM ION BATTERIES  
Class or division, Subsidiary risk: Class 9  
Hazard label: Miscellaneous Lithium batt  
Excepted Quantity Code: E0  
Passenger and Cargo Aircraft: Ltd.Qty.: Forbidden  
Passenger and Cargo Aircraft: Forbidden  
Cargo Aircraft only: Pack.Instr. See 965 - Max. Net Qty/Pkg. See 965  
Special provisions: A88 A99 A154 A164 A183 A201 A206 A331  
Emergency Response Guide-Code (ERG): 9F



**15. Regulatory information**

**National regulations - U.S. Federal Regulations**

Cobalt lithium dioxide: TSCA Inventory: listed  
TSCA HPVC: not listed

Aluminium: TSCA Inventory: listed  
TSCA HPVC: not listed  
Other Environmental Laws:  
SARA Title III Section 313, Toxic Release: Conc. 1.0% / Threshold Standard  
NIOSH Recommendations:  
Occupational Health Guideline: 0022

Graphite: TSCA Inventory: listed  
TSCA HPVC: not listed  
NIOSH Recommendations:  
Occupational Health Guideline: 0306

Carbon: TSCA Inventory: listed  
TSCA HPVC: not listed  
NIOSH Recommendations:  
Occupational Health Guideline: 0307

Copper: TSCA Inventory: listed  
TSCA HPVC: not listed  
Clean Water Act:  
Priority Pollutant: yes  
Other Environmental Laws:  
CERCLA: RQ 5000\* lbs.  
Marine Pollutant: listed as severe pollutant.  
RCRA Groundwater Monitoring: Methods 6010, 7210 / PQL 60, 200  
SARA Title III Section 313, Toxic Release: Conc. 1.0% / Threshold Standard  
NIOSH Recommendations:  
Occupational Health Guideline: 0150\*

**National regulations - U.S. State Regulations**

Cobalt lithium dioxide: California Proposition 65:  
cancer  
Rhode Island HSL: listed

**National regulations - Great Britain**

Hazchem-Code: 4W

**16. Other information**

Hazard rating systems:



NFPA Hazard Rating:  
Health: 0 (Minimal)  
Fire: 1 (Slight)  
Reactivity: 0 (Minimal)

HMIS Version III Rating:  
Health: 0 (Minimal)  
Flammability: 1 (Slight)  
Physical Hazard: 0 (Minimal)  
Personal Protection: X = Consult your supervisor  
in case of damaged battery cases: NFPA/HMIS: F2

HEALTH	0
FLAMMABILITY	1
PHYSICAL HAZARD	0
	X



# SAFETY DATA SHEET

in accordance with 29 CFR 1910.1200 and ANSI standard Z400.1-2010

## 13/625/757 - Lithium-ion battery

Material number 013/625/757

Revision date: 3/22/2018

Version: 9

Language: en-US

Date of print: 5/4/2018

Page: 10 of 10

Reason of change: Changes in section 1.3: Corporate headquarters

Date of first version: 10/26/2010

### Department issuing data sheet

Contact person: see section 1: Dept. responsible for information

The information in this data sheet has been established to our best knowledge and was up-to-date at time of revision. It does not represent a guarantee for the properties of the product described in terms of the legal warranty regulations.