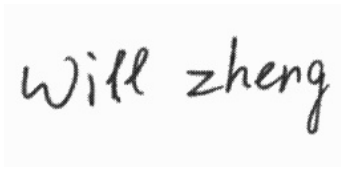
Safety Data Sheet

Regulation (EU) 2015/830 (REACH Annex II)

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:	Lithium Battery
Model No.:	502030-320mAh

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

Prepared by:



Will Zheng
Project Handler

Reviewed by:

Scarlett Liang
Designated Reviewer

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

1.1. Product identifier

Product form	: Article
Trade name	: lithium battery
Model No	: 502030-320mAh

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

1.2.1. Relevant identified uses

Use of the substance/mixture	: Energy supply

1.2.2. Uses advised against

Restrictions on use	: No information available

1.3. Details of the supplier of the safety data sheet

Supplier

Rifen International Ltd
Unit 601, 6/F, Apec Plaza, 49 Hoi Yuen Road, Kwun Tong,
Kowloon, HONG KONG
T (852) 2325 6228
herman@rifen-international.com

1.4. Emergency telephone number

Emergency number	: /

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)	: None
Signal word (CLP)	: None
Hazard statements (CLP)	: Not applicable
Precautionary statements (CLP)	: Not applicable
EUH-statements	: None.

2.3. Other hazards

Contains no PBT/vPvB substances ≥ 0.1% assessed in accordance with REACH Annex XIII

The mixtures is not included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is 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

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable.

3.2. Mixtures

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Cobalt lithium manganese nickel oxide	CAS-No.: 346417-97-8	37.5	Not classified
Graphite	CAS-No.: 7782-42-5 EC-No.: 231-955-3	20.5	Not classified
Phosphate(1-), hexafluoro-, lithium	CAS-No.: 21324-40-3 EC-No.: 244-334-7	16.9	Acute Tox. 3 (Oral), H301 Skin Corr. 1A, H314 Eye Dam. 1, H318 STOT RE 1, H372
Copper	CAS-No.: 7440-50-8 EC-No.: 231-159-6 EC Index-No.: 029-024-00-X	9.3	Aquatic Chronic 2, H411
Aluminum	CAS-No.: 7429-90-5 EC-No.: 231-072-3 EC Index-No.: 013-002-00-1	4.7	Flam. Sol. 1, H228 Water-react. 2, H261
Other	/	4.6	Not classified
Polypropylene	CAS-No.: 9003-07-0 EC-No.: 618-352-4	3.7	Not classified
DOWEX(R) 1X8	CAS-No.: 69772-06-1	1	Not classified
Nickel	CAS-No.: 7440-02-0 EC-No.: 231-111-4 EC Index-No.: 028-002-00-7	0.7	Skin Sens. 1, H317 Carc. 2, H351 STOT RE 1, H372
1,1-Difluoroethylene polymer	CAS-No.: 24937-79-9 EC-No.: 607-458-6	0.6	Not classified
Cellulose, carboxymethyl ether	CAS-No.: 9000-11-7 EC-No.: 618-326-2	0.3	Not classified
Poly[imino(1-oxo-1,12-dodecanediyl)], (nylon 12 chips)	CAS-No.: 24937-16-4 EC-No.: 607-456-5	0.2	Not classified

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 after inhalation : Not an expected route of exposure.

First-aid measures after skin contact : 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. Call a poison center or a doctor if you feel unwell.

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

No additional information available

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

Hazardous decomposition products in case of fire	: Toxic fumes may be released.

5.3. Advice for firefighters

Precautionary measures fire	: Eliminate every possible source of ignition. Keep container tightly closed and away from heat, sparks and flame.
Protection during firefighting	: Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.
Other information	: 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. Cool containers / tanks with spray water if possible. Stay upwind.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures	: Ventilate spillage area. Evacuate personnel to a safe area. Remove ignition sources. Avoid contact with skin and eyes.

6.1.2. 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".

