



Safety Data Sheet

(According to Regulation (EC) No. 1907/2006 (REACH)
and its amendment Regulation (EU) 2020/878)

Applicant: Rifen International Ltd

Address: Unit 601, 6/F, Apec Plaza, 49 Hoi Yuen Road, Kwun Tong,
Kowloon, HONG KONG

Attn.: Mr. Richard Felen

Sample Description: Li-ion Battery

Model No.: YD 501010-40mAh

TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch
TÜV SÜD Group

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Disclaimer Measurement Uncertainty: Unless otherwise agreed upon, pass or fail verdicts are given based on the measured values without consideration of measurement uncertainties. Please note, every test method has a measurement uncertainty which has been evaluated by the laboratory according to ISO IEC 17025 requirements. By taking measurement uncertainties into account it might happen that measured values can neither be assessed as pass or fail.

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

1.1. Product identifier

Product form : Article
Trade name : Li-ion Battery
Model No : YD 501010-40mAh

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

Relevant identified uses

Use of the substance/mixture : Power supply.

Uses advised against

Restrictions on use : No information available

1.3. Details of the supplier of the safety data sheet

Supplier

RIFEN INTERNATIONAL LIMITED
UNIT 601, 6/F APEC PLAZA, 49 HOI YUEN ROAD, KWUN TONG,
KOWLOON, HONG KONG
518101
T 852+23256228

1.4. Emergency telephone number

Emergency number : 852+23256228

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Not classified

Adverse physicochemical, human health and environmental effects

To our knowledge, this product does not present any particular risk, provided it is handled in accordance with good occupational hygiene and safety practice.

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) : Not applicable.
Signal word (CLP) : Not applicable.
Hazard statements (CLP) : Not applicable.
Precautionary statements (CLP) : Not applicable.
EUH-statements : Not applicable.

2.3. Other hazards

Other hazards which do not result in classification : No information available.



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This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII

This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

Contains no PBT and/or vPvB substances $\geq 0.1\%$ assessed in accordance with REACH Annex XIII

The mixture does not contain substance(s) included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or substance(s) are not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at a concentration equal to or greater than 0,1 %

SECTION 3: Composition/information on ingredients

Mixtures

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Cobaltate (CoO21-), lithium	CAS-No.: 12190-79-3 EC-No.: 235-362-0	20 – 40	Repr. 1B, H360Fd
Carbon	CAS-No.: 7440-44-0 EC-No.: 231-153-3	15 – 30	Eye Irrit. 2, H319 STOT SE 3, H335
Diethyl carbonate	CAS-No.: 105-58-8 EC-No.: 203-311-1	10 – 25	Flam. Liq. 2, H225
Copper	CAS-No.: 7440-50-8 EC-No.: 231-159-6	8 – 15	Not classified
Aluminum	CAS-No.: 7429-90-5 EC-No.: 231-072-3	2 – 10	Not classified
Ethene, homopolymer	CAS-No.: 9002-88-4 EC-No.: 618-339-3	3 – 10	Not classified
Phosphate(1-), hexafluoro-, lithium	CAS-No.: 21324-40-3 EC-No.: 244-334-7	1 – 5	Acute Tox. 3 (Oral), H301 Skin Corr. 1A, H314 Eye Dam. 1, H318 STOT RE 1, H372
Nickel	CAS-No.: 7440-02-0 EC-No.: 231-111-4	0.5 – 5	Skin Sens. 1, H317 Carc. 2, H351 STOT RE 1, H372

Full text of H- and EUH-statements: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general : If you feel unwell, seek medical advice.
First-aid measures after inhalation : Not an expected route of exposure.
First-aid measures after skin contact : Not an expected route of exposure. Wash skin with plenty of water.
First-aid measures after eye contact : Not an expected route of exposure.
First-aid measures after ingestion : Not an expected route of exposure.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/effects : No information available.

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4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Water spray, dry powder, foam.
Unsuitable extinguishing media : No information available.

5.2. Special hazards arising from the substance or mixture

Fire hazard : No fire hazard.
Explosion hazard : No direct explosion hazard.
Hazardous decomposition products in case of fire : Toxic fumes may be released.

5.3. Advice for firefighters

Firefighting instructions : Cool down the containers exposed to heat with a water spray. Do not allow run-off from fire fighting to enter drains or water courses. Eliminate every possible source of ignition. Ensure adequate ventilation, especially in confined areas. Evacuate personnel to a safe area. Avoid contact with skin, eyes and clothing. Move containers away from the fire area if this can be done without risk. Stay upwind.
Protection during firefighting : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Notify authorities if product enters sewers or public waters. Absorb spillage to prevent material damage.

For non-emergency personnel

Protective equipment : Avoid contact with eyes, skin and clothing.
Emergency procedures : Ventilate spillage area. Wear protective gloves. Keep unprotected persons away. Evacuate personnel to a safe area. Remove ignition sources. Avoid contact with skin and eyes.

For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".
Emergency procedures : Evacuate unnecessary personnel.

