SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Mirka Intelligent Battery BPA 11125 11.1V 2.5Ah
Mirka Intelligent Battery BPA 11150 11.1V 5.0Ah

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

1.2.1 Relevant uses

Battery

1.2.2 Uses advised against

For all uses not specified in SECTION 1.2.1

1.3 Details of the supplier of the safety data sheet

Company

Mirka Ltd
Pensalavägen 210
66850 Jeppo / FINLAND
Phone +358 20 760 2111
Homepage www.mirka.com
E-mail sales@mirka.com

Address enquiries to

Technical information sales@mirka.com

Safety Data Sheet sdb@chemiebuero.de (No dispatch of safety data sheets)

Safety data sheets are available from the supplier.

1.4 Emergency telephone number

Advisory body

For Chemical Emergency: spill, leak, fire, exposure or accident call CHEMTREC day or night:
CHEMTREC UK: +(44)-870-8200418 (English)
CHEMTREC Ireland (Dublin): +(353)-19014670 (English, Irish Gaelic)
Multilingual response for emergency calls only. Non-emergency calls cannot be serviced at these numbers.

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture [REGULATION (EC) No 1272/2008]

Carc. 1A: H350i May cause cancer by inhalation.
Repr. 1B: H360Fd May damage fertility. Suspected of damaging the unborn child.
Repr. 1B: H360D May damage the unborn child.
Skin Corr. 1A: H314 Causes severe skin burns and eye damage.
Eye Dam. 1: H318 Causes serious eye damage.
Skin Sens. 1: H317 May cause an allergic skin reaction.
STOT RE 1: H372 Causes damage to organs through prolonged or repeated exposure.
STOT RE 2: H373 May cause damage to organs through prolonged or repeated exposure.
Acute Tox. 4: H302 Harmful if swallowed.
Aquatic Acute 1: H400 Very toxic to aquatic life.
Aquatic Chronic 2: H411 Toxic to aquatic life with long lasting effects.

2.2 Label elements

This product is an article and therefore it does not require labelling according to regulations REACH/CLP.

2.3 Other hazards

Physico-chemical hazards	When cell is exposed to an external short-circuit, it will cause heat generation and ignition. The chemicals are contained within a sealed housing. There is only a risk of exposure if the battery is subject to mechanical or electrical misuse. At temperatures over 125 °C risk of bursting and withdrawal of electrolyte liquid exists.
Human health dangers	The contained dangerous materials are not freely available with foreseeable use. The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.
Environmental hazards	This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher. The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.
Other hazards	Mercury content: Hg < 0.1mg/kg Cadmium content: Cd < 1mg/kg Lead content: Pb < 10mg/kg Further hazards were not determined with the current level of knowledge.

SECTION 3: Composition / Information on ingredients

3.1 Substances

not applicable

3.2 Mixtures

The product is an article.

Range [%]	Substance
15 - 25	Lithium nickel dioxide
	CAS: 12031-65-1, EINECS/ELINCS: 620-400-4, EU-INDEX: 028-057-00-7
	GHS/CLP: Skin Sens. 1: H317 - STOT RE 1: H372 - Carc. 1A: H350i
15 - 25	Graphite
	CAS: 7782-42-5, EINECS/ELINCS: 231-955-3
10 - 20	Iron
	CAS: 7439-89-6, EINECS/ELINCS: 231-096-4
5 - 15	Lithium Manganese (III,IV) oxide
	CAS: 12057-17-9, EINECS/ELINCS: 601-724-5
	GHS/CLP: Acute Tox. 4: H302 H332 - Aquatic Chronic 4: H413
1 - 10	Lithium hexafluorophosphate
	CAS: 21324-40-3, EINECS/ELINCS: 244-334-7
	GHS/CLP: Acute Tox. 3: H301 - Skin Corr. 1A: H314 - Eye Dam. 1: H318 - STOT RE 1: H372
1 - 10	Cobalt lithium dioxide
	CAS: 12190-79-3, EINECS/ELINCS: 235-362-0
	GHS/CLP: Repr. 1B: H360Fd
1 - 10	Dimethyl carbonate
	CAS: 616-38-6, EINECS/ELINCS: 210-478-4, EU-INDEX: 607-013-00-6
	GHS/CLP: Flam. Liq. 2: H225
1 - 10	Polyethylene
	CAS: 9002-88-4, EINECS/ELINCS: 618-339-3
1 - 10	Ethylene carbonate
	CAS: 96-49-1, EINECS/ELINCS: 202-510-0
	GHS/CLP: Eye Irrit. 2: H319 - Acute Tox. 4: H302 - STOT RE 2: H373
1 - 10	Copper [specific surface area > 0,67 mm2/mg]
	CAS: 7440-50-8, EINECS/ELINCS: 231-159-6, EU-INDEX: 029-024-00-X
	GHS/CLP: Aquatic Acute 1: H400 - Aquatic Chronic 1: H410, M-Factor (acute): 10 , M-Factor (chronic): 1
1 - 10	Aluminium powder
	CAS: 7429-90-5, EINECS/ELINCS: 231-072-3, EU-INDEX: 013-001-00-6
	GHS/CLP: Flam. Sol. 1: H228 - Water-react. 2: H261
0,1 - 1	Carbon black
	CAS: 1333-86-4, EINECS/ELINCS: 215-609-9
0,1 - 1	Nickel
	CAS: 7440-02-0, EINECS/ELINCS: 231-111-4, EU-INDEX: 028-002-00-7
	GHS/CLP: Carc. 2: H351 - STOT RE 1: H372 - Skin Sens. 1: H317 - Aquatic Chronic 3: H412
0,1 - 1	Lithium carbonate
	CAS: 554-13-2, EINECS/ELINCS: 209-062-5
	GHS/CLP: Acute Tox. 4: H302 - Eye Irrit. 2: H319
0,1 - 1	N-Methyl-2-pyrrolidone
	CAS: 872-50-4, EINECS/ELINCS: 212-828-1, EU-INDEX: 606-021-00-7
	GHS/CLP: Repr. 1B: H360D - Eye Irrit. 2: H319 - Skin Irrit. 2: H315 - STOT SE 3: H335
	SCL [%]: >= 10: STOT SE 3: H335
0,1 - 1	Ethyl acetate
	CAS: 141-78-6, EINECS/ELINCS: 205-500-4, EU-INDEX: 607-022-00-5
	GHS/CLP: Flam. Liq. 2: H225 - Eye Irrit. 2: H319 - STOT SE 3: H336 - EUH066

