

Lithium ion Battery

Safety Data Sheet

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



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

1.1. Product identifier

Product form : Article
Trade name : Lithium ion Battery
Product model : LFP48173170E-120Ah

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

1.2.1. Relevant identified uses

Main use category : No information available

1.2.2. Uses advised against

Restrictions on use : No information available

1.3. Details of the supplier of the safety data sheet

Supplier : Jiangsu Higeer New Energy Co., Ltd
Address : NO.55, Jianshe Road, Yunting Town, Jiangyin, Jiangsu Province, China
Zip Code : 214400
Phone : 0510-88012065
Fax : 0510-88012020
E-mail : xuq@ihigeer.com

1.4. Emergency telephone number

+86-13914288740

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]

No labelling applicable

Hazard pictograms (CLP) : None
Signal word (CLP) : None
Hazard statements (CLP) : Not applicable
Precautionary statements (CLP) : Not applicable
EU Specific Hazard Statements : None

2.3. Other hazards

No additional information available

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

Technical Report No.: 64.168.18.00443.01B

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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]
Phosphoric acid, iron(2+) lithium salt (1:1:1)	(CAS-No.) 15365-14-7 (EC-No.) 476-700-9	36	Not classified
Phosphate(1-), hexafluoro-, lithium	(CAS-No.) 21324-40-3 (EC-No.) 244-334-7	21.5	Not classified
Graphite	(CAS-No.) 7782-42-5 (EC-No.) 231-955-3	20	Not classified
Copper	(CAS-No.) 7440-50-8 (EC-No.) 231-159-6	12	Not classified
Aluminum	(CAS-No.) 7429-90-5 (EC-No.) 231-072-3 (EC Index-No.) 013-002-00-1	8.5	Flam. Sol. 1, H228 Water-react. 2, H261
Polyethylene	(CAS-No.) 9002-88-4	2	Not classified

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general : If you feel unwell, seek medical advice (show directions for use or safety data sheet if possible).
First-aid measures after inhalation : Not an expected route of exposure.
First-aid measures after skin contact : Not expected to present a significant skin hazard under anticipated conditions of normal use. No special technical protective measures required.
First-aid measures after eye contact : Not an expected route of exposure.
First-aid measures after ingestion : Rinse mouth out with water. If you feel unwell, seek medical advice.

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 : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
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 inhalation of vapors. Move containers from fire area if it can be done without personal risk. Cool tanks/drums with water spray/remove them into safety. Stay upwind.

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SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures : Evacuate personnel to safe areas. Ensure adequate ventilation, especially in confined areas.
Remove all sources of ignition. Avoid contact with skin, eyes and inhalation of vapors.

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".

Emergency procedures : Stop leak if safe to do so.

6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

For containment : Such containers shall be stored in suitable locations for the purpose of handling or disposing in accordance with national law

Methods for cleaning up : Use a clean shovel to collect it in a properly sealed waste container with a label and completely sealed.

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

Storage conditions : Prohibited high temperature storage. Store in a well-ventilated place. Store in a dry place. Keep container tightly closed. Keep cool.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Copper (7440-50-8)		
Austria	MAK (mg/m ³)	1 mg/m ³ (inhalable fraction) 0.1 mg/m ³ (respirable fraction, smoke)
Austria	MAK Short time value (mg/m ³)	4 mg/m ³ (inhalable fraction) 0.4 mg/m ³ (respirable fraction, smoke)
Belgium	Limit value (mg/m ³)	0.2 mg/m ³ (fume) 1 mg/m ³ (dust and mist)
Bulgaria	OEL TWA (mg/m ³)	0.1 mg/m ³ (metal vapor)
Croatia	GVI (granična vrijednost izloženosti) (mg/m ³)	0.2 mg/m ³ (fume) 1 mg/m ³ (dust)
Croatia	KGVI (kratkotrajna granična vrijednost izloženosti) (mg/m ³)	2 mg/m ³ (dust and fume)
Czech Republic	Expoziční limity (PEL) (mg/m ³)	1 mg/m ³ (dust) 0.1 mg/m ³ (fume)
Denmark	Grænseværdie (langvarig) (mg/m ³)	1 mg/m ³ (dust and powder) 0.1 mg/m ³ (fume)
Estonia	OEL TWA (mg/m ³)	1 mg/m ³ (total dust) 0.2 mg/m ³ (respirable dust)