6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

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

No additional information available

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.
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

Storage conditions : Avoid high temperatures. Store in a dry place. Keep container tightly closed. Store in a well-ventilated place. Keep cool.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1 National occupational exposure and biological limit values

Aluminum (7429-90-5)	
Austria - Occupational Exposure Limits	
MAK (OEL TWA)	10 mg/m³ (inhalable fraction)
MAK (OEL STEL)	20 mg/m³ (inhalable fraction)
Belgium - Occupational Exposure Limits	
OEL TWA	1 mg/m³
Bulgaria - Occupational Exposure Limits	
OEL TWA	10 mg/m³ (inhalable fraction) 1.5 mg/m³ (respirable fraction)
Croatia - Occupational Exposure Limits	
GVI (OEL TWA) [1]	10 mg/m³ (total dust, inhalable particles) 4 mg/m³ (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/m³ (dust)
Denmark - Occupational Exposure Limits	
OEL TWA [1]	5 mg/m³ (dust and powder; total) 2 mg/m³ (dust and powder; respirable)
Estonia - Occupational Exposure Limits	
OEL TWA	10 mg/m³ (total dust) 4 mg/m³ (respirable dust)
France - Occupational Exposure Limits	
VME (OEL TWA)	10 mg/m³ (metal) 5 mg/m³ (dust)
Germany - Occupational Exposure Limits (TRGS 900)	
AGW (OEL TWA) [1]	1.25 mg/m³ (respirable fraction (dust) 10 mg/m³ (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

Aluminum (7429-90-5)	
Greece - Occupational Exposure Limits	
OEL TWA	10 mg/m³ (inhalable fraction) 5 mg/m³ (respirable fraction)
Hungary - Occupational Exposure Limits	
AK (OEL TWA)	1 mg/m³ (respirable dust)
Ireland - Occupational Exposure Limits	
OEL TWA [1]	1 mg/m³ (respirable fraction)
OEL STEL	3 mg/m³ (calculated-respirable dust)
Latvia - Occupational Exposure Limits	
OEL TWA	2 mg/m³
Lithuania - Occupational Exposure Limits	
IPRV (OEL TWA)	5 mg/m³ (inhalable fraction) 2 mg/m³ (respirable fraction) 1 mg/m³
Poland - Occupational Exposure Limits	
NDS (OEL TWA)	2.5 mg/m³ (non-stabilized-inhalable fraction) 1.2 mg/m³ (non-stabilized-respirable fraction)
Portugal - Occupational Exposure Limits	
OEL TWA	10 mg/m³ (metal dust)
OEL chemical category	A4 - Not Classifiable as a Human Carcinogen
Romania - Occupational Exposure Limits	
OEL TWA	3 mg/m³ (dust) 1 mg/m³ (fume)
OEL STEL	10 mg/m³ (dust) 3 mg/m³ (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) [1]	4 mg/m³ (inhalable dust) 1.5 mg/m³ (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]	1 mg/m³ (see UNE EN 481:1995 on workplace atmospheres-respirable fraction)
Sweden - Occupational Exposure Limits	
NGV (OEL TWA)	5 mg/m³ (total dust) 2 mg/m³ (respirable fraction)
United Kingdom - Occupational Exposure Limits	
WEL TWA (OEL TWA) [1]	10 mg/m³ (inhalable dust) 4 mg/m³ (respirable dust)

Aluminum (7429-90-5)	
WEL STEL (OEL STEL)	30 mg/m³ (calculated-inhalable dust) 12 mg/m³ (calculated-respirable dust)
Norway - Occupational Exposure Limits	
Grenseverdi (OEL TWA) [1]	5 mg/m³ (pyrotechnical-powder)
Korttidsverdi (OEL STEL)	10 mg/m³ (pyrotechnical-powder)
Switzerland - Occupational Exposure Limits	
MAK (OEL TWA) [1]	3 mg/m³ (respirable dust)
Switzerland - BAT	
BAT	50 µg/g creatinine Parameter: Aluminum - Medium: urine - Sampling time: after several shifts (for long-term exposures)
USA - ACGIH - Occupational Exposure Limits	
ACGIH OEL TWA	1 mg/m³ (respirable particulate matter)
ACGIH chemical category	Not Classifiable as a Human Carcinogen