Comment on component parts

For full text of H-statements: see SECTION 16.
The structural design of the cells prevents release of the hazardous media contained therein when the unit is used for its intended purpose.

SECTION 4: First aid measures

4.1 Description of first aid measures

General information
Measures are only needed for damaged cells.
Undamaged, closed cells do not represent a danger to the health.

Inhalation
Remove the victim into fresh air and keep him calm.
In the event of symptoms seek medical treatment.

Skin contact
In case of contact with skin wash off immediately with soap and water.
Immediate medical treatment necessary, as untreated burns can result in slow-healing wounds.

Eye contact
Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Consult a doctor immediately.

Ingestion
Consult a doctor immediately.
Do not induce vomiting.

4.2 Most important symptoms and effects, both acute and delayed

Product is caustic.
Allergic reactions

4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically.
Forward this sheet to your doctor.

SECTION 5: Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media
Metal fire-ex powder.
Dry powder.
Sand.
Much water.

Extinguishing media that must not be used
Full water jet

5.2 Special hazards arising from the substance or mixture

Danger of electric shock during fire-fighting of batteries.
Bursting batteries can be forcibly projected from a fire.
Carbon monoxide (CO)
Carbon dioxide (CO2)
Hydrogen fluoride (HF).

5.3 Advice for firefighters

Use self-contained breathing apparatus.
Wear full protective suit.

Cool containers at risk with water spray jet.
Collect contaminated firefighting water separately, must not be discharged into the drains.
Fire residues and contaminated firefighting water must be disposed of in accordance within the local regulations.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Not required under normal conditions.
In case of mistreatment and in case of fault, some electrolyte can leak from the cell through the air holes.
Keep away from all sources of ignition.
Wear suitable protective equipment. For personal protection see SECTION 8.
Measures apply only to the damaged product.

6.2 Environmental precautions

Do not discharge leakages into the drains/surface waters/groundwater.

6.3 Methods and material for containment and cleaning up

Take up mechanically.
Take up residues with absorbent material (e.g. sand).
Dispose of absorbed material in accordance within the regulations.

6.4 Reference to other sections

See SECTION 8+13

SECTION 7: Handling and storage

7.1 Precautions for safe handling

The data of the manufacturer concerning the loading and unloading parameters and the recommended temperature ranges are to be considered.
Do not use or test damaged cell.

Keep away from open flames, hot surfaces and sources of ignition.
Do not pierce or burn, even after use.
Handle with care - avoid shock, friction, impact.

7.2 Conditions for safe storage, including any incompatibilities

Prevent penetration into the ground.

Do not store together with food and animal food/diet.
Do not store with combustible materials.

Keep container tightly closed.
Store in a dry place.
Protect from heat/overheating.
Protect from sun.
Ensure battery terminals are protected during storage.
Protect from atmospheric moisture, water and contamination.
Storage at room temperature (approx. 20℃) at approx. 40% of the nominal capacity.