6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

For containment : Collect spillage.
Methods for cleaning up : Mechanically recover the product. Use a clean shovel to collect it in a properly sealed waste container with a label and completely sealed. Such containers shall be stored in suitable locations for the purpose of handling or disposing in accordance with national law.
Other information : Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Precautions for safe handling : Ensure good ventilation of the work station. Wear personal protective equipment. Do not open, destroy, or incinerate batteries because the battery may explode, break, or vent during these processes. Do not short-circuit the battery, overcharge, forced discharge or thrown into the fire. Do not squeeze the battery or immerse the battery in the solution.
- Hygiene measures : Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

- Technical measures : Keep away from open flames, hot surfaces and sources of ignition.
- Storage conditions : Avoid high temperatures. Store in a dry place. Keep container tightly closed. Store in a well-ventilated place. Keep cool.
- Incompatible materials : Strong acids, strong bases.

7.3. Specific end use(s)

No information available.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

National occupational exposure and biological limit values

Aluminum (7429-90-5)	
Austria - Occupational Exposure Limits	
MAK (OEL TWA)	10 mg/m ³ (inhalable fraction)
MAK (OEL STEL)	20 mg/m ³ (inhalable fraction)
Belgium - Occupational Exposure Limits	
OEL TWA	1 mg/m ³
Bulgaria - Occupational Exposure Limits	
OEL TWA	10 mg/m ³ (inhalable fraction) 1.5 mg/m ³ (respirable fraction)
Croatia - Occupational Exposure Limits	
GVI (OEL TWA)	10 mg/m ³ (total dust, inhalable particles) 4 mg/m ³ (respirable dust)
Croatia - Biological limit values	
BLV	200 µg/l Parameter: Aluminum - Medium: urine - Sampling time: at the end of the work shift
Czech Republic - Occupational Exposure Limits	
PEL (OEL TWA)	10 mg/m ³ (dust)
Denmark - Occupational Exposure Limits	
OEL TWA	5 mg/m ³ (total, dust and powder) 2 mg/m ³ (respirable, dust and powder)



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Aluminum (7429-90-5)	
OEL STEL	10 mg/m ³ (total, dust and powder) 4 mg/m ³ (respirable, dust and powder)
Estonia - Occupational Exposure Limits	
OEL TWA	10 mg/m ³ (total dust) 4 mg/m ³ (respirable dust)
France - Occupational Exposure Limits	
VME (OEL TWA)	10 mg/m ³ (metal) 5 mg/m ³ (dust)
Germany - Occupational Exposure Limits (TRGS 900)	
AGW (OEL TWA)	1.25 mg/m ³ (respirable fraction (dust)) 10 mg/m ³ (inhalable fraction (dust))
Germany - Biological limit values (TRGS 903)	
Biological limit value	50 µg/g creatinine Parameter: Aluminum - Medium: urine - Sampling time: for long-term exposures: at the end of the shift after several shifts
Greece - Occupational Exposure Limits	
OEL TWA	10 mg/m ³ (inhalable fraction) 5 mg/m ³ (respirable fraction)
Hungary - Occupational Exposure Limits	
AK (OEL TWA)	1 mg/m ³ (respirable fraction)
Ireland - Occupational Exposure Limits	
OEL TWA	1 mg/m ³ (respirable fraction)
OEL STEL	3 mg/m ³ (calculated-respirable dust)
Latvia - Occupational Exposure Limits	
OEL TWA	2 mg/m ³
Lithuania - Occupational Exposure Limits	
IPRV (OEL TWA)	5 mg/m ³ (inhalable fraction) 2 mg/m ³ (respirable fraction) 1 mg/m ³
Poland - Occupational Exposure Limits	
NDS (OEL TWA)	2.5 mg/m ³ (non-stabilized-inhalable fraction) 1.2 mg/m ³ (non-stabilized-respirable fraction)
Portugal - Occupational Exposure Limits	
OEL TWA	1 mg/m ³ (metal-respirable fraction)
OEL chemical category	A4 - Not Classifiable as a Human Carcinogen
Romania - Occupational Exposure Limits	
OEL TWA	3 mg/m ³ (dust) 1 mg/m ³ (fume)

Aluminum (7429-90-5)	
OEL STEL	10 mg/m ³ (dust) 3 mg/m ³ (fume)
Romania - Biological limit values	
BLV	200 µg/l Parameter: Aluminum - Medium: urine - Sampling time: end of shift
Slovakia - Occupational Exposure Limits	
NPHV (OEL TWA)	4 mg/m ³ (inhalable dust) 1.5 mg/m ³ (respirable dust)
Slovakia - Biological limit values	
BLV	60 µg/g creatinine Parameter: Aluminum - Medium: urine - Sampling time: not critical
Spain - Occupational Exposure Limits	
VLA-ED (OEL TWA)	1 mg/m ³ (see UNE EN 481:1995 on workplace atmospheres-respirable fraction)
Sweden - Occupational Exposure Limits	
NGV (OEL TWA)	5 mg/m ³ (total dust) 2 mg/m ³ (respirable fraction)
United Kingdom - Occupational Exposure Limits	
WEL TWA (OEL TWA)	10 mg/m ³ (inhalable dust) 4 mg/m ³ (respirable dust)
WEL STEL (OEL STEL)	30 mg/m ³ (calculated-inhalable dust) 12 mg/m ³ (calculated-respirable dust)
Norway - Occupational Exposure Limits	
Grenseverdi (OEL TWA)	5 mg/m ³ (pyrotechnical-powder)
Korttidsverdi (OEL STEL)	10 mg/m ³ (pyrotechnical-powder)
Switzerland - Occupational Exposure Limits	
MAK (OEL TWA)	3 mg/m ³ (respirable dust) 3 mg/m ³ (total dust limit values-respirable dust) 10 mg/m ³ (total dust limit values-inhalable dust)
Switzerland - BAT	
BAT	50 µg/g creatinine Parameter: Aluminum - Medium: urine - Sampling time: after several shifts (for long-term exposures) (metal) Parameter: Aluminum - Medium: urine - Sampling time: after several shifts (for long-term exposures) (metal)
USA - ACGIH - Occupational Exposure Limits	
ACGIH OEL TWA	1 mg/m ³ (respirable particulate matter)
ACGIH chemical category	Not Classifiable as a Human Carcinogen
Carbon (7440-44-0)	
Austria - Occupational Exposure Limits	
MAK (OEL TWA)	5 mg/m ³ (alveolar dust with <1% Quartz, respirable fraction)