Copper (7440-50-8)	
EU - Indicative Occupational Exposure Limit (IOEL)	
Local name	Copper
IOEL TWA	0.01 mg/m³ (respirable fraction)
Remark	(Year of adoption 2014)
Regulatory reference	SCOEL Recommendations
Austria - Occupational Exposure Limits	
MAK (OEL TWA)	1 mg/m³ (inhalable fraction) 0.1 mg/m³ (respirable fraction, smoke)
MAK (OEL STEL)	4 mg/m³ (inhalable fraction) 0.4 mg/m³ (respirable fraction, smoke)
Belgium - Occupational Exposure Limits	
OEL TWA	0.2 mg/m³ (fume) 1 mg/m³ (dust and mist)
Bulgaria - Occupational Exposure Limits	
OEL TWA	0.1 mg/m³ (metal vapor)
Croatia - Occupational Exposure Limits	
GVI (OEL TWA) [1]	0.2 mg/m³ (fume) 1 mg/m³ (dust)
KGVI (OEL STEL)	2 mg/m³ (dust)
Czech Republic - Occupational Exposure Limits	
PEL (OEL TWA)	1 mg/m³ (dust) 0.1 mg/m³ (fume)
Denmark - Occupational Exposure Limits	
OEL TWA [1]	1 mg/m³ (dust and powder) 0.1 mg/m³ (fume)

Copper (7440-50-8)	
Estonia - Occupational Exposure Limits	
OEL TWA	1 mg/m³ (total dust) 0.2 mg/m³ (respirable dust)
Finland - Occupational Exposure Limits	
HTP (OEL TWA) [1]	0.02 mg/m³ (respirable dust)
France - Occupational Exposure Limits	
VME (OEL TWA)	0.2 mg/m³ (fume) 1 mg/m³ (dust)
VLE (OEL C/STEL)	2 mg/m³ (dust)
Greece - Occupational Exposure Limits	
OEL TWA	0.2 mg/m³ (fume) 1 mg/m³ (dust)
OEL STEL	2 mg/m³ (dust)
Hungary - Occupational Exposure Limits	
AK (OEL TWA)	0.1 mg/m³ 0.01 mg/m³ (fume)
CK (OEL STEL)	0.2 mg/m³
Ireland - Occupational Exposure Limits	
OEL TWA [1]	0.2 mg/m³ (fume) 1 mg/m³ (dusts and mists)
OEL STEL	2 mg/m³ (dusts and mists) 0.6 mg/m³ (calculated-fume)
Latvia - Occupational Exposure Limits	
OEL TWA	0.5 mg/m³
Lithuania - Occupational Exposure Limits	
IPRV (OEL TWA)	1 mg/m³ (inhalable fraction) 0.2 mg/m³ (respirable fraction)
Netherlands - Occupational Exposure Limits	
TGG-8u (OEL TWA)	0.1 mg/m³ (inhalable dust)
Poland - Occupational Exposure Limits	
NDS (OEL TWA)	0.2 mg/m³
Portugal - Occupational Exposure Limits	
OEL TWA	0.2 mg/m³ (fume) 1 mg/m³ (dust and mist)
Romania - Occupational Exposure Limits	
OEL TWA	0.5 mg/m³ (dust)
OEL STEL	0.2 mg/m³ (fume) 1.5 mg/m³ (dust)
Slovakia - Occupational Exposure Limits	
NPHV (OEL TWA) [1]	1 mg/m³ (inhalable fraction) 0.2 mg/m³ (respirable fraction)

Copper (7440-50-8)	
Spain - Occupational Exposure Limits	
VLA-ED (OEL TWA) [1]	0.1 mg/m³ (see UNE EN 481:1995 on workplace atmospheres-respirable fraction)
Sweden - Occupational Exposure Limits	
NGV (OEL TWA)	0.01 mg/m³ (respirable fraction)
United Kingdom - Occupational Exposure Limits	
WEL TWA (OEL TWA) [1]	1 mg/m³ (dust and mists) 0.2 mg/m³ (fume)
WEL STEL (OEL STEL)	0.6 mg/m³ (calculated-fume) 2 mg/m³ (dust and mist)
Norway - Occupational Exposure Limits	
Grenseverdi (OEL TWA) [1]	0.1 mg/m³ (fume) 1 mg/m³ (dust)
Korttidsverdi (OEL STEL)	3 mg/m³ (value calculated-dust) 0.3 mg/m³ (value calculated-fume)
Switzerland - Occupational Exposure Limits	
MAK (OEL TWA) [1]	0.1 mg/m³ (inhalable dust)
KZGW (OEL STEL)	0.2 mg/m³ (inhalable dust)
USA - ACGIH - Occupational Exposure Limits	
ACGIH OEL TWA	0.2 mg/m³ (fume)