7.3 Specific end use(s)

See product use, SECTION 1.2

SECTION 8: Exposure controls / personal protection

8.1 Control parameters

Ingredients with occupational exposure limits to be monitored EU (2004/37/EG)

Substance / EC LIMIT VALUES
Lithium hexafluorophosphate
CAS: 21324-40-3, EINECS/ELINCS: 244-334-7
Eight hours: 2,5 mg/m³, F
Ethyl acetate
CAS: 141-78-6, EINECS/ELINCS: 205-500-4, EU-INDEX: 607-022-00-5
Eight hours: 200 ppm, 734 mg/m³
Short-term (15-minute): 400 ppm, 1468 mg/m³
N-Methyl-2-pyrrolidone
CAS: 872-50-4, EINECS/ELINCS: 212-828-1, EU-INDEX: 606-021-00-7
Eight hours: 10 ppm, 40 mg/m³, H
Short-term (15-minute): 20 ppm, 80 mg/m³

8.2 Exposure controls

Additional advice on system design	Measures apply only to the damaged product. Ensure adequate ventilation on workstation. Measurement methods for taking workplace measurements must meet the performance requirements of DIN EN 482. For example, recommendations are given in the IFA's list of hazardous substances.
Eye protection	Not required under normal conditions. safety glasses (EN 166:2001)
Hand protection	Not required under normal conditions. 0,7 mm Butyl rubber, >480 min (EN 374-1/-2/-3).
Skin protection	Not required under normal conditions. Protective clothing (EN 340)
Other	Personal protective equipment should be selected specifically for the working place, depending on concentration and quantity handled. The resistance of this equipment to chemicals should be ascertained with the respective supplier.
Respiratory protection	Not required under normal conditions.
Thermal hazards	none
Delimitation and monitoring of the environmental exposition	Protect the environment by applying appropriate control measures to prevent or limit emissions.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	solid
Form	Battery BPA 11125 11.1V 2.5Ah: 11.1V; 2500mAh; 27.75Wh BPA 11150 11.1V 5.0Ah: 11.1V; 5000mAh; 55.5Wh
Color	No information available.
Odor	odourless
Odour threshold	not applicable
pH-value	not applicable
pH-value [1%]	not applicable
Boiling point or initial boiling point and boiling range [°C]	not applicable
Flash point [°C]	not applicable
Flammability	not applicable
Lower explosion limit	not applicable
Upper explosion limit	not applicable
Oxidising properties	no
Vapour pressure/gas pressure [kPa]	not applicable
Density [g/cm³]	No information available.
Relative density	No information available.
Bulk density [kg/m³]	not applicable
Solubility in water [g/L]	insoluble
Solubility other solvents	No information available.
Partition coefficient n-octanol/water (log value)	not applicable
Kinematic viscosity	not applicable
Relative vapour density	not applicable
Melting point [°C]	not applicable
Auto-ignition temperature [°C]	not applicable
Decomposition temperature [°C]	not applicable
Particle characteristics	not applicable

9.2 Other information

none

SECTION 10: Stability and reactivity

10.1 Reactivity

When handled and stored properly, no hazardous reactions are anticipated.

10.2 Chemical stability

The product is stable under standard conditions.
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

When cell is exposed to an external short-circuit, it will cause heat generation and ignition.
Avoid mechanical and electrical misuse.
Heating leads to a risk of bursting and of electrolyte fluid escaping.

10.4 Conditions to avoid

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Heating leads to a risk of bursting and of electrolyte fluid escaping.
Extreme risk of explosion by shock, friction, fire or other sources of ignition.

10.5 Incompatible materials

Water
Acids
Oxidizing agent
Reducing agent

10.6 Hazardous decomposition products

No decomposition if used and stored according to specifications.
In the event of fire: See SECTION 5.

SECTION 11: Toxicological information

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute oral toxicity Based on the available information, the classification criteria are fulfilled.
Calculation method

Product
ATE-mix, oral, 1770 mg/kg

Substance
Carbon black, CAS: 1333-86-4
LD50, oral, Rat, 11000 mg/kg (Lit.)
Dimethyl carbonate, CAS: 616-38-6
LD50, oral, Rat, > 5000 mg/kg, OECD 401
Iron, CAS: 7439-89-6
LD50, oral, Rat, > 5000 mg/kg
Graphite, CAS: 7782-42-5
LD50, oral, Human, > 15000 mg/kg (Lit.)
Lithium carbonate, CAS: 554-13-2
LD50, oral, Rat, 525 mg/kg bw, (Lithane),
Lithium hexafluorophosphate, CAS: 21324-40-3
LD50, oral, Rat, > 50 - 300 mg/kg (Lit.), OECD 423
ATE, oral, 100 mg/kg (category 3)
Ethylene carbonate, CAS: 96-49-1
LD50, oral, Rat, 10400 mg/kg, OECD 401
Ethyl acetate, CAS: 141-78-6
LD50, oral, Rat, 5620 mg/kg
Lithium Manganese (III,IV) oxide, CAS: 12057-17-9
ATE, oral, 500 mg/kg
Cobalt lithium dioxide, CAS: 12190-79-3
LD50, oral, Rat, > 5000 mg/kg
Nickel, CAS: 7440-02-0
LD50, oral, Rat, > 9000 mg/kg, OECD 401
N-Methyl-2-pyrrolidone, CAS: 872-50-4
LD50, oral, Rat, 4150 mg/kg (OECD 401, Lit.)
Lithium nickel dioxide, CAS: 12031-65-1
LD50, oral, Rat, > 2000 mg/kg
Polyethylene, CAS: 9002-88-4
LD50, oral, Rat, > 2000 mg/kg
Copper [specific surface area > 0,67 mm2/mg], CAS: 7440-50-8
LC50, oral, Rat, > 2000 mg/kg
Aluminium powder, CAS: 7429-90-5
LD50, oral, Rat, 15900 mg/kg

Acute dermal toxicity Based on the available information, the classification criteria are not fulfilled.