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Copper (7440-50-8)		
Finland	HTP-arvo (8h) (mg/m ³)	0.02 mg/m ³ (respirable)
France	VME (mg/m ³)	0.2 mg/m ³ (fume) 1 mg/m ³ (dust)
France	VLE (mg/m ³)	2 mg/m ³ (dust)
Greece	OEL TWA (mg/m ³)	0.2 mg/m ³ (fume) 1 mg/m ³ (dust)
Greece	OEL STEL (mg/m ³)	2 mg/m ³ (dust)
Hungary	AK-érték	1 mg/m ³ 0.1 mg/m ³ (fume)
Hungary	CK-érték	4 mg/m ³ 0.4 mg/m ³ (fume)
Ireland	OEL (8 hours ref) (mg/m ³)	0.2 mg/m ³ (fume) 1 mg/m ³ (dusts and mists)
Ireland	OEL (15 min ref) (mg/m ³)	0.6 mg/m ³ (calculated-fume) 2 mg/m ³ (dusts and mists)
Latvia	OEL TWA (mg/m ³)	0.5 mg/m ³
Lithuania	IPRV (mg/m ³)	1 mg/m ³ (inhalable fraction) 0.2 mg/m ³ (respirable fraction)
Netherlands	Grenswaarde TGG 8H (mg/m ³)	0.1 mg/m ³ (inhalable fraction)
Poland	NDS (mg/m ³)	0.2 mg/m ³
Portugal	OEL TWA (mg/m ³)	0.2 mg/m ³ (fume) 1 mg/m ³ (dust and mist)
Romania	OEL TWA (mg/m ³)	0.5 mg/m ³ (powder)
Romania	OEL STEL (mg/m ³)	0.2 mg/m ³ (fume) 1.5 mg/m ³ (dust)
Slovakia	NPHV (priemerná) (mg/m ³)	1 mg/m ³ (dust) 0.1 mg/m ³ (fume)
Slovakia	NPHV (Hraničná) (mg/m ³)	2 mg/m ³ (dust) 0.2 mg/m ³ (fume)
Slovenia	OEL TWA (mg/m ³)	1 mg/m ³ (inhalable fraction) 0.1 mg/m ³ (respirable fraction, fume)
Slovenia	OEL STEL (mg/m ³)	4 mg/m ³ (inhalable fraction) 0.4 mg/m ³ (respirable fraction, fume)
Spain	VLA-ED (mg/m ³)	0.2 mg/m ³ (fume) 1 mg/m ³ (dust and mist)
Sweden	nivågränsvärde (NVG) (mg/m ³)	1 mg/m ³ (total dust) 0.2 mg/m ³ (respirable dust)
United Kingdom	WEL TWA (mg/m ³)	1 mg/m ³ (dust and mists) 0.2 mg/m ³ (fume)
United Kingdom	WEL STEL (mg/m ³)	0.6 mg/m ³ (calculated-fume) 2 mg/m ³ (dust and mist)
Russian Federation	OEL TWA (mg/m ³)	0.5 mg/m ³ (aerosol)
Norway	Grenseverdier (AN) (mg/m ³)	0.1 mg/m ³ (fume) 1 mg/m ³ (dust)
Norway	Grenseverdier (Korttidsverdi) (mg/m ³)	0.3 mg/m ³ (value calculated-fume) 2 mg/m ³ (value calculated-dust)
Switzerland	MAK (mg/m ³)	0.1 mg/m ³ (inhalable dust)
Switzerland	KZGW (mg/m ³)	0.2 mg/m ³ (inhalable dust)
Australia	TWA (mg/m ³)	1 mg/m ³ (dust and mist) 0.2 mg/m ³ (fume)
Canada (Quebec)	VEMP (mg/m ³)	0.2 mg/m ³ (fume) 1 mg/m ³ (dust and mist)
USA - ACGIH	ACGIH TWA (mg/m ³)	0.2 mg/m ³ (fume)