Graphite (7782-42-5)	
Austria - Occupational Exposure Limits	
MAK (OEL TWA)	5 mg/m³ (alveolar dust with <1% Quartz, respirable fraction)
MAK (OEL STEL)	10 mg/m³ (alveolar dust with <1% Quartz, respirable fraction)
Belgium - Occupational Exposure Limits	
OEL TWA	2 mg/m³ (except fibers-alveolar fraction)
Bulgaria - Occupational Exposure Limits	
OEL TWA	5 mg/m³ (inhalable fraction)
Croatia - Occupational Exposure Limits	
GVI (OEL TWA) [1]	4 mg/m³ (respirable dust) 10 mg/m³ (total dust, inhalable particles)
Czech Republic - Occupational Exposure Limits	
PEL (OEL TWA)	2 mg/m³ (dust)
Denmark - Occupational Exposure Limits	
OEL TWA [1]	2.5 mg/m³ (natural-respirable)
Estonia - Occupational Exposure Limits	
OEL TWA	5 mg/m³ (total dust (Dusts)
Finland - Occupational Exposure Limits	
HTP (OEL TWA) [1]	2 mg/m³

Graphite (7782-42-5)	
France - Occupational Exposure Limits	
VME (OEL TWA)	2 mg/m³ (alveolar fraction)
Germany - Occupational Exposure Limits (TRGS 900)	
AGW (OEL TWA) [1]	1.25 mg/m³ (respirable fraction (dust) 10 mg/m³ (inhalable fraction (dust)
Greece - Occupational Exposure Limits	
OEL TWA	10 mg/m³ (inhalable fraction) 5 mg/m³ (respirable fraction)
Hungary - Occupational Exposure Limits	
AK (OEL TWA)	5 mg/m³ (respirable (flying and fibrous powders)
Ireland - Occupational Exposure Limits	
OEL TWA [1]	2 mg/m³ (all forms except fibres; respirable fraction)
OEL STEL	6 mg/m³ (calculated-all forms except fibres; respirable fraction)
Latvia - Occupational Exposure Limits	
OEL TWA	2 mg/m³ (Carbon dust)
Lithuania - Occupational Exposure Limits	
IPRV (OEL TWA)	5 mg/m³ (dust)
Poland - Occupational Exposure Limits	
NDS (OEL TWA)	4 mg/m³ (natural-inhalable fraction) 1 mg/m³ (natural-respirable fraction)
Portugal - Occupational Exposure Limits	
OEL TWA	2 mg/m³ (all forms except Graphite fibers-respirable fraction)
Romania - Occupational Exposure Limits	
OEL TWA	2 mg/m³ (Quartz <=5%-dust, respirable fraction)
Spain - Occupational Exposure Limits	
VLA-ED (OEL TWA) [1]	2 mg/m³ (see UNE EN 481:1995 on workplace atmospheres-dust; respirable fraction)
United Kingdom - Occupational Exposure Limits	
WEL TWA (OEL TWA) [1]	10 mg/m³ (inhalable dust) 4 mg/m³ (respirable dust)
WEL STEL (OEL STEL)	30 mg/m³ (calculated-inhalable dust) 12 mg/m³ (calculated-respirable dust)
Norway - Occupational Exposure Limits	
Grenseverdi (OEL TWA) [1]	5 mg/m³ (natural-total dust) 2 mg/m³ (natural-respirable dust) 10 mg/m³ (synthetic-total dust) 4 mg/m³ (synthetic-respirable dust)
Korttidsverdi (OEL STEL)	10 mg/m³ (natural-total dust) 4 mg/m³ (natural-respirable dust) 20 mg/m³ (synthetic-total dust) 8 mg/m³ (synthetic-respirable dust)

Graphite (7782-42-5)	
Switzerland - Occupational Exposure Limits	
MAK (OEL TWA) [1]	3 mg/m³ (natural-respirable dust)
USA - ACGIH - Occupational Exposure Limits	
ACGIH OEL TWA	2 mg/m³ (all forms except graphite fibers-respirable particulate matter)

Nickel (7440-02-0)	
EU - Indicative Occupational Exposure Limit (IOEL)	
Local name	Nickel metal
IOEL TWA	0.005 mg/m³ (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/m³ (dust, inhalable fraction)
OEL chemical category	Group A1 Carcinogen dust, Respiratory sensitizer dust, Skin sensitizer
Belgium - Occupational Exposure Limits	
OEL TWA	1 mg/m³
Bulgaria - Occupational Exposure Limits	
OEL TWA	0.05 mg/m³
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) [1]	0.5 mg/m³
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)	0.5 mg/m³ (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 [1]	0.05 mg/m³ (dust and powder)