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Carbon (7440-44-0)	
MAK (OEL STEL)	10 mg/m ³ (alveolar dust with <1% Quartz, respirable fraction)
Poland - Occupational Exposure Limits	
NDS (OEL TWA)	6 mg/m ³ (regulated under Synthetic graphite-inhalable fraction)
Copper (7440-50-8)	
EU - Indicative Occupational Exposure Limit (IOEL)	
Local name	Copper
IOEL TWA	0.01 mg/m ³ (respirable fraction)
Remark	(Year of adoption 2014)
Regulatory reference	SCOEL Recommendations
Austria - Occupational Exposure Limits	
Local name	Kupfer und seine Verbindungen
MAK (OEL TWA)	1 mg/m ³ (inhalable fraction) 0.1 mg/m ³ (respirable fraction, smoke)
MAK (OEL STEL)	4 mg/m ³ (inhalable fraction) 0.4 mg/m ³ (respirable fraction, smoke)
Regulatory reference	BGBl. II Nr. 156/2021
Belgium - Occupational Exposure Limits	
Local name	Cuivre (en Cu) # Koper (als Cu)
OEL TWA	0.2 mg/m ³ (fume) 1 mg/m ³ (dust and mist)
Regulatory reference	Koninklijk besluit/Arrêté royal 16/11/2023
Bulgaria - Occupational Exposure Limits	
Local name	Мед
OEL TWA	0.1 mg/m ³ (metal vapor)
Regulatory reference	Наредба № 13 от 30.12.2003 г. за защита на работещите от рискове, свързани с експозиция на химични агенти при работа (изм. и доп. ДВ. бр. 28 от 2024 г., в сила от 05.04.2024 г.)
Croatia - Occupational Exposure Limits	
Local name	Bakar
GVI (OEL TWA)	0.2 mg/m ³ (fume) 1 mg/m ³ (dust)
KGVI (OEL STEL)	2 mg/m ³ (dust)
Regulatory reference	Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, граниčnim vrijednostima izloženosti i biološkim граниčnim vrijednostima (NN 148/2023)
Czech Republic - Occupational Exposure Limits	
Local name	Měď



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Copper (7440-50-8)	
PEL (OEL TWA)	1 mg/m ³ (dust) 0.1 mg/m ³ (fume)
NPK-P (OEL C)	2 mg/m ³ (prach) (V - vdechovatelná frakce aerosolu) 0.2 mg/m ³ (dýmy) (R - respirabilní frakce aerosolu)
Regulatory reference	Nařízení vlády č. 361/2007 Sb. (Předpis 330/2023 Sb.)
Denmark - Occupational Exposure Limits	
Local name	Kobber
OEL TWA	1 mg/m ³ (dust and powder) 0.1 mg/m ³ (fume)
OEL STEL	2 mg/m ³ (dust and powder) 0.2 mg/m ³ (fume)
Regulatory reference	BEK nr 291 af 19/03/2024
Estonia - Occupational Exposure Limits	
Local name	Vask ja anorgaanilised ühendid (arvutatud vasele)
OEL TWA	1 mg/m ³ (total dust) 0.2 mg/m ³ (respirable dust)
Regulatory reference	Vabariigi Valitsuse 20. märtsi 2001. a määruse nr 105 (RT I, 02.04.2024, 13)
Finland - Occupational Exposure Limits	
Local name	Kupari, metalli
HTP (OEL TWA)	0.02 mg/m ³ (respirable dust)
Regulatory reference	HTP-ARVOT 2020 (Sosiaali- ja terveysministeriö)
France - Occupational Exposure Limits	
Local name	Cuivre
VME (OEL TWA)	0.2 mg/m ³ (fume) 1 mg/m ³ (dust)
VLE (OEL C/STEL)	2 mg/m ³ (dust)
Remark	Valeurs recommandées/admises
Regulatory reference	Circulaire du Ministère du travail (réf.: INRS ED 6443, 2022; Outil65)
Greece - Occupational Exposure Limits	
OEL TWA	0.2 mg/m ³ (fume) 1 mg/m ³ (dust)
OEL STEL	2 mg/m ³ (dust)
Hungary - Occupational Exposure Limits	
Local name	RÉZ és vegyületei (Cu-re számítva)
AK (OEL TWA)	0.1 mg/m ³ 0.01 mg/m ³ (fume; respirable fraction)
CK (OEL STEL)	0.2 mg/m ³