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Copper (7440-50-8)		
USA - IDLH	US IDLH (mg/m ³)	100 mg/m ³ (dust, fume and mist)
USA - NIOSH	NIOSH REL (TWA) (mg/m ³)	1 mg/m ³ (dust and mist) 0.1 mg/m ³ (fume)
USA - OSHA	OSHA PEL (TWA) (mg/m ³)	0.1 mg/m ³ (fume) 1 mg/m ³ (dust and mist)
Aluminum (7429-90-5)		
Austria	MAK (mg/m ³)	10 mg/m ³ (inhalable fraction)
Austria	MAK Short time value (mg/m ³)	20 mg/m ³ (inhalable fraction)
Belgium	Limit value (mg/m ³)	1 mg/m ³
Bulgaria	OEL TWA (mg/m ³)	10 mg/m ³ (metal dust) 1.5 mg/m ³ (respirable fraction)
Croatia	GVI (granična vrijednost izloženosti) (mg/m ³)	10 mg/m ³ (total dust) 4 mg/m ³ (respirable dust)
Croatia	Croatia - BLV	200 mg/l Parameter: Aluminum - Medium: urine - Sampling time: at the end of the shift
Czech Republic	Expoziční limity (PEL) (mg/m ³)	10 mg/m ³ (dust)
Denmark	Grænseværdie (langvarig) (mg/m ³)	5 mg/m ³ (dust, fume and powder, total) 2 mg/m ³ (dust and powder, respirable)
Estonia	OEL TWA (mg/m ³)	10 mg/m ³ (total dust) 4 mg/m ³ (respirable dust)
France	VME (mg/m ³)	10 mg/m ³ (metal) 5 mg/m ³ (dust)
Greece	OEL TWA (mg/m ³)	10 mg/m ³ (inhalable fraction) 5 mg/m ³ (respirable fraction)
Hungary	AK-érték	6 mg/m ³ (respirable dust)
Ireland	OEL (8 hours ref) (mg/m ³)	1 mg/m ³ (respirable fraction)
Ireland	OEL (15 min ref) (mg/m ³)	3 mg/m ³ (calculated-respirable dust)
Latvia	OEL TWA (mg/m ³)	2 mg/m ³
Lithuania	IPRV (mg/m ³)	5 mg/m ³ (inhalable fraction) 2 mg/m ³ (respirable fraction) 1 mg/m ³
Poland	NDS (mg/m ³)	2.5 mg/m ³ (inhalable fraction) 1.2 mg/m ³ (respirable fraction)
Portugal	OEL TWA (mg/m ³)	10 mg/m ³ (metal dust)
Romania	OEL TWA (mg/m ³)	3 mg/m ³ (dust) 1 mg/m ³ (fume)
Romania	OEL STEL (mg/m ³)	10 mg/m ³ (dust) 3 mg/m ³ (fume)
Romania	Romania - BLV	200 µg/l Parameter: Aluminum - Medium: urine - Sampling time: end of shift
Slovakia	NPHV (priemerná) (mg/m ³)	1.5 mg/m ³ (metal) 6 mg/m ³ (total aerosol)
Slovakia	Slovakia - BLV	60 µg/g creatinine Parameter: Aluminum - Medium: urine - Sampling time: not critical
Spain	VLA-ED (mg/m ³)	10 mg/m ³ (dust)
Sweden	nivågränsvärde (NVG) (mg/m ³)	5 mg/m ³ (total dust) 2 mg/m ³ (respirable dust)
United Kingdom	WEL TWA (mg/m ³)	10 mg/m ³ (inhalable dust) 4 mg/m ³ (respirable dust)
United Kingdom	WEL STEL (mg/m ³)	30 mg/m ³ (calculated-inhalable dust) 12 mg/m ³ (calculated-respirable dust)
Russian Federation	OEL TWA (mg/m ³)	2 mg/m ³ (aerosol)
Norway	Grenseverdier (AN) (mg/m ³)	5 mg/m ³ (pyrotechnical-powder)