Substance
Carbon black, CAS: 1333-86-4
LD50, dermal, Rabbit, > 3000 mg/kg (Lit.)
Dimethyl carbonate, CAS: 616-38-6
LD50, dermal, Rabbit, > 2000 mg/kg
Lithium carbonate, CAS: 554-13-2
LD50, dermal, Rabbit, > 3000 mg/kg, OECD 402, (Lithane),
Ethylene carbonate, CAS: 96-49-1
LD50, dermal, Rat, > 2000 mg/kg, OECD 402
Ethyl acetate, CAS: 141-78-6

LD50, dermal, mouse, 20000 mg/kg
Cobalt lithium dioxide, CAS: 12190-79-3
LD50, dermal, Rat, > 2000 mg/kg
N-Methyl-2-pyrrolidone, CAS: 872-50-4
LD50, dermal, Rat, > 5000 mg/kg (OECD 402, Lit.)
Copper [specific surface area > 0,67 mm2/mg], CAS: 7440-50-8
LD50, dermal, Rat, > 2000 mg/kg

Acute inhalational toxicity Based on the available information, the classification criteria are not fulfilled.
Calculation method

Product
ATE-mix, inhalativ (dust), > 5 mg/l/4h

Substance
Carbon black, CAS: 1333-86-4
LC0, inhalative, Rat, 13 mg/m³/18h
LC0, inhalative, Rat, 229 mg/m³/6h
LC0, inhalative, Rat, 4,6 mg/m³/4h
Dimethyl carbonate, CAS: 616-38-6
LC50, inhalative, Rat, > 5,36 mg/l (4h), OECD 403
Iron, CAS: 7439-89-6
LC50, inhalative, Rat, 5,05 mg/L/4h
Graphite, CAS: 7782-42-5
LC50, inhalativ (dust), Rat, > 2 mg/l, OECD 403, 4h
Lithium carbonate, CAS: 554-13-2
LC50, inhalative, Rat, > 2 mg/l, OECD 403, 4h, (Lithane),
Ethylene carbonate, CAS: 96-49-1
LC0, 730 mg/m³, 8h
Ethyl acetate, CAS: 141-78-6
LC50, inhalative, Rat, 50 mg/l (4 h)
Lithium Manganese (III,IV) oxide, CAS: 12057-17-9
ATE, inhalativ (dust), 1,5 mg/l, 4h
Cobalt lithium dioxide, CAS: 12190-79-3
LC50, inhalativ (dust), Rat, > 5,05 mg/l, 4h
N-Methyl-2-pyrrolidone, CAS: 872-50-4
LC50, inhalative, Rat, > 5,1 mg/l 4h (OECD 403, Lit.)
Aluminium powder, CAS: 7429-90-5
LC50, inhalative, Rat, 888 mg/m³

Serious eye damage/irritation Risk of serious damage to eyes.
Calculation method

Substance
Carbon black, CAS: 1333-86-4
no adverse effect observed
Dimethyl carbonate, CAS: 616-38-6
Rabbit (eye), non-irritating
Iron, CAS: 7439-89-6
non-irritating
Graphite, CAS: 7782-42-5
Rabbit (eye), OECD 405, non-irritating
Lithium carbonate, CAS: 554-13-2
Rabbit (eye), OECD 405, irritant, (Lithane),
Lithium hexafluorophosphate, CAS: 21324-40-3
Eye, Causes serious eye damage.

Ethylene carbonate, CAS: 96-49-1
Rabbit (eye), OECD 405, irritant
Ethyl acetate, CAS: 141-78-6
Harmonised classification, Eye Irrit. 2 H319
N-Methyl-2-pyrrolidone, CAS: 872-50-4
Eye, Rabbit, OECD 405, irritant
Polyethylene, CAS: 9002-88-4
Rabbit (eye), Slight irritant effect - does not require labelling.
Copper [specific surface area > 0,67 mm2/mg], CAS: 7440-50-8
Eye, Rabbit, OECD 405, non-irritating