Copper (7440-50-8)	
Remark	R (Azok az anyagok, amelyek egészségkárosító hatása RÖVID expozíció hatására jelentkeznek)
Regulatory reference	5/2020. (II. 6.) ITM rendelet - A kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről
Ireland - Occupational Exposure Limits	
Local name	Copper (as Cu)
OEL TWA	0.2 mg/m ³ (fume) 1 mg/m ³ (dusts and mists)
OEL STEL	2 mg/m ³ (dusts and mists) 0.6 mg/m ³ (calculated-fume)
Remark	Advisory OELV (Advisory Occupational Exposure Limit Values)
Regulatory reference	Chemical Agents Code of Practice 2024
Latvia - Occupational Exposure Limits	
Local name	Varš
OEL TWA	0.5 mg/m ³
OEL STEL	1 mg/m ³
Regulatory reference	Ministru kabineta 2007. gada 15. maija noteikumiem Nr. 325 (Grozījumi Ministru kabineta 2024. gada 26. martā noteikumiem Nr. 191).
Lithuania - Occupational Exposure Limits	
IPRV (OEL TWA)	1 mg/m ³ (inhalable fraction) 0.2 mg/m ³ (respirable fraction)
Netherlands - Occupational Exposure Limits	
Local name	Koper
TGG-8u (OEL TWA)	0.1 mg/m ³ (inhalable dust)
Regulatory reference	Arbeidsomstandighedenregeling 2024
Poland - Occupational Exposure Limits	
Local name	Miedź i jej związki nieorganiczne
NDS (OEL TWA)	0.2 mg/m ³
Regulatory reference	Dz. U. 2024 poz. 1017 wraz z późn. zm.
Portugal - Occupational Exposure Limits	
Local name	Cobre
OEL TWA	0.2 mg/m ³ (fume) 1 mg/m ³ (dust; mist)
Regulatory reference	Norma Portuguesa NP 1796:2014
Romania - Occupational Exposure Limits	
Local name	Cupru
OEL TWA	0.5 mg/m ³ (dust)



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Copper (7440-50-8)	
OEL STEL	0.2 mg/m ³ (fume) 1.5 mg/m ³ (dust)
Regulatory reference	Hotărârea Guvernului nr. 1.218/2006 (Hotărârea nr. 179/2024)
Spain - Occupational Exposure Limits	
Local name	Cobre
VLA-ED (OEL TWA)	0.01 mg/m ³ (see UNE EN 481:1995 on workplace atmospheres-respirable fraction)
Remark	d (Véase UNE EN 481: Atmósferas en los puestos de trabajo. Definición de las fracciones por el tamaño de las partículas para la medición de aerosoles).
Regulatory reference	Límites de Exposición Profesional para Agentes Químicos en España 2024. INSHT
Sweden - Occupational Exposure Limits	
Local name	Koppar, och oorg. Föreningar (som Cu)
NGV (OEL TWA)	0.01 mg/m ³ (respirable fraction)
Remark	3 (Den respirabla fraktionen är de inhälerbara partiklar som når längst ner i luftvägarna, till alveolerna i lungorna)
Regulatory reference	Hygieniska gränsvärden (AFS 2018:1)
United Kingdom - Occupational Exposure Limits	
Local name	Copper
WEL TWA (OEL TWA)	1 mg/m ³ (dust and mists) 0.2 mg/m ³ (fume)
WEL STEL (OEL STEL)	0.6 mg/m ³ (calculated-fume) 2 mg/m ³ (dust and mist)
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE
Iceland - Occupational Exposure Limits	
Local name	Kopar
OEL TWA	1 mg/m ³ duft og ryk, (heildarryk) 0.1 mg/m ³ reykur, sem Cu, (örfínt ryk)
Regulatory reference	Reglugerð um mengunarmörk og aðgerðir til að draga úr mengun á vinnustöðum (Nr. 390/2009)
Norway - Occupational Exposure Limits	
Local name	Kobber
Grenseverdi (OEL TWA)	0.1 mg/m ³ (fume) 1 mg/m ³ (dust)
Korttidsverdi (OEL STEL)	3 mg/m ³ (value calculated-dust) 0.3 mg/m ³ (value calculated-fume)
Regulatory reference	FOR-2024-04-05-581



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Copper (7440-50-8)	
Switzerland - Occupational Exposure Limits	
Local name	Cuivre et ses composés inorganiques / Kupfer und seine anorganischen Verbindungen
MAK (OEL TWA)	0.1 mg/m ³ (inhalable dust)
KZGW (OEL STEL)	0.2 mg/m ³ (inhalable dust)
Notation	SS _c / SS _c
Remark	NIOSH. Exprimé en Cu. / NIOSH. Als Cu berechnet.
Regulatory reference	www.suva.ch, 01.01.2024
USA - ACGIH - Occupational Exposure Limits	
Local name	Copper, as Cu
ACGIH OEL TWA	0.2 mg/m ³ (fume)
Remark (ACGIH)	TLV® Basis: Irr; GI; metal fume fever
Regulatory reference	ACGIH 2024
Nickel (7440-02-0)	
EU - Indicative Occupational Exposure Limit (IOEL)	
Local name	Nickel metal
IOEL TWA	0.005 mg/m ³ (respirable fraction)
Remark	(Year of adoption 2011)
Regulatory reference	SCOEL Recommendations
EU - Biological Limit Value (BLV)	
Local name	Nickel and nickel compounds
Regulatory reference	SCOEL List of recommended health-based BLVs and BGVs
Austria - Occupational Exposure Limits	
TRK (OEL TWA)	0.5 mg/m ³ (dust, inhalable fraction)
OEL chemical category	Group A1 Carcinogen dust, Respiratory sensitizer dust, Skin sensitizer
Belgium - Occupational Exposure Limits	
OEL TWA	0.1 mg/m ³ (until January 18, 2025-inhalable fraction) 0.01 mg/m ³ (as from January 18, 2025-alveolar fraction)
Bulgaria - Occupational Exposure Limits	
OEL TWA	0.05 mg/m ³
Bulgaria - Biological limit values	
BLV	45 µg/l Parameter: Nickel - Medium: urine - Sampling time: after several work shifts
Croatia - Occupational Exposure Limits	
GVI (OEL TWA)	0.5 mg/m ³



