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.

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/m³
		USA: NIOSH: TWA	0.05 mg/m³
		USA: OSHA: TWA	0.1 mg/m³
7429-90-5	Aluminium	NIOSH: Ceiling	5 mg/m³
		USA: ACGIH: TWA	1 mg/m³
		USA: NIOSH: TWA	10 mg/m³
		USA: NIOSH: TWA	5 mg/m³
		USA: OSHA: TWA	15 mg/m³
		USA: OSHA: TWA	5 mg/m³
7782-42-5	Graphite	USA: ACGIH: TWA	2 mg/m³
		USA: NIOSH: TWA	2.5 mg/m³
		USA: OSHA: TWA	15 mg/m³
		USA: OSHA: TWA	15 mppcf
		USA: OSHA: TWA	5 mg/m³
7440-44-0	Carbon	USA: OSHA: TWA	15 mg/m³
		USA: OSHA: TWA	5 mg/m³
7440-50-8	Copper	USA: ACGIH: TWA	0.2 mg/m³
		USA: ACGIH: TWA	1 mg/m³
		USA: NIOSH: TWA	1 mg/m³
		USA: OSHA: TWA	0.1 mg/m³
		USA: OSHA: TWA	1 mg/m³

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.).

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

Sea transport (IMDG)

UN number:	UN 3480
Proper shipping name:	UN 3480, LITHIUM ION BATTERIES
Class or division, Subsidary 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 explusive 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, Subsidary 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

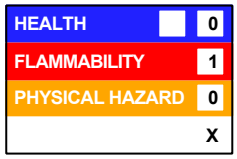
16. Other information

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



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.

1. Product and company identification

Product identifier

Trade name: 625/757 - lithium-ion battery

This safety data sheet pertains to the following products:
625B5-1 - Lithium-Ion Accumulator 2500mAh
625B2-4 - Lithium-Ion Accumulator 2500mAh
757B20 - OTTO BOCK EnergyPack
757B20-1 - OTTO BOCK EnergyPack
757B20-2 - OTTO BOCK EnergyPack
757B20-3 - OTTO BOCK EnergyPack
757B21 - OTTO BOCK EnergyPack
757B21-1 - OTTO BOCK EnergyPack
757B21-2 - OTTO BOCK EnergyPack
757B21-3 - OTTO BOCK EnergyPack
757B500 - Li-Ion Zelle UR-18500 konfektioniert kl./gr. (varying colors)
757B501 - 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: 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.
Information about electrolyte, organic, CAS No. - :
Flammable liquid and vapor. After contact with water: Formation of Hydrogen fluoride. Vapors irritate eyes, mucous membranes and respiratory system. Vapors may cause drowsiness and dizziness.
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 Iron (15-25%), Graphite and Carbon (10-20%), Copper (5-15%), Aluminium (2-6%).
Possibly contains Polyvinylidene fluoride.

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	10 - 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: development of gas/vapor possible.

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:
Immediately clean with water and soap and, if available, apply a generous amount of polyethylene glycol 400 or protective hand cream.
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: 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.

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. Vapors may cause drowsiness and dizziness. Other symptoms: respiratory complaints, irritation.

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.
Only in case of small fires: fire extinguisher class D, metal fire extinguisher.

Extinguishing media which must not be used for safety reasons:
Water, foam.

Specific hazards arising from the chemical

> 212 °F: Generation of heat. Ignition.
In case of fire may be liberated: Toxic metal oxide smoke, toxic gases/vapours, 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:
Eliminate all ignition sources if safe to do so.
Provide fresh air. Avoid exposure.
Wear appropriate protective equipment.
In case of development of vapors or dust:
Do not inhale vapors or dust particles.

Environmental precautions:
Product contains heavy metals. Discharge into the environment must be avoided. Special pre-treatment is necessary.

Methods for clean-up: Take up mechanically. Dispose of waste according to applicable legislation.
Avoid generation of dust.

Information about electrolyte, organic, CAS No. - :
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: Eliminate all ignition sources if safe to do so.

Storage

Requirements for storerooms and containers:
Provide adequate ventilation. Store in a dry place.
Protect from: humidity, heat, UV-radiation/sunlight

Storage temperature: -4 °F up to 95 °F.
Air humidity: 45% up to 80%.

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/m³
		USA: NIOSH: TWA	0.05 mg/m³
		USA: OSHA: TWA	0.1 mg/m³
7782-42-5	Graphite	USA: ACGIH: TWA	2 mg/m³
		USA: NIOSH: TWA	2.5 mg/m³
		USA: OSHA: TWA	15 mg/m³
		USA: OSHA: TWA	15 mppcf
		USA: OSHA: TWA	5 mg/m³
7440-50-8	Copper	USA: ACGIH: TWA	0.2 mg/m³
		USA: ACGIH: TWA	1 mg/m³
		USA: NIOSH: TWA	1 mg/m³
		USA: OSHA: TWA	0.1 mg/m³
		USA: OSHA: TWA	1 mg/m³
7429-90-5	Aluminium	NIOSH: Ceiling	5 mg/m³
		USA: ACGIH: TWA	1 mg/m³
		USA: NIOSH: TWA	10 mg/m³
		USA: NIOSH: TWA	5 mg/m³
		USA: OSHA: TWA	15 mg/m³
		USA: OSHA: TWA	5 mg/m³

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: Respiratory protection must be worn whenever the TLV (WEL) levels have been exceeded. The filter class must be suitable for the maximum contaminant concentration (gas/vapor/aerosol/particulates) that may arise when handling the product. If the concentration is exceeded, closed-circuit breathing apparatus must be used!

General hygiene considerations:
In case of damaged battery cases:
Do not inhale vapors or dust particles.
Avoid exposure.
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:
Flammable liquid and vapor. (Electrolyte)
After contact with water: formation of Hydrogen fluoride.

Conditions to avoid: > 212 °F: Generation of heat. Ignition.
Protect from: humidity, 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.

Incompatible materials: Keep away from strong acids and strong oxidizing agents.
In case of damaged battery cases: Keep away from water.

Hazardous decomposition products:

In case of fire may be liberated: Toxic metal oxide smoke, 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.
Information about electrolyte, organic, CAS No. - :
Vapors irritate eyes, mucous membranes and respiratory system.
Vapors may cause drowsiness and dizziness.

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: Product contains heavy metals. Discharge into the environment must be avoided. Special pre-treatment is necessary.

13. Disposal considerations

Product

Recommendation:

Product contains Metallic oxides containing heavy metals.
Recycling or special waste incineration.

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

Sea transport (IMDG)

UN number:	UN 3480
Proper shipping name:	UN 3480, LITHIUM ION BATTERIES
Class or division, Subsidary 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 explusive 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, Subsidary 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

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

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*

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

National regulations - U.S. State Regulations

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

National regulations - Great Britain

Hazchem-Code: 4W

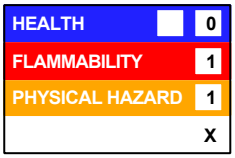
16. Other information

Hazard rating systems:

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

HMIS Version III Rating:
Health: 0 (Minimal)
Flammability: 1 (Slight)
Physical Hazard: 1 (Slight)
Personal Protection: X = Consult your supervisor

In case of damaged battery cases: NFPA/HMIS: F2



Reason of change: Changes in section 1.3: Corporate headquarters

Date of first version: 10/8/2010

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.