

1. Identification

Product identifier

Trade name: 4G520 - Akku 7.4V Li-Ion

This safety data sheet pertains to the following products:

4G520 - Akku 7.4V Li-Ion

4G520=2 - Akku 7.4V Li-Ion

4G520=3 - Akku 7.2V Li-Ion

Relevant identified uses of the substance or mixture and uses advised against

General use: Lithium-ion battery (7,4V 800 mAh) 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

Zip code, city: Salt Lake City, UT 84120

USA

WWW: www.ottobockus.com

Telephone: +1 (801) 956-2400

Telefax: +1 (801) 956-2401

Department 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 telephone 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. Hazard identification

Classification of the substance or mixture

Article not subject to hazard labelling or classification.

Label elements

not applicable

Other hazards

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:

May cause cancer. May cause damage to organs. May cause allergy or asthma symptoms or breathing difficulties if inhaled. 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.).

3. Composition/information on ingredients

Mixtures

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	Concentration	Classification
CAS 12190-79-3	Cobalt lithium dioxide	< 50 %	Respiratory Sensitizer - Category 1. Sensitization - skin - Category 1. Carcinogenicity - Category 2.
CAS 12057-17-9	Lithium manganese oxide	< 50 %	Acute Toxicity - oral - Category 4. Acute Toxicity - inhalative - Category 4. Aquatic toxicity - chronic - Category 4.
CAS 182442-95-1	Lithium Cobalt Manganese Nickel Oxide	< 50 %	Respiratory Sensitizer - Category 1. Sensitization - skin - Category 1. Carcinogenicity - Category 1A. Specific Target Organ Toxicity (Single Exposure) - Category 2.
CAS 7439-89-6	Iron	< 50 %	not classified
CAS 7429-90-5	Aluminium	< 50 %	not classified
CAS 7782-42-5	Graphite	< 50 %	not classified
CAS 7440-44-0	Carbon	< 50 %	not classified
CAS 7440-50-8	Copper	< 50 %	not classified
CAS -	Electrolyte, organic	< 50 %	Flammable Liquid - Category 3.

The actual concentration or concentration range is withheld as a trade secret.

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 and wash it before reuse. Seek medical treatment in case of troubles.
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. Remove contact lenses, if present and easy to do. Continue rinsing. 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

Suitable (and unsuitable) extinguishing media

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: corrosive gases/vapors, 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, protective equipment and emergency procedures

In case of damaged battery cases:

Remove all sources of ignition.

Provide fresh air. Avoid contact with skin and eyes.

Wear suitable gloves. Take off immediately all contaminated clothing and wash it before reuse.

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 and material for containment and cleaning up

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

Precautions for safe 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.

Conditions for safe storage, including any incompatibilities

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

Control parameters

Occupational exposure limit values:

CAS No.	Designation	Type	Limit value
7439-89-6	Iron	USA: ACGIH: TWA USA: OSHA: TWA	10 mg/m ³ (smoke, dust) 10 mg/m ³ (Smoke)
7429-90-5	Aluminium	USA: ACGIH: TWA USA: NIOSH: Ceiling USA: NIOSH: TWA USA: NIOSH: TWA USA: OSHA: TWA USA: OSHA: TWA	1 mg/m ³ 5 mg/m ³ (inhalable fraction) 10 mg/m ³ (inhalable fraction) 5 mg/m ³ (inhalable fraction) 15 mg/m ³ (inhalable fraction) 5 mg/m ³ (respirable fraction)
7782-42-5	Graphite	USA: ACGIH: TWA USA: IDLH: TWA USA: NIOSH: TWA USA: OSHA: TWA USA: OSHA: TWA	2 mg/m ³ (respirable fraction) 1,250 mg/m ³ 2.5 mg/m ³ (respirable fraction) 15 mg/m ³ (total dust) 5 mg/m ³ (respirable fraction)
7440-44-0	Carbon	USA: ACGIH: TWA USA: ACGIH: TWA USA: OSHA: TWA USA: OSHA: TWA	10 mg/m ³ (Dust limit value, inhalable fraction) 3 mg/m ³ (Dust limit value, respirable fraction) 15 mg/m ³ (inhalable fraction) 5 mg/m ³ (respirable fraction)
7440-50-8	Copper	USA: ACGIH: TWA USA: ACGIH: TWA USA: IDLH: TWA USA: IDLH: TWA USA: NIOSH: TWA USA: OSHA: TWA USA: OSHA: TWA	0.2 mg/m ³ (Smoke) 1 mg/m ³ (Dusts and mist calculated as Cu) 100 Cu/m ³ (dust and mist) 100 Cu/m ³ (Smoke) 1 mg/m ³ 0.1 mg/m ³ (Smoke; calculated as Cu) 1 mg/m ³ (Dusts and mist calculated as Cu)

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

Appropriate 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.

Personal protection equipment (PPE)

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.

Hand 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.
Eye protection:	In case of damaged battery cases: Tightly sealed goggles according to OSHA Standard - 29 CFR: 1910.133 or ANSI Z87.1-2010.
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.

Environmental exposure controls

Refer to 6.: Section "Environmental precautions".