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Nickel (7440-02-0)	
Croatia - Biological limit values	
BLV	10 µg/l Parameter: Nickel - Medium: plasma - Sampling time: at the end of the work shift 8 µg/g creatinine Parameter: Nickel - Medium: urine - Sampling time: at the end of the work shift (calculated on the average Creatinine value of 1.2 g/L urine)
Czech Republic - Occupational Exposure Limits	
PEL (OEL TWA)	0.05 mg/m ³ (respirable fraction of aerosol)
OEL chemical category	Sensitizer
Czech Republic - Biological limit values	
BLV	0.077 µmol/mmol Creatinine Parameter: Nickel - Medium: urine - Sampling time: discretionary 0.04 mg/g creatinine Parameter: Nickel - Medium: urine - Sampling time: discretionary
Denmark - Occupational Exposure Limits	
OEL TWA	0.05 mg/m ³ (dust and powder)
OEL STEL	0.1 mg/m ³ (dust and powder)
Estonia - Occupational Exposure Limits	
OEL TWA	0.5 mg/m ³
OEL chemical category	Sensitizer
Finland - Occupational Exposure Limits	
HTP (OEL TWA)	0.01 mg/m ³ (respirable dust)
Finland - Biological limit values	
BLV	0.1 µmol/l Parameter: Nickel - Medium: urine - Sampling time: after the shift after a working week or exposure period
France - Occupational Exposure Limits	
VME (OEL TWA)	1 mg/m ³
OEL chemical category	Carcinogen category 2
Germany - Occupational Exposure Limits (TRGS 900)	
AGW (OEL TWA)	0.03 mg/m ³ (the risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed-respirable fraction) 0.006 mg/m ³ (the risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed-inhalable fraction)
Chemical category	Skin sensitization
Greece - Occupational Exposure Limits	
OEL TWA	1 mg/m ³
Hungary - Occupational Exposure Limits	
AK (OEL TWA)	0.01 mg/m ³
OEL chemical category	Sensitizer, Carc. 1B - Presumed Carcinogen



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Nickel (7440-02-0)	
Latvia - Occupational Exposure Limits	
OEL TWA	0.05 mg/m ³
Latvia - Biological Exposure Indices	
BEI	3 µg/l Parameter: Nickel - Medium: urine
Lithuania - Occupational Exposure Limits	
IPRV (OEL TWA)	0.5 mg/m ³
OEL chemical category	Sensitizer, Carcinogen
Poland - Occupational Exposure Limits	
NDS (OEL TWA)	0.25 mg/m ³
Portugal - Occupational Exposure Limits	
OEL TWA	1.5 mg/m ³ (inhalable fraction)
OEL chemical category	A5 - Not Suspected as a Human Carcinogen
Romania - Occupational Exposure Limits	
OEL TWA	0.1 mg/m ³
OEL STEL	0.5 mg/m ³
OEL chemical category	C2
Romania - Biological limit values	
BLV	3 µg/l Parameter: Nickel - Medium: urine - Sampling time: end of shift (SCOEL)
Slovakia - Biological limit values	
BLV	0.03 mg/l Parameter: Nickel - Medium: blood - Sampling time: end of exposure or work shift
Slovenia - Occupational Exposure Limits	
OEL TWA	0.006 mg/m ³ (respirable fraction)
OEL STEL	0.048 mg/m ³ (respirable fraction)
OEL chemical category	Category 2
Spain - Occupational Exposure Limits	
VLA-ED (OEL TWA)	1 mg/m ³ (manufacturing, commercialization and use restrictions according to REACH)
OEL chemical category	Sensitizer
Sweden - Occupational Exposure Limits	
NGV (OEL TWA)	0.5 mg/m ³ (inhalable fraction)
OEL chemical category	Sensitizer
United Kingdom - Occupational Exposure Limits	
WEL TWA (OEL TWA)	0.5 mg/m ³
WEL STEL (OEL STEL)	1.5 mg/m ³ (calculated)