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Aluminum (7429-90-5)		
Norway	Grenseverdier (Korttidsverdi) (mg/m ³)	10 mg/m ³ (pyrotechnical, value calculated-powder)
Switzerland	MAK (mg/m ³)	3 mg/m ³ (respirable dust)
Switzerland	Switzerland - BLV	60 µg/g creatinine Parameter: Aluminum - Medium: urine - Sampling time: no restrictions
Australia	TWA (mg/m ³)	10 mg/m ³ (dust) 5 mg/m ³ (welding fume)
Canada (Quebec)	VEMP (mg/m ³)	10 mg/m ³
USA - ACGIH	ACGIH TWA (mg/m ³)	1 mg/m ³ (respirable particulate matter)
USA - NIOSH	NIOSH REL (TWA) (mg/m ³)	10 mg/m ³ (total dust) 5 mg/m ³ (respirable dust)
USA - OSHA	OSHA PEL (TWA) (mg/m ³)	15 mg/m ³ (total dust) 5 mg/m ³ (respirable fraction)
Polyethylene (9002-88-4)		
Bulgaria	OEL TWA (mg/m ³)	10 mg/m ³ (dust)
Czech Republic	Expoziční limity (PEL) (mg/m ³)	5 mg/m ³ (dust)
Latvia	OEL TWA (mg/m ³)	5 mg/m ³ (dust)
Lithuania	IPRV (mg/m ³)	10 mg/m ³
Slovakia	NPHV (priemerná) (mg/m ³)	5 mg/m ³ (total solid aerosol)
Graphite (7782-42-5)		
Austria	MAK (mg/m ³)	5 mg/m ³ (alveolar dust with <1% Quartz, respirable fraction)
Austria	MAK Short time value (mg/m ³)	10 mg/m ³ (alveolar dust with <1% Quartz, respirable fraction)
Belgium	Limit value (mg/m ³)	2 mg/m ³ (except fibers-alveolar fraction)
Bulgaria	OEL TWA (mg/m ³)	5 mg/m ³ (inhalable fraction)
Croatia	GVI (granična vrijednost izloženosti) (mg/m ³)	4 mg/m ³ (respirable dust) 10 mg/m ³ (total dust)
Czech Republic	Expoziční limity (PEL) (mg/m ³)	2 mg/m ³
Denmark	Grænseværdie (langvarig) (mg/m ³)	2.5 mg/m ³ (natural-respirable)
Estonia	OEL TWA (mg/m ³)	5 mg/m ³ (dust)
Finland	HTP-arvo (8h) (mg/m ³)	2 mg/m ³
France	VME (mg/m ³)	2 mg/m ³ (alveolar fraction)
Greece	OEL TWA (mg/m ³)	10 mg/m ³ (inhalable fraction) 5 mg/m ³ (respirable fraction)
Ireland	OEL (8 hours ref) (mg/m ³)	10 mg/m ³ (total inhalable dust) 4 mg/m ³ (respirable dust)
Ireland	OEL (15 min ref) (mg/m ³)	30 mg/m ³ (calculated-total inhalable dust) 12 mg/m ³ (calculated-respirable dust)
Latvia	OEL TWA (mg/m ³)	2 mg/m ³
Lithuania	IPRV (mg/m ³)	5 mg/m ³ (dust)
Poland	NDS (mg/m ³)	4 mg/m ³ (natural-inhalable fraction) 1 mg/m ³ (natural-respirable fraction) 6 mg/m ³ (synthetic-inhalable fraction)
Portugal	OEL TWA (mg/m ³)	2 mg/m ³ (all forms except Graphite fibers-respirable fraction)
Romania	OEL TWA (mg/m ³)	2 mg/m ³ (Quartz <=5%-dust, respirable fraction)
Slovakia	NPHV (priemerná) (mg/m ³)	2 mg/m ³ (respirable fraction, 5% or less fibrogenic component) 10 mg/m ³ (respirable fraction, greater than 5% fibrogenic component) 10 mg/m ³ (total aerosol)