Nickel (7440-02-0)	
Estonia - Occupational Exposure Limits	
OEL TWA	0.5 mg/m³
OEL chemical category	Sensitizer
Finland - Occupational Exposure Limits	
HTP (OEL TWA) [1]	0.01 mg/m³ (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/m³ 1 mg/m³ (metal gratings)
OEL chemical category	Carcinogen category 2
Germany - Occupational Exposure Limits (TRGS 900)	
AGW (OEL TWA) [1]	0.03 mg/m³ (the risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed-respirable fraction) 0.006 mg/m³ (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/m³
Hungary - Occupational Exposure Limits	
AK (OEL TWA)	0.01 mg/m³
OEL chemical category	Sensitizer, Carc. 1B - Presumed Carcinogen
Ireland - Occupational Exposure Limits	
OEL TWA [1]	0.5 mg/m³
OEL STEL	1.5 mg/m³ (calculated)
OEL chemical category	Sensitizer
Latvia - Occupational Exposure Limits	
OEL TWA	0.05 mg/m³
Latvia - Biological Exposure Indices	
BEI	3 µg/l Parameter: Nickel - Medium: urine
Lithuania - Occupational Exposure Limits	
IPRV (OEL TWA)	0.5 mg/m³
OEL chemical category	Sensitizer, Carcinogen
Poland - Occupational Exposure Limits	
NDS (OEL TWA)	0.25 mg/m³
Portugal - Occupational Exposure Limits	
OEL TWA	1.5 mg/m³ (inhalable fraction)
OEL chemical category	A5 - Not Suspected as a Human Carcinogen

Nickel (7440-02-0)	
Romania - Occupational Exposure Limits	
OEL TWA	0.1 mg/m³
OEL STEL	0.5 mg/m³
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/m³ (respirable fraction)
OEL STEL	0.048 mg/m³ (respirable fraction)
OEL chemical category	Category 2
Spain - Occupational Exposure Limits	
VLA-ED (OEL TWA) [1]	1 mg/m³ (manufacturing, commercialization and use restrictions according to REACH)
OEL chemical category	Sensitizer
Sweden - Occupational Exposure Limits	
NGV (OEL TWA)	0.5 mg/m³ (total dust)
OEL chemical category	Sensitizer
United Kingdom - Occupational Exposure Limits	
WEL TWA (OEL TWA) [1]	0.5 mg/m³
WEL STEL (OEL STEL)	1.5 mg/m³ (calculated)
WEL chemical category	Potential for cutaneous absorption
Norway - Occupational Exposure Limits	
Grenseverdi (OEL TWA) [1]	0.05 mg/m³
Korttidsverdi (OEL STEL)	0.15 mg/m³ (value calculated)
OEL chemical category	Carcinogen, Potential reproductive hazard, Allergenic substance
Switzerland - Occupational Exposure Limits	
MAK (OEL TWA) [1]	0.5 mg/m³ (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)
USA - ACGIH - Occupational Exposure Limits	
ACGIH OEL TWA	1.5 mg/m³ (inhalable particulate matter)
ACGIH chemical category	Not Suspected as a Human Carcinogen

Nickel (7440-02-0)	
USA - ACGIH - Biological Exposure Indices	
BEI	5 µg/l Parameter: Nickel - Medium: urine - Sampling time: post-shift at end of workweek (background)

Polypropylene (9003-07-0)	
Czech Republic - Occupational Exposure Limits	
PEL (OEL TWA)	5 mg/m³ (dust)
Latvia - Occupational Exposure Limits	
OEL TWA	5 mg/m³ (dust (Polymers dust)
Lithuania - Occupational Exposure Limits	
IPRV (OEL TWA)	10 mg/m³ (not stabilized)

8.1.2. Recommended monitoring procedures

No additional information available

8.1.3. Air contaminants formed

No additional information available

8.1.4. DNEL and PNEC

No additional information available

8.1.5. Control banding

No additional information available

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Appropriate engineering controls:

Ensure good ventilation of the work station.