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Nickel (7440-02-0)	
WEL chemical category	Potential for cutaneous absorption
Norway - Occupational Exposure Limits	
Grenseverdi (OEL TWA)	0.05 mg/m ³
Korttidsverdi (OEL STEL)	0.15 mg/m ³ (value calculated)
OEL chemical category	Carcinogen, Potential reproductive hazard, Allergenic substance
Switzerland - Occupational Exposure Limits	
MAK (OEL TWA)	0.5 mg/m ³ (inhalable dust)
OEL chemical category	Sensitizer, Category C2 carcinogen
Switzerland - BAT	
BAT	45 µg/l Parameter: Nickel - Medium: urine - Sampling time: end of shift, and after several shifts (for long-term exposures) 766.6 nmol/L Parameter: Nickel - Medium: urine - Sampling time: end of shift, and after several shifts (for long-term exposures)
USA - ACGIH - Occupational Exposure Limits	
ACGIH OEL TWA	1.5 mg/m ³ (inhalable particulate matter)
ACGIH chemical category	Not Suspected as a Human Carcinogen
USA - ACGIH - Biological Exposure Indices	
BEI	5 µg/l Parameter: Nickel - Medium: urine - Sampling time: post-shift at end of workweek (background)
Diethyl carbonate (105-58-8)	
Romania - Occupational Exposure Limits	
OEL TWA	700 mg/m ³
	145 ppm
OEL STEL	1000 mg/m ³
	207 ppm
Ethene, homopolymer (9002-88-4)	
Bulgaria - Occupational Exposure Limits	
OEL TWA	10 mg/m ³ (dust (Dust from Polyethylene))
Czech Republic - Occupational Exposure Limits	
PEL (OEL TWA)	5 mg/m ³ (dust)
Latvia - Occupational Exposure Limits	
OEL TWA	5 mg/m ³ (dust (Polymers dust))
Lithuania - Occupational Exposure Limits	
IPRV (OEL TWA)	10 mg/m ³

8.2. Exposure controls

Appropriate engineering controls

Appropriate engineering controls:

Ensure good ventilation of the work station.

Personal protection equipment

Eye and face protection

Eye protection:

Not required.

Skin protection

Skin and body protection:

Wear suitable protective clothing.

Hand protection:

Protective gloves.

Respiratory protection

Respiratory protection:

Not required.

Thermal hazards

Thermal hazard protection:

No information available.

Environmental exposure controls

Environmental exposure controls:

Avoid release to the environment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Solid
Colour	: Not available
Appearance	: Solid
Odour	: Not available
Odour threshold	: Not available
Melting point	: Not available
Freezing point	: Not available
Boiling point	: Not available
Flammability	: Non flammable.
Lower explosion limit	: Not available
Upper explosion limit	: Not available
Flash point	: Not available
Auto-ignition temperature	: Not available
Decomposition temperature	: Not available
pH	: Not available
pH solution	: Not available
Viscosity, kinematic	: Not available
Solubility	: Not available
Partition coefficient n-octanol/water (Log Kow)	: Not available
Vapour pressure	: Not available
Vapour pressure at 50°C	: Not available
Density	: Not available
Relative density	: Not available

Relative vapour density at 20°C : Not available
 Particle size : Not available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

10.5. Incompatible materials

Strong acids, strong bases.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

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

Acute toxicity (oral) : Not classified
 Acute toxicity (dermal) : Not classified
 Acute toxicity (inhalation) : Not classified

Carbon (7440-44-0)	
LD50 oral rat	> 10000 mg/kg
LC50 Inhalation - Rat (Vapours)	> 64.4 mg/l
Copper (7440-50-8)	
LC50 Inhalation - Rat	> 5.11 mg/l/4h
Cobaltate (CoO21-), lithium (12190-79-3)	
LD50 oral rat	> 5000 mg/kg
LD50 dermal rat	> 2000 mg/kg
LC50 Inhalation - Rat	> 5.05 mg/l/4h
Phosphate(1-), hexafluoro-, lithium (21324-40-3)	
LD50 oral rat	50 – 300 mg/kg bodyweight Animal: rat, Animal sex: female, Guideline: OECD Guideline 423 (Acute Oral toxicity - Acute Toxic Class Method), Guideline: EU Method B.1 tris (Acute Oral Toxicity - Acute Toxic Class Method), Guideline: EPA OPPTS 870.1100 (Acute Oral Toxicity)



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Nickel (7440-02-0)	
LD50 oral rat	> 9000 mg/kg
LC50 Inhalation - Rat	> 10.2 mg/l (Exposure time: 1 h)
Diethyl carbonate (105-58-8)	
LD50 oral rat	4876 mg/kg
LC50 Inhalation - Rat	19500 mg/m ³
Ethene, homopolymer (9002-88-4)	
LD50 oral rat	> 8 g/kg
Skin corrosion/irritation	: Not classified
Serious eye damage/irritation	: Not classified
Respiratory or skin sensitisation	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Nickel (7440-02-0)	
IARC group	2B - Possibly carcinogenic to humans
Ethene, homopolymer (9002-88-4)	
IARC group	3 - Not classifiable
Reproductive toxicity	: Not classified
Phosphate(1-), hexafluoro-, lithium (21324-40-3)	
NOAEL (animal/male, F0/P)	500 mg/kg bodyweight Animal: rat, Animal sex: male
Nickel (7440-02-0)	
NOAEL (animal/male, F0/P)	> 1000 mg/kg bodyweight Effects on fertility, oral, rat, OECD 443
NOAEL (animal/female, F0/P)	> 1000 mg/kg bodyweight Effects on fertility, oral, rat, OECD 443
NOAEL (animal/male, F1)	> 1000 mg/kg bodyweight Developmental toxicity, oral, rat, OECD 443
NOAEL (animal/female, F1)	> 1000 mg/kg bodyweight Developmental toxicity, oral, rat, OECD 443
STOT-single exposure	: Not classified
Carbon (7440-44-0)	
STOT-single exposure	May cause respiratory irritation.
STOT-repeated exposure	: Not classified
Phosphate(1-), hexafluoro-, lithium (21324-40-3)	
STOT-repeated exposure	Causes damage to organs through prolonged or repeated exposure.
Nickel (7440-02-0)	
LOAEC (inhalation, rat, 90 days)	0.0001 mg/l 2 year, OECD 451
NOAEL (subchronic, oral, animal/male, 90 days)	0.011 mg/kg bodyweight/day long-term systemic effects, Tolerable Daily Intake (TDI) for nickel included in the background document for development of WHO (2007) guidelines for drinking water quality.