9. Physical and chemical properties

Information on basic physical and chemical properties

Physical state at 68 °F and 101.3 kPa	Form: solid
Color:	metallic or black
Odor:	odorless
Odor threshold:	No data available
Melting point/freezing point:	No data available
Initial boiling point and boiling range:	No data available
Flammability:	No data available
Explosion limits:	No data available
Flash point/flash point range:	No data available
Evaporation rate:	No data available
Auto-ignition temperature:	No data available
Decomposition temperature:	No data available
pH:	No data available
Viscosity:	No data available
Solubility:	No data available
Partition coefficient: n-octanol/water:	No data available
Vapor pressure:	No data available
Density:	No data available
Vapor density:	No data available
Particle characteristics:	Not applicable

Additional information

Additional information:	No data available
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10. Stability and reactivity

Reactivity:	No data available
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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.

11. Toxicological information

Information on toxicological effects

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)

Lithium manganese oxide:

Harmful if swallowed. Harmful if inhaled.

(Manganese: LD50 Guinea pig oral 9000 mg/kg)

Lithium Cobalt Manganese Nickel Oxide:

May cause an allergic skin reaction. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause cancer. May cause damage to organs.

(Nickel: LD50 Guinea pig oral 5 mg/kg)

Aluminium:

LC50 Rat, inhalative 888 mg/L

Copper:

Mucous membrane irritation, cough, shortage of breath. TDLo Rabbit, hypodermic 375 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

Aquatic toxicity:

Lithium Cobalt Manganese Nickel Oxide:

Acute Daphnia toxicity EC50: > 0.33 mg/L/48 h

Persistence and degradability

Further details:

Product is not biodegradable.

Bioaccumulative potential

Partition coefficient: n-octanol/water:

No data available

Mobility in soil

No data available

Other adverse effects

General information:

Discharge into the environment must be avoided.

13. Disposal considerations

Waste treatment methods

Product

Recommendation:

Dispose of waste according to applicable legislation.

Package

Recommendation: Dispose of waste according to applicable legislation.
Packing can be recycled or disposed of.

14. Transport information

UN number

DOT: UN3480
IMDG, IATA-DGR: UN 3480

UN proper shipping name

DOT, IMDG, IATA-DGR: UN 3480, LITHIUM ION BATTERIES

Transport hazard class(es)

DOT: 9
IMDG: Class 9, Subrisk -
IATA-DGR: Class 9



Packing group

DOT, IATA-DGR: not applicable
IMDG: -

Environmental hazards

Marine pollutant: no

Transport in bulk according to IMO instruments

No data available

Special precautions for user

USA: Department of Transportation (DOT)

Labels: 9
Special Provisions: 388, 422, A54, A100
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
Vessel stowage – Other: 156

Sea transport (IMDG)

EmS:	F-A, S-I
Special Provisions:	188 230 310 348 376 377 384 387
Limited quantities:	0
Excepted quantities:	E0
Package - Instructions:	P903, P908, P909, P910, P911, LP903, LP904, LP905, LP906
Package - 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 may react (e.g., flame, heat, emission of toxic, corrosive or flammable gases or vapours) or disassemble due to damage, defects or short circuit.
Marine pollutant:	no
Segregation group:	none

Air transport (IATA)

Proper shipping name:	UN 3480, LITHIUM ION BATTERIES
Hazard label:	Lithium batt or Sodium-ion 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 A183 A201 A213 A331 A334 A802
Emergency Response Guide-Code (ERG):	12FZ

15. Regulatory information

National regulations - U.S. Federal Regulations

This product is an article as defined by TSCA regulations, and is exempt from TSCA inventory listing requirements.

National regulations - U.S. State Regulations

Copper: New York Right-To-Know: listed

Further regulations, limitations and legal requirements

No data available

16. Other information

Revision date:	1/1/2026
Date of first version:	7/18/2012
Reason of change:	Changes in section 14: IATA-DGR 2026

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

Abbreviations and acronyms:

Acute Toxicity: Acute toxicity

Aquatic toxicity - chronic: Hazardous to the aquatic environment - chronic

AS/NZS: Australian Standards/New Zealand Standards

Carcinogenicity: Carcinogenicity

CAS: Chemical Abstracts Service

CFR: Code of Federal Regulations

CLP: Classification, Labelling and Packaging

DMEL: Derived minimal effect level

DNEL: Derived no-effect level

DOT: Department of Transportation's Safety Regulations (USA)

EC: European Community

EC50: Effective Concentration 50%

EmS: Emergency Response Procedures for Ships Carrying Dangerous Goods

EN: European Standard

EQ: Excepted quantities

Flammable Liquid: Flammable liquid

IATA: International Air Transport Association

IATA-DGR: International Air Transport Association – Dangerous Goods Regulations

IBC Code: International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk

IMDG Code: International Maritime Dangerous Goods Code

IMO: International Maritime Organization

LC50: Median lethal concentration

LD50: Lethal dose 50%

MARPOL: Maritime Pollution: The International Convention for the Prevention of Pollution from Ships

OEL: Occupational Exposure Limit Value

OSHA: Occupational Safety and Health Administration

PBT: Persistent, bioaccumulative and toxic

PNEC: Predicted no-effect concentration

Respiratory Sensitizer: Sensitisation to the respiratory tract

Sensitization - skin: Skin sensitisation

STOT SE: Specific target organ toxicity - single exposure

TLV: Threshold Limit Value

TRGS: Technical Rules for Hazardous Substances

TSCA: Toxic Substance Control Act

UN: United Nations

UV: Ultraviolet

vPvB: Very persistent and very bioaccumulative

WEL: Workplace Exposure Limit

Department issuing data sheet

Contact person: see section 1: Department 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.