Skin corrosion/irritation Product is caustic.
Calculation method

Substance
Carbon black, CAS: 1333-86-4
no adverse effect observed
Dimethyl carbonate, CAS: 616-38-6
Rabbit, OECD 404, non-irritating
Iron, CAS: 7439-89-6
non-irritating
Graphite, CAS: 7782-42-5
Rabbit, OECD 404, non-irritating
Lithium carbonate, CAS: 554-13-2
Rabbit, OECD 404, non-irritating, (Lithane),
Lithium hexafluorophosphate, CAS: 21324-40-3
dermal, Human, corrosive, (EU-Methode B.40, GLP),
Ethylene carbonate, CAS: 96-49-1
dermal, Rabbit, OECD 404, non-irritating
Ethyl acetate, CAS: 141-78-6
dermal, Rabbit, OECD 404, non-irritating
N-Methyl-2-pyrrolidone, CAS: 872-50-4
dermal, Rabbit, OECD 404, irritant
Polyethylene, CAS: 9002-88-4
Rabbit, non-irritating
Copper [specific surface area > 0,67 mm2/mg], CAS: 7440-50-8
dermal, Rabbit, OECD 404, non-irritating

Respiratory or skin sensitisation Sensitizing.
Calculation method

Substance
Carbon black, CAS: 1333-86-4
dermal, no adverse effect observed
Dimethyl carbonate, CAS: 616-38-6
dermal, Guinea pig, OECD 406, non-sensitizing
Iron, CAS: 7439-89-6
non-sensitizing
Graphite, CAS: 7782-42-5
mouse, OECD 429, non-sensitizing
Lithium carbonate, CAS: 554-13-2
Guinea pig, OECD 406, non-sensitizing, (Lithane),
Lithium hexafluorophosphate, CAS: 21324-40-3
dermal, mouse, OECD 429, non-sensitizing
Ethylene carbonate, CAS: 96-49-1
Guinea pig, OECD 406, non-sensitizing

Ethyl acetate, CAS: 141-78-6
dermal, Guinea pig, OECD 406, non-sensitizing
N-Methyl-2-pyrrolidone, CAS: 872-50-4
mouse, OECD 429, non-sensitizing
Polyethylene, CAS: 9002-88-4
dermal, Guinea pig, non-sensitizing
Copper [specific surface area > 0,67 mm2/mg], CAS: 7440-50-8
dermal, Guinea pig, OECD 406, non-sensitizing

Specific target organ toxicity — single exposure

Based on the available information, the classification criteria are not fulfilled.

Substance
Carbon black, CAS: 1333-86-4
inhalative, no adverse effect observed
Ethyl acetate, CAS: 141-78-6
Harmonised classification: STOT SE 3 H336
Nickel, CAS: 7440-02-0
OECD 401, no adverse effect observed
N-Methyl-2-pyrrolidone, CAS: 872-50-4
inhalative, irritant

Specific target organ toxicity — repeated exposure

Causes damage to organs through prolonged or repeated exposure.
Calculation method
May cause damage to organs through prolonged or repeated exposure.
Calculation method

Substance
Lithium hexafluorophosphate, CAS: 21324-40-3
NOAEL, oral, Human, 0,133 mg/kg bw/day, The effects observed are not sufficient for classification.
NOAEC, inhalative, Human, 2 mg/m³, The effects observed are not sufficient for classification.

Mutagenicity

Based on the available information, the classification criteria are not fulfilled.

Substance
Carbon black, CAS: 1333-86-4
no adverse effect observed
Dimethyl carbonate, CAS: 616-38-6
in vitro, OECD 473, negative
in vivo, OECD 483, negative
Iron, CAS: 7439-89-6
in vitro, negative
in vivo, negative
Graphite, CAS: 7782-42-5
in vitro, OECD 471, negative
Lithium carbonate, CAS: 554-13-2
in vitro, OECD 471, negative
Lithium hexafluorophosphate, CAS: 21324-40-3
in vivo, OECD 474, negative
in vitro, OECD 471, negative
Ethylene carbonate, CAS: 96-49-1
in vitro, OECD 476, negative
Ethyl acetate, CAS: 141-78-6
in vitro, OECD 471, negative
N-Methyl-2-pyrrolidone, CAS: 872-50-4
in vitro, OECD 471, negative
in vivo, negative

Reproduction toxicity

May damage the unborn child.
May damage fertility.
Calculation method

- Fertility

Substance
N-Methyl-2-pyrrolidone, CAS: 872-50-4
NOAEL, oral, Rat, 350 mg/kg bw/day (chronic), OECD 416, positive

- Development

Substance
Lithium hexafluorophosphate, CAS: 21324-40-3
Rat, OECD 414, negative
Rat, OECD 416, negative

Carcinogenicity

May cause cancer.
Calculation method

Substance
N-Methyl-2-pyrrolidone, CAS: 872-50-4
NOAEL, oral, Rat, 678 mg/kg/day, Study, no adverse effect observed
NOAEC, inhalative, Rat, 400 mg/m³ (chronic), no adverse effect observed

Aspiration hazard

Based on the available information, the classification criteria are not fulfilled.

General remarks

The chemicals are contained within a sealed housing. There is only a risk of exposure if the battery is subject to mechanical or electrical misuse.