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Nickel (7440-02-0)	
NOAEL (subchronic, oral, animal/female, 90 days)	0.011 mg/kg bodyweight/day long-term systemic effects, Tolerable Daily Intake (TDI) for nickel included in the background document for development of WHO (2007) guidelines for drinking water quality.
STOT-repeated exposure	Causes damage to organs through prolonged or repeated exposure.

Aspiration hazard : Not classified

11.2. Information on other hazards

Endocrine disrupting properties

Adverse health effects caused by endocrine disrupting properties : The mixture does not contain substance(s) included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or substance(s) are not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at a concentration equal to or greater than 0,1 %

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : The product is not considered harmful to aquatic organisms nor to cause long-term adverse effects in the environment.

Hazardous to the aquatic environment, short-term (acute) : Not classified

Hazardous to the aquatic environment, long-term (chronic) : Not classified

Phosphate(1-), hexafluoro-, lithium (21324-40-3)	
EC50 96h - Algae [1]	> 100 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)

Nickel (7440-02-0)	
LC50 - Fish [1]	> 100 mg/l (Exposure time: 96 h - Species: Brachydanio rerio Source: IUCLID)
LC50 - Fish [2]	1.3 mg/l (Exposure time: 96 h - Species: Cyprinus carpio [semi-static] Source: EPA)
LC50 - Other aquatic organisms [1]	≥ 24.8 – ≤ 350 mg/l Marine fish, Fundulus heteroclitus
EC50 - Crustacea [1]	> 100 mg/l (Exposure time: 48 h - Species: Daphnia magna)

Diethyl carbonate (105-58-8)	
LC50 - Fish [1]	100 mg/l
EC50 - Crustacea [1]	100 mg/l
EC50 72h - Algae [1]	100 mg/l

12.2. Persistence and degradability

Li-ion Battery	
Persistence and degradability	No information available.



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12.3. Bioaccumulative potential

Carbon (7440-44-0)	
Partition coefficient n-octanol/water (Log Pow)	0.78
Nickel (7440-02-0)	
Bioaccumulative potential	Low bioaccumulation potential.
Diethyl carbonate (105-58-8)	
Partition coefficient n-octanol/water (Log Pow)	1.21

12.4. Mobility in soil

Cobaltate (CoO2-), lithium (12190-79-3)	
Ecology - soil	Slightly soluble in water.

12.5. Results of PBT and vPvB assessment

Li-ion Battery	
This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII	
This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII	

12.6. Endocrine disrupting properties

Adverse effects on the environment caused by endocrine disrupting properties : The mixture does not contain substance(s) included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or substance(s) are not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at a concentration equal to or greater than 0,1 %.

12.7. Other adverse effects

Other adverse effects : No information available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.

Product/Packaging disposal recommendations : Comply with applicable regulations for solid waste disposal. Disposal must be done according to official regulations.

Additional information : Do not re-use empty containers.

SECTION 14: Transport information

In accordance with ADR / IMDG (IMDG 2024, Amendment 41-22) / IATA (66th Edition) / ADN / RID

ADR	IMDG	IATA	ADN	RID
14.1. UN number or ID number				
UN 3481	UN 3481	UN 3481	UN 3481	UN 3481



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ADR	IMDG	IATA	ADN	RID
14.2. UN proper shipping name				
LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT	LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT	Lithium ion batteries contained in equipment	LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT	LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT
Transport document description				
UN 3481 LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT, 9, (E)	UN 3481 LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT, 9	UN 3481 Lithium ion batteries contained in equipment, 9	UN 3481 LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT, 9	UN 3481 LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT, 9
14.3. Transport hazard class(es)				
9A	9A	9A	9A	9A
14.4. Packing group				
Not applicable.	Not applicable.	Not applicable.	Not applicable.	Not applicable.
14.5. Environmental hazards				
Dangerous for the environment: No	Dangerous for the environment: No Marine pollutant: No EmS-No. (Fire): F-A EmS-No. (Spillage): S-I	Dangerous for the environment: No	Dangerous for the environment: No	Dangerous for the environment: No
No supplementary information available				

14.6. Special precautions for user

Overland transport

Classification code (ADR) : M4
 Special provisions (ADR) : 188, 230, 310, 348, 360, 376, 377, 387, 390, 670
 Limited quantities (ADR) : 0
 Excepted quantities (ADR) : E0
 Packing instructions (ADR) : P903, P908, P909, P910, P911, LP903, LP904, LP905, LP906
 Transport category (ADR) : 2
 Tunnel restriction code (ADR) : E
 EAC code : 2Y

Transport by sea

Special provisions (IMDG) : 188, 230, 310, 348, 360, 376, 377, 384, 387, 390
 Limited quantities (IMDG) : 0
 Excepted quantities (IMDG) : E0
 Packing instructions (IMDG) : P903, P908, P909, P910, P911, LP903, LP904, LP905, LP906
 Stowage category (IMDG) : A
 Stowage and handling (IMDG) : SW19



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Properties and observations (IMDG) : Electrical batteries containing lithium ion encased in a rigid metallic body. Lithium ion batteries may also be shipped in, or packed with, equipment. Electrical lithium batteries may cause fire due to an explosive rupture of the body caused by improper construction or reaction with contaminants.