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Graphite (7782-42-5)		
Spain	VLA-ED (mg/m ³)	2 mg/m ³ (see UNE EN 481:1995 on workplace atmospheres. Definition of fractions by particle size for aerosol measurement-dust; respirable fraction)
Sweden	nivågränsvärde (NVG) (mg/m ³)	5 mg/m ³ (total dust)
United Kingdom	WEL TWA (mg/m ³)	10 mg/m ³ (inhalable dust) 4 mg/m ³ (respirable dust)
United Kingdom	WEL STEL (mg/m ³)	30 mg/m ³ (calculated-inhalable dust) 12 mg/m ³ (calculated-respirable dust)
Norway	Grenseverdier (AN) (mg/m ³)	5 mg/m ³ (natural-total dust) 2 mg/m ³ (natural-respirable dust) 10 mg/m ³ (synthetic-total dust) 4 mg/m ³ (synthetic-respirable dust)
Norway	Grenseverdier (Korttidsverdi) (mg/m ³)	10 mg/m ³ (natural, value calculated-total dust) 4 mg/m ³ (natural, value calculated-respirable dust) 15 mg/m ³ (synthetic, value calculated-total dust) 8 mg/m ³ (synthetic, value calculated-respirable dust)
Switzerland	MAK (mg/m ³)	2.5 mg/m ³ (natural-respirable dust) 5 mg/m ³ (natural-inhalable dust)
Australia	TWA (mg/m ³)	3 mg/m ³ (containing no asbestos and <1% crystalline silica-respirable dust)
Canada (Quebec)	VEMP (mg/m ³)	2 mg/m ³ (containing no Asbestos and <1% Crystalline silica, except Graphite fibres-respirable dust)
USA - ACGIH	ACGIH TWA (mg/m ³)	2 mg/m ³ (all forms except graphite fibers-respirable particulate matter)
USA - IDLH	US IDLH (mg/m ³)	1250 mg/m ³
USA - NIOSH	NIOSH REL (TWA) (mg/m ³)	2.5 mg/m ³ (natural-respirable dust)
USA - OSHA	OSHA PEL (TWA) (mg/m ³)	15 mg/m ³ (synthetic-total dust) 5 mg/m ³ (synthetic-respirable fraction)

8.2. Exposure controls

Appropriate engineering controls:

Ensure good ventilation of the work station.

Hand protection:

Protective gloves

Eye protection:

Safety glasses

Skin and body protection:

Wear suitable protective clothing

Respiratory protection:

In case of insufficient ventilation, wear suitable respiratory equipment

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	: No data available
Odour	: No data available
Odour threshold	: No data available

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

Technical Report No.: 64.168.18.00443.01B

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pH	: No data available
Relative evaporation rate (butylacetate=1)	: No data available
Melting point	: No data available
Freezing point	: Not applicable
Boiling point	: No data available
Flash point	: Not applicable
Auto-ignition temperature	: Not applicable
Decomposition temperature	: No data available
Flammability (solid, gas)	: Non flammable.
Vapour pressure	: No data available
Relative vapour density at 20 °C	: No data available
Relative density	: Not applicable
Solubility	: No data available
Log Pow	: No data available
Viscosity, kinematic	: Not applicable
Viscosity, dynamic	: No data available
Explosive properties	: No data available
Oxidising properties	: No data available
Explosive limits	: Not applicable

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

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No deformation, destruction, crushed, disassemble, overcharge, short circuit. Prolonged exposure to damp conditions

10.5. Incompatible materials

Strong acid, Strong bases. Oxidizing agent.

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 toxicological effects

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
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

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Reproductive toxicity	: Not classified
STOT-single exposure	: Not classified
STOT-repeated exposure	: Not classified
Aspiration hazard	: Not classified

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.
Acute aquatic toxicity	: Not classified
Chronic aquatic toxicity	: Not classified

Copper (7440-50-8)	
LC50 fish	0.0068 - 0.0156 mg/l (Exposure time: 96 h - Species: Pimephales promelas)
EC50 Daphnia	0.03 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])
EC50 72h algae	0.0426 - 0.0535 mg/l (Species: Pseudokirchneriella subcapitata [static])
EC50 96h algae	0.031 - 0.054 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

No additional information available

12.6. 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.
Product/Packaging disposal recommendations	: Dispose of contents/container in accordance with licensed collector's sorting instructions.

SECTION 14: Transport information

In accordance with ADR / RID / IMDG / IATA / ADN

ADR	IMDG	IATA	ADN	RID
14.1. UN number				
3480	3480	3480	3480	3480
14.2. UN proper shipping name				
LITHIUM ION BATTERIES	LITHIUM ION BATTERIES	Lithium ion batteries	LITHIUM ION BATTERIES	LITHIUM ION BATTERIES
Transport document description				
UN 3480 LITHIUM ION BATTERIES, 9A, (E)	UN 3480 LITHIUM ION BATTERIES, 9	UN 3480 Lithium ion batteries, 9	UN 3480 LITHIUM ION BATTERIES, 9A	UN 3480 LITHIUM ION BATTERIES, 9A
14.3. Transport hazard class(es)				
9A	9	9	9A	9A
14.4. Packing group				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable

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

Technical Report No.: 64.168.18.00443.01B

TÜV SÜD Group

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ADR	IMDG	IATA	ADN	RID
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				
ADR	IMDG	IATA	ADN	RID
14.1. UN number				
3481	3481	3481	3481	3481
14.2. UN proper shipping name				
LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT / LITHIUM ION BATTERIES PACKED WITH 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 / LITHIUM ION BATTERIES PACKED WITH EQUIPMENT, 9A, (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, 9A	UN 3481 LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT, 9A
14.3. Transport hazard class(es)				
9A	9	9	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	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, 376, 377, 636
 Limited quantities (ADR) : 0
 Excepted quantities (ADR) : E0
 Packing instructions (ADR) : P903, P908, P909, P910, LP903, LP904
 Transport category (ADR) : 2
 Tunnel restriction code (ADR) : E
 EAC code : 4W

- Transport by sea

Special provisions (IMDG) : 188, 230, 310, 348, 376, 377
 Limited quantities (IMDG) : 0
 Excepted quantities (IMDG) : E0
 Packing instructions (IMDG) : P903, P908, P909, LP903, LP904
 EmS-No. (Fire) : F-A
 EmS-No. (Spillage) : S-I
 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) : Forbidden
PCA max net quantity (IATA) : Forbidden
CAO packing instructions (IATA) : See 965
CAO max net quantity (IATA) : See 965
Special provisions (IATA) : A88, A99, A154, A164, A183, A201, A206, A331
ERG code (IATA) : 9F

- Inland waterway transport

Classification code (ADN) : M4
Special provisions (ADN) : 188, 230, 310, 348, 376, 377, 636
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, _376, 377, 636
Limited quantities (RID) : 0
Excepted quantities (RID) : E0
Packing instructions (RID) : P903, 908, 909, P910, LP903, LP904
Transport category (RID) : 2
Colis express (express parcels) (RID) : CE2
Hazard identification number (RID) : 90

- Overland transport

Classification code (ADR) : M4
Special provisions (ADR) : 188, 230, 310, 360, 348, 376, 377, 636
Limited quantities (ADR) : 0
Excepted quantities (ADR) : E0
Packing instructions (ADR) : P903, P908, P909, P910, LP903, LP904
Transport category (ADR) : 2
Tunnel restriction code (ADR) : E
EAC code : 4W

- Transport by sea

Special provisions (IMDG) : 188, 230, 348, 360, 376, 377
Limited quantities (IMDG) : 0
Excepted quantities (IMDG) : E0
Packing instructions (IMDG) : P903, P908, P909 , LP903, LP904
EmS-No. (Fire) : F-A
EmS-No. (Spillage) : S-I
Stowage category (IMDG) : A
Stowage and handling (IMDG) : SW19

Lithium ion Battery

Safety Data Sheet

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



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, A99, A154, A164, A181, A185, A88, A206
ERG code (IATA) : 9F

- Inland waterway transport

Classification code (ADN) : M4
Special provisions (ADN) : 188, 230, 310, 348, 360, 376, 377, 636
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, 636
Limited quantities (RID) : 0
Excepted quantities (RID) : E0
Packing instructions (RID) : P903, 908, 909, P910, LP903, LP904
Transport category (RID) : 2
Colis express (express parcels) (RID) : CE2
Hazard identification number (RID) : 90

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

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

Contains no substance on the REACH candidate list

15.1.2. National regulations

Graphite(CAS#7782-42-5) : Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on the Canadian DSL (Domestic Substances List)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on the United States TSCA (Toxic Substances Control Act) inventory
Listed on INSQ (Mexican National Inventory of Chemical Substances)