11.2 Information on other hazards

11.2.1 Endocrine disrupting properties

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

11.2.2 Other information

none

SECTION 12: Ecological information

12.1 Toxicity

Based on the available information, the classification criteria are fulfilled.
Calculation method

Substance
Dimethyl carbonate, CAS: 616-38-6
LC50, (96h), Danio rerio, > 100 mg/l
Iron, CAS: 7439-89-6
LC50, (96h), Fish, 1,29 mg/l
Graphite, CAS: 7782-42-5
LC50, (96h), Danio rerio, > 100 mg/l, OECD 203
EC50, (48h), Daphnia magna, > 100 mg/l, OECD 202
EC50, (72h), Pseudokirchneriella subcapitata, > 100 mg/l, OECD 201
Lithium carbonate, CAS: 554-13-2
LC50, (4d), Fish, 30,3 mg/L, OECD 203
EC50, (48h), Invertebrates, 33,2 mg/L, OECD 202
EC50, (72h), Algae, > 400 mg/L
Lithium hexafluorophosphate, CAS: 21324-40-3
LC50, (96h), Algae, > 100 mg/l, OECD 201
LC50, (96h), Fish, 51 - 193 mg/l
EC50, (48h), Daphnia magna, > 100 mg/l, OECD 202
EC50, (72h), Pseudokirchneriella subcapitata, > 100 mg/l (Lit.)
EC50, (3h), Activated sludge, > 1000 mg/l (Lit.)
NOEC, (21d), Fish, 4 mg F-/L
NOEC, (96h), Algae, 22 mg/l, OECD 201
Ethylene carbonate, CAS: 96-49-1
LC50, (96h), Fish, > 100 mg/l, OECD 203
EC50, (48h), Daphnia magna, > 100 mg/l, OECD 202
EC50, (72h), Algae, > 100 mg/l, OECD 201
NOEC, (72h), Selenastrum capricornutum, 100 mg/l, OECD 201
Ethyl acetate, CAS: 141-78-6
LC50, (96h), Pimephales promelas, 230 mg/l
LC50, (96h), Salmo gairdneri, 230 mg/l
EC50, (48h), Algae, 5600 mg/l
EC50, (48h), Daphnia magna, 164 mg/l
Cobalt lithium dioxide, CAS: 12190-79-3
LC50, (96h), Fish, 54,1 mg/l (cobalt (II) chloride hexahydrate)
EC50, (48h), Daphnia pulex, 2,618 mg/l (cobalt (II) chloride hexahydrate)
EC50, (96h), Algae, 71,314 mg/l (cobalt (II) chloride hexahydrate)
NOEC, (96h), Algae, 4,672 mg/l
NOEC, (34d), Pimephales promelas, 0,21 mg/l
Nickel, CAS: 7440-02-0
LC50, (96h), Brachidanio rerio, > 100 mg/l, OECD 203
EC50, (48h), Daphnia magna, > 100 mg/l, OECD 202
EC50, (48h), Pseudomonas fluorescens, 250 mg/l (Lit.)
IC50, (72h), Selenastrum capricornutum, 100 mg/l, OECD 201
N-Methyl-2-pyrrolidone, CAS: 872-50-4
LC50, (96h), Oncorhynchus mykiss, > 500 mg/l
EC50, (72h), Scenedesmus subspicatus, > 500 mg/l (DIN 38412 /9)
EC50, (24h), Daphnia magna, > 1000 mg/l (OECD 202)
NOEC, (21d), Daphnia magna, 12,5 mg/l (OECD 202)

12.2 Persistence and degradability

Behaviour in environment compartments No information available.

Behaviour in sewage plant No information available.

Biological degradability

Substance
Carbon black, CAS: 1333-86-4
The methods for determining the biological degradability are not applicable to inorganic substances.
Dimethyl carbonate, CAS: 616-38-6
(28d), 86 %, OECD 301 C, The product is readily biodegradable.
Graphite, CAS: 7782-42-5
The methods for determining the biological degradability are not applicable to inorganic substances.
log Kow, 0,78
Lithium hexafluorophosphate, CAS: 21324-40-3
(28d), 86 %, OECD 301 C, The product is readily biodegradable.
log Kow, 0,354 (20°C), OECD 107
Ethylene carbonate, CAS: 96-49-1
(10d), 70 - 80 %, OECD 301 A, The product is readily biodegradable.
log Kow, 0,11 (20°C)
Ethyl acetate, CAS: 141-78-6
(10d), 62 %, The product is readily biodegradable.
log Kow, 0,68
Copper [specific surface area > 0,67 mm2/mg], CAS: 7440-50-8
The methods for determining the biological degradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential

Accumulation in organisms is not expected.

Substance
Dimethyl carbonate, CAS: 616-38-6
BCF, 3,2
Graphite, CAS: 7782-42-5
BCF, < 500
Lithium hexafluorophosphate, CAS: 21324-40-3
BCF, < 31
Ethylene carbonate, CAS: 96-49-1
BCF, 3,162
Ethyl acetate, CAS: 141-78-6
BCF, 30
Cobalt lithium dioxide, CAS: 12190-79-3
BCF, 23
Nickel, CAS: 7440-02-0
BCF, 70

12.4 Mobility in soil

Spillages may penetrate the soil causing ground water contamination.