8.2.2. Personal protection equipment

8.2.2.1. Eye and face protection

Eye protection:

Not required

8.2.2.2. Skin protection

Skin and body protection:

Wear suitable protective clothing

Hand protection:

Protective gloves

8.2.2.3. Respiratory protection

Respiratory protection:

Not required

8.2.2.4. Thermal hazards

No additional information available

8.2.3. 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.
Explosive limits	: Not available
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
Particle size distribution	: Not available
Particle shape	: Not available
Particle aspect ratio	: Not available
Particle aggregation state	: Not available
Particle agglomeration state	: Not available
Particle specific surface area	: Not available
Particle dustiness	: Not available

9.2. Other information

9.2.1. Information with regard to physical hazard classes

No additional information available

9.2.2. Other safety characteristics

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

No additional information available

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

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)

Aluminum (7429-90-5)	
LC50 Inhalation - Rat	> 0.888 mg/l/4h

Copper (7440-50-8)	
LC50 Inhalation - Rat	> 5.11 mg/l/4h

Graphite (7782-42-5)	
LC50 Inhalation - Rat	> 2000 mg/m³ (Exposure time: 4 h)

Nickel (7440-02-0)	
LD50 oral rat	> 9000 mg/kg
LC50 Inhalation - Rat	> 10.2 mg/l (Exposure time: 1 h)

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

Polypropylene (9003-07-0)	
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

STOT-single exposure : Not classified

STOT-repeated exposure : Not classified

Phosphate(1-), hexafluoro-, lithium (21324-40-3)	
STOT-repeated exposure	Causes damage to organs through prolonged or repeated exposure.

Graphite (7782-42-5)	
NOAEC (inhalation, rat, dust/mist/fume, 90 days)	0.000279 mg/l air Animal: rat, Guideline: OECD Guideline 413 (Subchronic Inhalation Toxicity: 90-Day Study)

Nickel (7440-02-0)	
STOT-repeated exposure	Causes damage to organs through prolonged or repeated exposure.

Aspiration hazard : Not classified

11.2. Information on other hazards

11.2.1. Endocrine disrupting properties

Adverse health effects caused by endocrine disrupting properties : The mixture is not included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is 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

11.2.2. Other information

Other information : No information available

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)
NOEC chronic fish	4 mg/l Test organisms (species): Duration: '21 d'

Copper (7440-50-8)	
LC50 - Fish [1]	0.0068 – 0.0156 mg/l (Exposure time: 96 h - Species: Pimephales promelas)
LC50 - Fish [2]	< 0.3 mg/l (Exposure time: 96 h - Species: Pimephales promelas [static])
EC50 - Crustacea [1]	0.03 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])
EC50 72h - Algae [1]	0.0426 – 0.0535 mg/l (Species: Pseudokirchneriella subcapitata [static])
EC50 96h - Algae [1]	0.031 – 0.054 mg/l (Species: Pseudokirchneriella subcapitata [static])

Graphite (7782-42-5)	
LC50 - Fish [1]	> 100 mg/l Test organisms (species): Danio rerio (previous name: Brachydanio rerio)
EC50 - Crustacea [1]	> 100 mg/l Test organisms (species): Daphnia magna
EC50 72h - Algae [1]	19 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)
EC50 72h - Algae [2]	7.2 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)
NOEC (chronic)	47 mg/l Test organisms (species): Daphnia magna Duration: '21 d'

Nickel (7440-02-0)	
LC50 - Fish [1]	> 100 mg/l (Exposure time: 96 h - Species: Brachydanio rerio)
LC50 - Fish [2]	1.3 mg/l (Exposure time: 96 h - Species: Cyprinus carpio [semi-static])
EC50 - Crustacea [1]	> 100 mg/l (Exposure time: 48 h - Species: Daphnia magna)
EC50 - Crustacea [2]	1 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])
EC50 72h - Algae [1]	0.18 mg/l (Species: Pseudokirchneriella subcapitata)
EC50 96h - Algae [1]	0.174 – 0.311 mg/l (Species: Pseudokirchneriella subcapitata [static])

12.2. Persistence and degradability

No additional information available

12.3. Bioaccumulative potential

No additional information available

12.4. Mobility in soil

No additional information available

12.5. Results of PBT and vPvB assessment

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 is not included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is 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

12.7. Other adverse effects

No additional 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. Destroy the product by incineration (in accordance with local and national regulations).

Contaminated packaging : Dispose of contents/container in accordance with licensed collector's sorting instructions. Destroy packaging by incineration at an approved waste disposal site. In accordance with local and national regulations.