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Aluminum(CAS#7429-90-5)	: Listed on Turkish inventory of chemical Listed on the TCSI (Taiwan Chemical Substance Inventory) Listed on the AICS (Australian Inventory of Chemical Substances) Listed on the Canadian DSL (Domestic Substances List) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances) Listed on the Korean ECL (Existing Chemicals List) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances) Listed on the United States TSCA (Toxic Substances Control Act) inventory Subject to reporting requirements of United States SARA Section 313 Listed on the Canadian IDL (Ingredient Disclosure List) Listed on INSQ (Mexican National Inventory of Chemical Substances) Listed on Turkish inventory of chemical
Copper(CAS#7440-50-8)	: Listed on the TCSI (Taiwan Chemical Substance Inventory) Listed on the AICS (Australian Inventory of Chemical Substances) Listed on the Canadian DSL (Domestic Substances List) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances) Listed on the Korean ECL (Existing Chemicals List) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances) Listed on the United States TSCA (Toxic Substances Control Act) inventory Subject to reporting requirements of United States SARA Section 313 Listed on the Canadian IDL (Ingredient Disclosure List) Listed on INSQ (Mexican National Inventory of Chemical Substances) Listed on Turkish inventory of chemical
Phosphate(1-), hexafluoro-, lithium (CAS#21324-40-3)	: Listed on the TCSI (Taiwan Chemical Substance Inventory) Listed on the AICS (Australian Inventory of Chemical Substances) Listed on the Canadian NDSL (Non-Domestic Substances List) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances) Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory Listed on the Japanese ISHL (Industrial Safety and Health Law) Listed on the Korean ECL (Existing Chemicals List) Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances) Listed on the United States TSCA (Toxic Substances Control Act) inventory
Phosphoric acid, iron(2+) lithium salt (1:1:1)(CAS#15365-14-7)	: Listed on the TCSI (Taiwan Chemical Substance Inventory) Listed on the Canadian DSL (Domestic Substances List) Listed on ELINCS (European List of Notified Chemical Substances) Listed on the United States TSCA (Toxic Substances Control Act) inventory
Polyethylene(CAS#9002-88-4)	: Listed on the TCSI (Taiwan Chemical Substance Inventory) Listed on the AICS (Australian Inventory of Chemical Substances) Listed on the Canadian DSL (Domestic Substances List) Listed on IECSC (Inventory of Existing Chemical Substances Produced or

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Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on the United States TSCA (Toxic Substances Control Act) inventory
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)

Germany

VwVwS Annex reference : Water hazard class (WGK) 2, significant hazard to waters (KBwS-Beschluss; ID No. 7616)
12th Ordinance Implementing the Federal Immission Control Act - 12.BImSchV : Is not subject of the 12. BImSchV (Hazardous Incident Ordinance)

Netherlands

SZW-lijst van kankerverwekkende stoffen : None of the components are listed
SZW-lijst van mutagene stoffen : None of the components are listed
NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Borstvoeding : None of the components are listed
NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Vruchtbaarheid : None of the components are listed
NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Ontwikkeling : None of the components are listed

15.2. Chemical safety assessment

No chemical safety assessment has been carried out

SECTION 16: Other information

Issue date : 1-Mar-2018
Revision date : 1-Mar-2018

Full text of H- and EUH-phrases

H228 : Flammable solid.
H261 : In contact with water releases flammable gases.

Key or legend to abbreviations and acronyms used in the safety data sheet

ADR : European Agreement Concerning the International Carriage of Dangerous Goods by Road
IMDG : International Maritime Dangerous Goods
IATA : International Air Transport Association
ADN : European Agreement Concerning the International Carriage of Dangerous Goods by Inland Waterway
RID : Regulations Concerning the International Carriage of Dangerous Goods by Rail
PBT : Persistent, Bioaccumulative and Toxic
vPvB : Very Persistent and Very Bioaccumulative
DNEL : Derived No Effect Level
PNEC : Predicted No Effect Concentration
LC50 : Lethal Concentration 50
LD50 : Lethal Dose 50
EC50 : Effective Concentration 50
TWA : Time Weighted Average
STEL : Short Term Exposure Limit

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Key literature references and sources for data

ECHA: <http://echa.europa.eu/>

IFA GESTIS: [http://gestis-en.itrust.de/nxt/gateway.dll?f=templates\\$fn=default.htm\\$vid=gestiseng:sdbeng](http://gestis-en.itrust.de/nxt/gateway.dll?f=templates$fn=default.htm$vid=gestiseng:sdbeng)

HSDB: <http://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>

ICSC: <http://www.ilo.org/dyn/icsc/showcard.home>

eChemPortal: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en

NITE-CHRIP: http://www.nite.go.jp/en/chem/chrip/chrip_search/srhInput

SDS EU (REACH Annex II)

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

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

TÜV SÜD Group



Engineer: _____

Kevin Zhang



Technical Report checked: _____

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