Substance
Ethylene carbonate, CAS: 96-49-1
Koc, 3,219
Ethyl acetate, CAS: 141-78-6
Koc, 6
Nickel, CAS: 7440-02-0
Koc, 2,86

12.5 Results of PBT and vPvB assessment

Based on all available information not to be classified as PBT or vPvB respectively.

12.6 Endocrine disrupting properties

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7 Other adverse effects

The chemicals are contained within a sealed housing. There is only a risk of exposure if the battery is subject to mechanical or electrical misuse.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Waste material must be disposed of in accordance with the Directive on waste 2008/98/EC as well as other national and local regulations. It is not possible to determine a waste code for this product in accordance with the European Waste Catalogue (EWC) since it is only possible to classify it according to how it is used by the customer. The waste code is to be determined within the EU in liaison with the waste-disposal operator.

Product

For recycling, consult manufacturer.

Waste no. (recommended) 160605
200134

Contaminated packaging

Uncontaminated packaging may be taken for recycling.

Waste no. (recommended) 150102

SECTION 14: Transport information

14.1 UN number or ID number

Transport by land according to ADR/RID 3480 / 3481

Inland navigation (ADN) 3480 / 3481

Marine transport in accordance with IMDG 3480 / 3481

Air transport in accordance with IATA 3480 / 3481

14.2 UN proper shipping name

Transport by land according to ADR/RID	UN 3480 Lithium ion batteries / UN 3481 Lithium Ion batteries contained in equipment or Lithium Ion batteries packed with equipment (No dangerous goods, according ADR special regulations 188)
- Classification Code	M4
- ADR LQ	0 kg
- ADR 1.1.3.6 (8.6)	Transport category (tunnel restriction code) 2 (E)
Inland navigation (ADN)	UN 3480 Lithium ion batteries / UN 3481 Lithium Ion batteries contained in equipment or Lithium Ion batteries packed with equipment (No dangerous goods, according ADN special regulations 188)
- Classification Code	M4
Marine transport in accordance with IMDG	UN 3480 Lithium ion batteries / UN 3481 Lithium Ion batteries contained in equipment or Lithium Ion batteries packed with equipment (No dangerous goods, according IMDG special regulations 188)
- EMS	F-A, S-I
- IMDG LQ	0 l
Air transport in accordance with IATA	UN 3480 Lithium ion batteries / UN 3481 Lithium Ion batteries contained in equipment or Lithium Ion batteries packed with equipment
- Label	

14.3 Transport hazard class(es)

Transport by land according to ADR/RID	9
Inland navigation (ADN)	9
Marine transport in accordance with IMDG	9
Air transport in accordance with IATA	9

14.4 Packing group

Transport by land according to ADR/RID	not applicable
Inland navigation (ADN)	not applicable
Marine transport in accordance with IMDG	not applicable
Air transport in accordance with IATA	not applicable

14.5 Environmental hazards

Transport by land according to ADR/RID	no
Inland navigation (ADN)	no
Marine transport in accordance with IMDG	no
Air transport in accordance with IATA	no

14.6 Special precautions for user

Relevant information under SECTION 6 to 8.

We further certify that the enclosed products have been tested and fulfilled the requirements and conditions in accordance with UN Recommendations (T1 – T8) on the Transport of Dangerous Goods Model Regulations and the Manual of Tests and Criteria that can be treated as “Non-Dangerous Goods”.
The structural design of the cells prevents release of the hazardous media contained therein when the unit is used for its intended purpose.
The test results can be found in the table in the appendix of the safety data sheet.

14.7 Maritime transport in bulk according to IMO instruments

not applicable

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

EEC-REGULATIONS	2008/98/EG (2000/532/EC); 2010/75/EU; 2004/42/EG; (EG) 648/2004; (EC) 1907/2006 (REACH); (EU) 1272/2008; 75/324/EWG ((EC) 2016/2037); (EU) 2020/878; (EU) 2016/131; (EU) 2024/573; (EU) 2019/1148; (EU) 2019/1021, (EU) 2023/707
- Comment on component parts	SVHC (Candidate List of Substances of Very High Concern for authorisation) ≥ 0.1% CAS 872-50-4 - N-Methyl-2-pyrrolidone
- Annex XIV (REACH)	According to Annex XIV of Regulation (EC) 1907/2006 (REACH) the product does not contain any substances ≥ 0.1% that are subject to authorisation.
- Annex XVII (REACH)	According to Annex XVII of Regulation (EC) 1907/2006 (REACH) the product contains ≥ 0.1% of substances with the following restrictions. 27, 28, 30, 40, 71, 72, 75
TRANSPORT-REGULATIONS	ADR (2025); IMDG-Code (2025, 42. Amdt.); IATA-DGR (2026, 67th Edition)
NATIONAL REGULATIONS (EU):	
- Observe employment restrictions for people	none
- VOC (2010/75/CE)	0 %

