



SAFETY DATA SHEET

according to 29 CFR 1910.1200 and ANSI standard Z400.1-2010

4G520e - Akku 7.4V Li-Ion in equipment

Material number 004G520e

Revision date: 1/13/2025
Version: 9.5
Replaces version: 9.4
Language: en-US
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1. Product and company identification

Product identifier

Trade name: 4G520e - Akku 7.4V Li-Ion in equipment
(Batteries 4G520, 4G520=2 and 4G520=3)
The following products contain this batterie:
3E80

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

General use: Lithium-ion battery for orthopedic procedures

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
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 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
Color: metallic or black
Odor: odorless
Classification: Article not subject to hazard labelling or classification.

Regulatory status

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

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:

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.).

see section 11: Toxicological information

3. Composition / Information on ingredients

Chemical characterization: Article: Lithium-ion battery (Cell in equipment).

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

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.

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: 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: 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:	in case of damaged battery cases: 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 data available

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: 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:	in case of damaged battery cases: 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.

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

Additional information: in case of damaged battery cases:
Remove all sources of ignition.

7. Handling and storage

Handling

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

Precautions against fire and explosion:

Avoid short circuit. Avoid damage to the battery casing.

Storage

Requirements for storerooms and containers:

Provide adequate ventilation. Store in a dry place.

Protect from: humidity, heat, UV-radiation/sunlight

8. Exposure controls / personal protection

Exposure guidelines

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: Hazardous ingredients embedded in the product.

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.

Environmental exposure controls

Refer to 6.: Section "Environmental precautions".

9. Physical and chemical properties

Information on basic physical and chemical properties

Appearance:	Form: solid Color: metallic or black
Odor:	odorless
Odor threshold:	No data available
pH:	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:	refer to section 10.3
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Chemical stability:	Product is stable under normal storage conditions.
Possibility of hazardous reactions:	In case of damaged battery cases: Release of: Electrolyte, organic: Flammable.
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: Release of: Electrolyte, organic: After contact with water: formation of Hydrogen fluoride.
Hazardous decomposition products:	In case of fire may be liberated: corrosive gases/vapors, 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.
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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

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.

Package

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

14. Transport information

UN number

ADR/RID, IMDG, IATA-DGR:

UN 3481

UN proper shipping name

ADR/RID, IMDG, IATA-DGR:

UN 3481, LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT

Transport hazard class(es)

ADR/RID:

Class 9, Code: M4

IMDG:

Class 9, Subrisk -

IATA-DGR:

Class 9



Packing group

ADR/RID, IATA-DGR:

not applicable

IMDG:

-

Environmental hazards

Marine pollutant:

no

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

No data available

USA: Department of Transportation (DOT)

Identification number:

UN3481

Proper shipping name:

UN 3481,
LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT

Hazard class or Division:

9

Labels:

9

Special Provisions:

181, 360, 388, 422, A54

Packaging – Exceptions:

185

Packaging – Non-bulk:

185

Packaging – Bulk:

185

Quantity limitations – Passenger aircraft / rail:

5 kg

Quantity limitations – Cargo only:

35 kg

Vessel stowage – Location:

A

Vessel stowage – Other:

156



Sea transport (IMDG)

UN number:	UN 3481
Proper shipping name::	UN 3481, LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT
Class or division, Subsidiary risk:	Class 9, Subrisk -
Packing Group:	-
EmS:	F-A, S-I
Special Provisions:	188 230 310 348 360 376 377 384 387 390
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)

UN/ID number:	UN 3481
Proper shipping name::	UN 3481, LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT
Class or division, Subsidiary risk:	Class 9
Hazard label:	Lithium batt or Sodium-ion batt
Excepted Quantity Code:	E0
Passenger and Cargo Aircraft: Ltd.Qty.:	Forbidden
Passenger and Cargo Aircraft:	Pack.Instr. 967 - Max. Net Qty/Pkg. 5 kg
Cargo Aircraft only:	Pack.Instr. 967 - Max. Net Qty/Pkg. 35 kg
Special Provisions:	A48 A88 A99 A154 A181 A185 A213 A220
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

No data available

National regulations - Canada

Cobalt lithium dioxide:	DSL: listed
Iron:	DSL: listed
Aluminium:	DSL: listed
Graphite:	DSL: listed

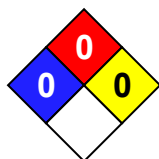
Carbon: DSL: listed
Copper: DSL: listed

National regulations - Great Britain

Hazchem-Code: 2Y

16. Other information

Hazard rating systems:



NFPA Hazard Rating:

Health: 0 (Minimal)
Fire: 0 (Minimal)
Reactivity: 0 (Minimal)

HMIS Version III Rating:

Health: 0 (Minimal)
Flammability: 0 (Minimal)
Physical Hazard: 0 (Minimal)
Personal Protection: X = Consult your supervisor

HEALTH	0
FLAMMABILITY	0
PHYSICAL HAZARD	0
	X

Abbreviations and acronyms:

Acute Toxicity: Acute toxicity
ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
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
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
RID: Regulations Concerning the International Carriage of Dangerous Goods by Rail
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

Reason of change: Changes in section 14: IMDG 2025

Date of first version: 7/19/2012



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according to 29 CFR 1910.1200 and ANSI standard Z400.1-2010

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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.