SECTION 14: Transport information

In accordance with ADR / IMDG(IMDG CODE 40-20) / IATA (DGR 64th) / ADN / RID

ADR	IMDG	IATA	ADN	RID
14.1. UN number or ID number				
UN 3481	UN 3481	UN 3481	UN 3481	UN 3481
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, 9A, (E)	UN 3481 LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT, 9	UN 3481 Lithium ion batteries contained in equipment, 9A	UN 3481 LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT, 9A	UN 3481 LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT, 9A
14.3. Transport hazard class(es)				
9	9	9	9	9
				
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	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
Limited quantities (IMDG) : 0
Excepted quantities (IMDG) : E0
Packing instructions (IMDG) : P903, P908, P909 , P910, P911, LP903, LP904, LP905, LP906

EmS-No. (Fire)	: F-A
EmS-No. (Spillage)	: S-I
Stowage category (IMDG)	: A
Stowage and handling (IMDG)	: SW19
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, A164, A181, A185, A206, 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

15.1.1. EU-Regulations

REACH Annex XVII (Restriction List)

Not applicable.

REACH Annex XIV (Authorisation List)

Not applicable.

REACH Candidate List (SVHC)

Contains no substance on the REACH candidate list

PIC Regulation (Prior Informed Consent)

Contains no substance subject to Regulation (EU) No 649/2012 of the European Parliament and of the Council of 4 July 2012 concerning the export and import of hazardous chemicals.

POP Regulation (Persistent Organic Pollutants)

Contains no substance subject to Regulation (EU) No 2019/1021 of the European Parliament and of the Council of 20 June 2019 on persistent organic pollutants

Ozone Regulation (1005/2009)

Contains no substance subject to REGULATION (EU) No 1005/2009 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 September 2009 on substances that deplete the ozone layer.

Explosives Precursors Regulation (2019/1148)

Contains no substance subject to Regulation (EU) 2019/1148 of the European Parliament and of the Council of 20 June 2019 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 drug precursors)

15.1.2. National regulations

France

Occupational diseases	
Code	Description
RG 25	Diseases resulting from the inhalation of mineral dust containing crystalline silica (quartz, cristobalite, tridyr crystalline silicates (kaolin, talc), graphite or coal.
RG 66	Occupational rhinitis and asthma

Germany

Employment restrictions	: Observe restrictions according Act on the Protection of Working Mothers (MuSchG). Observe restrictions according Act on the Protection of Young People in Employment (JArbSchG).
Water hazard class (WGK)	: WGK 3, Highly hazardous to water (Classification according to AwSV, Annex 1).
Hazardous Incident Ordinance (12. BImSchV)	: Is not subject of the Hazardous Incident Ordinance (12. BImSchV)

Netherlands

SZW-lijst van kankerverwekkende stoffen	: None of the components are listed
SZW-lijst van mutagene stoffen	: None of the components are listed
SZW-lijst van reprotoxische stoffen – Borstvoeding	: None of the components are listed
SZW-lijst van reprotoxische stoffen – Vruchtbaarheid	: None of the components are listed
SZW-lijst van reprotoxische stoffen – Ontwikkeling	: None of the components are listed

Denmark

Danish National Regulations	: Young people below the age of 18 years are not allowed to use the product Pregnant/breastfeeding women working with the product must not be in direct contact with the product

Switzerland

Storage class (LK)	: LK 11/13 - Solids

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
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 disrupting properties

Data sources	: Loli. ECHA reference.
Training advice	: Normal use of this product shall imply use in accordance with the instructions on the packaging.

Full text of H- and EUH-statements:	
Acute Tox. 3 (Oral)	Acute toxicity (oral), Category 3
Aquatic Chronic 2	Hazardous to the aquatic environment – Chronic Hazard, Category 2
Carc. 2	Carcinogenicity, Category 2
Eye Dam. 1	Serious eye damage/eye irritation, Category 1
Flam. Sol. 1	Flammable solids, Category 1
H228	Flammable solid.
H261	In contact with water releases flammable gases.
H301	Toxic if swallowed.
H314	Causes severe skin burns and eye damage.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H351	Suspected of causing cancer.
H372	Causes damage to organs through prolonged or repeated exposure.
H411	Toxic to aquatic life with long lasting effects.
Skin Corr. 1A	Skin corrosion/irritation, Category 1, Sub-Category 1A
Skin Sens. 1	Skin sensitisation, Category 1
STOT RE 1	Specific target organ toxicity – Repeated exposure, Category 1
Water-react. 2	Substances and Mixtures which, in contact with water, emit flammable gases, Category 2

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---------