15.2 Chemical safety assessment

not applicable

SECTION 16: Other information

16.1 Hazard statements (SECTION 3)

EUH066 Repeated exposure may cause skin dryness or cracking.
H336 May cause drowsiness or dizziness.
H335 May cause respiratory irritation.
H315 Causes skin irritation.
H360D May damage the unborn child.
H412 Harmful to aquatic life with long lasting effects.
H351 Suspected of causing cancer.
H261 In contact with water releases flammable gases.
H228 Flammable solid.
H410 Very toxic to aquatic life with long lasting effects.
H400 Very toxic to aquatic life.
H373 May cause damage to organs through prolonged or repeated exposure.
H302 Harmful if swallowed.
H319 Causes serious eye irritation.
H225 Highly flammable liquid and vapour.
H360Fd May damage fertility. Suspected of damaging the unborn child.
H318 Causes serious eye damage.
H314 Causes severe skin burns and eye damage.
H301 Toxic if swallowed.
H413 May cause long lasting harmful effects to aquatic life.
H302+H332 Harmful if swallowed or if inhaled.

H350i May cause cancer by inhalation.
H372 Causes damage to organs through prolonged or repeated exposure.
H317 May cause an allergic skin reaction.

16.2 Abbreviations and acronyms:

ADR = Accord européen relatif au transport international des marchandises Dangereuses par Route
RID = Règlement concernant le transport international ferroviaire de marchandises dangereuses
ADN = Accord européen relatif au transport international des marchandises dangereuses par voie de navigation intérieure
ATE = acute toxicity estimate
CAS = Chemical Abstracts Service
CLP = Classification, Labelling and Packaging
DMEL = Derived Minimum Effect Level
DNEL = Derived No Effect Level
EC50 = Median effective concentration
ECB = European Chemicals Bureau
EEC = European Economic Community
EINECS = European Inventory of Existing Commercial Chemical Substances
EL50 = Median effective loading
ELINCS = European List of Notified Chemical Substances
EmS = Emergency Schedules
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC-Code = International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk
IC50 = Inhibition concentration, 50%
IMDG = International Maritime Code for Dangerous Goods
IUCLID = International Uniform ChemicaL Information Database
IVIS = In vitro irritation score
LC50 = Lethal concentration, 50%
LD50 = Median lethal dose
LC0 = lethal concentration, 0%
LOAEL = lowest-observed-adverse-effect level
LL50 = Median lethal loading
LQ = Limited Quantities
MARPOL = International Convention for the Prevention of Marine Pollution from Ships
NOAEL = No Observed Adverse Effect Level
NOEC = No Observed Effect Concentration
PBT = Persistent, Bioaccumulative and Toxic substance
PNEC = Predicted No-Effect Concentration
REACH = Registration, Evaluation, Authorisation and Restriction of Chemicals
STP = Sewage Treatment Plant
TLV®/TWA = Threshold limit value – time-weighted average
TLV®STEL = Threshold limit value – short-time exposure limit
VOC = Volatile Organic Compounds
vPvB = very Persistent and very Bioaccumulative

16.3 Other information

This document does not comply with Regulation (EC) No 1907/2006, article 31 (5) and may be used for internal purposes only.

Classification procedure

Carc. 1A: H350i May cause cancer by inhalation. (Calculation method)
Repr. 1B: H360Fd May damage fertility. Suspected of damaging the unborn child. (Calculation method)
Repr. 1B: H360D May damage the unborn child. (Calculation method)
Skin Corr. 1A: H314 Causes severe skin burns and eye damage. (Calculation method)
Eye Dam. 1: H318 Causes serious eye damage. (Calculation method)
Skin Sens. 1: H317 May cause an allergic skin reaction. (Calculation method)
STOT RE 1: H372 Causes damage to organs through prolonged or repeated exposure. (Calculation method)
STOT RE 2: H373 May cause damage to organs through prolonged or repeated exposure. (Calculation method)
Acute Tox. 4: H302 Harmful if swallowed. (Calculation method)
Aquatic Acute 1: H400 Very toxic to aquatic life. (Calculation method)
Aquatic Chronic 2: H411 Toxic to aquatic life with long lasting effects. (Calculation method)

Modified position

2.1, 2.3, 3.2, 11.1, 12.5, 12.6, 13.1

Annex I

Test results of the UN Recommendation on the Transport of Dangerous Goods			
Manualof Test and Criteria (38.3 Lithium battery)		**Test result**	**Remark**
No	Test item		
T1	Altitude item	Pass	
T2	Thermal Test	Pass	
T3	Vibration	Pass	
T4	Shock	Pass	
T5	External Short Circuit	Pass	
T6	Impact	Pass	
T7	Overcharge	Pass	For pack and single cell bettery only
T8	Forced Discharge	Pass	