Air transport

PCA Excepted quantities (IATA) : E0
PCA Limited quantities (IATA) : Forbidden
PCA limited quantity max net quantity (IATA) : Forbidden
PCA packing instructions (IATA) : 967
PCA max net quantity (IATA) : 5kg
CAO packing instructions (IATA) : 967
CAO max net quantity (IATA) : 35kg
Special provisions (IATA) : A48, A88, A99, A154, A181, A185, A213, A220
ERG code (IATA) : 12FZ

Inland waterway transport

Classification code (ADN) : M4
Special provisions (ADN) : 188, 230, 310, 348, 360, 376, 377, 387, 390, 670
Limited quantities (ADN) : 0
Excepted quantities (ADN) : E0
Equipment required (ADN) : PP
Number of blue cones/lights (ADN) : 0

Rail transport

Classification code (RID) : M4
Special provisions (RID) : 188, 230, 310, 348, 360, 376, 377, 387, 390, 670
Limited quantities (RID) : 0
Excepted quantities (RID) : E0
Packing instructions (RID) : P903, 908, 909, P910, P911, LP903, LP904, LP905, LP906
Transport category (RID) : 2
Colis express (express parcels) (RID) : CE2
Hazard identification number (RID) : 90

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

EU-Regulations

REACH Candidate List (SVHC)

Contains no substance(s) listed on the REACH Candidate List

PIC Regulation (Prior Informed Consent)

Contains no substance(s) listed on the PIC list (Regulation EU 649/2012 concerning the export and import of hazardous chemicals)

POP Regulation (Persistent Organic Pollutants)

Contains no substance(s) listed on the POP list (Regulation EU 2019/1021 on persistent organic pollutants)

Ozone Regulation (2024/590)

Contains no substance(s) listed on the Ozone Depletion list (Regulation EU 2024/590 on substances that deplete the ozone layer)



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Council Regulation (EC) for the control of dual-use items

Contains substance subject to the COUNCIL REGULATION (EC) for the control of dual-use items: Aluminium powder (7429-90-5), Nickel powder (7440-02-0).

Explosives Precursors Regulation (2019/1148)

Contains no substance(s) listed on the Explosives Precursors list (Regulation EU 2019/1148 on the marketing and use of explosives precursors)

Drug Precursors Regulation (273/2004)

Contains no substance(s) listed on the Drug Precursors list (Regulation EC 273/2004 on the manufacture and the placing on market of certain substances used in the illicit manufacture of narcotic drugs and psychotropic substances)

15.2. Chemical safety assessment

No chemical safety assessment has been carried out

SECTION 16: Other information

Abbreviations and acronyms:	
ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR	Agreement concerning the International Carriage of Dangerous Goods by Road
ATE	Acute Toxicity Estimate
BCF	Bioconcentration factor
BLV	Biological limit value
BOD	Biochemical oxygen demand (BOD)
COD	Chemical oxygen demand (COD)
DMEL	Derived Minimal Effect level
DNEL	Derived-No Effect Level
EC-No.	European Community number
EC50	Median effective concentration
EN	European Standard
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
LC50	Median lethal concentration
LD50	Median lethal dose
LOAEL	Lowest Observed Adverse Effect Level
NOAEC	No-Observed Adverse Effect Concentration
NOAEL	No-Observed Adverse Effect Level
NOEC	No-Observed Effect Concentration
OECD	Organisation for Economic Co-operation and Development
OEL	Occupational Exposure Limit



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Abbreviations and acronyms:	
PBT	Persistent Bioaccumulative Toxic
PNEC	Predicted No-Effect Concentration
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
SDS	Safety Data Sheet
STP	Sewage treatment plant
ThOD	Theoretical oxygen demand (ThOD)
TLM	Median Tolerance Limit
VOC	Volatile Organic Compounds
CAS-No.	Chemical Abstract Service number
N.O.S.	Not Otherwise Specified
vPvB	Very Persistent and Very Bioaccumulative
ED	Endocrine disruptor

Data sources : ECHA (European Chemicals Agency). Loli.
Training advice : Normal use of this product shall imply use in accordance with the instructions on the packaging.
Other information : No information available.

Full text of H- and EUH-statements:	
H225	Highly flammable liquid and vapour.
H301	Toxic if swallowed.
H314	Causes severe skin burns and eye damage.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
H351	Suspected of causing cancer.
H360Fd	May damage fertility. Suspected of damaging the unborn child.
H372	Causes damage to organs through prolonged or repeated exposure.

Safety Data Sheet (SDS), EU

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

-----End of Report-----