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

1.1. Product identifier

KMMU018WL

Further trade names

Type: Lithium Iron Phosphate Battery/Accumulator

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

Use of the substance/mixture

batteries and accumulators

1.3. Details of the supplier of the safety data sheet

Company name: RP-Technik GmbH
Street: Hermann-Staudinger-Str. 10-16
Place: D-63110 Rodgau
Telephone: +49 (6106) 660 28 - 0 +49 (6106) 660 28 - 40
E-mail: info@rp-group.com
Contact person: Francisco Goerke
E-mail: product@rp-group.com

1.4. Emergency telephone number:

+49 (6106) 660 28 - 0 (24 h.)

Further Information

This battery pack is an article according to Regulation (EC) No. 1907/2006 (REACH), Annex II, as amended by Regulation (EU) No. 453/2010, and is not subject to the REACH regulation. The information contained in this safety data sheet contains valuable and critical information for the safe and proper use of the product. This SDS should be kept and made available to employees and other users of the product.

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Regulation (EC) No 1272/2008

Acute Tox. 4; H302
Skin Irrit. 2; H315
Eye Dam. 1; H318
STOT RE 2; H373
Aquatic Chronic 3; H412

Full text of hazard statements: see SECTION 16.

2.2. Label elements

Additional advice on labelling

Labelling according to Regulation (EC) No. 1272/2008 [CLP]: not applicable / not relevant
The product is: article (batteries and accumulators)

2.3. Other hazards

The substances in the mixture do not meet the PBT/vPvB criteria according to REACH, annex XIII.
Risk of explosion by shock, friction, fire or other sources of ignition. (Formation of: Gases/vapours, toxic) Do not open container by force. To avoid risks to man and the environment, comply with the instructions for use.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

Chemical characterization

The product is: article (batteries and accumulators)

Relevant ingredients

CAS No	Chemical name	Quantity
7440-50-8	Copper	10 - < 15 %
231-159-6	029-024-00-X	—
—	Aquatic Chronic 2; H411	—
96-49-1	Ethylene carbonate	< 20 %
202-510-0	—	—
—	Acute Tox. 4, Eye Irrit. 2, STOT RE 2; H302 H319 H373	—
623-53-0	Ethyl methyl carbonate	< 20 %
433-480-9	—	—
—	Acute Tox. 4, Eye Irrit. 2, STOT RE 2; H302 H319 H373	—
21324-40-3	Lithium hexafluorophosphate(1-)	< 20 %
244-334-7	—	—
—	Acute Tox. 3, Skin Corr. 1A, Eye Dam. 1, STOT RE 1; H301 H314 H318 H372	—

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

Specific Conc. Limits, M-factors and ATE

CAS No	EC No	Chemical name	Quantity
21324-40-3	244-334-7	Lithium hexafluorophosphate(1-)	15 - 22 %
—	**Specific Conc. Limits, M-factors and ATE**	—	—
—	oral: ATE = Ethylene carbonate: 500 mg/kg; Ethyl methyl carbonate: 500 mg/kg; Lithium hexafluorophosphate(1-): 100 mg/kg	—	—

SECTION 4: First aid measures

4.1. Description of first aid measures

General information

In all cases of doubt, or when symptoms persist, seek medical attention. The following instructions refer to direct contact with the contents of the battery or accumulator.

After inhalation

Ensure fresh air supply. If respiratory symptoms occur: call a doctor.

After contact with skin

Wash off with plenty of water. Remove contaminated clothing and wash before re-use. If skin reactions occur, consult a doctor.

After contact with eyes

Immediately rinse carefully and thoroughly with eye wash or water. Remove contact lenses if possible. Continue rinsing. Do not rub. If eye irritation persists, consult an ophthalmologist.

After ingestion

If swallowed rinse mouth with water (only if person is conscious). In all cases of doubt, or when symptoms persist, seek medical attention.

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

No information available.

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

Symptomatic treatment.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media

Carbon dioxide (CO2), water spray. Adapt firefighting measures to the surrounding area.
Co-ordinate fire-fighting measures to the fire surroundings.

5.2. Special hazards arising from the substance or mixture

Danger of bursting container. (Electrolyte: Highly flammable). In case of fire may be liberated: Carbon monoxide, Carbon dioxide (CO2), toxic metal oxide smoke, corrosive. Pyrolysis products, toxic, containing fluorine.

5.3. Advice for firefighters

In case of fire: Wear self-contained breathing apparatus. Full protective suit.

Additional information

Knock down dust with water spray. Collect contaminated firefighting water separately, must not enter the sewage system.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General advice

Do not breathe gas/fumes/vapour/aerosol. Avoid contact with skin, eyes and clothing. Bring persons to safety. Ensure adequate ventilation. Remove all ignition sources. Use personal protective equipment.

For non-emergency personnel

Wear personal protective equipment (see Section 8).

For emergency responders

Wear personal protection equipment (refer to section 8).

6.2. Environmental precautions

Avoid release into the environment.

6.3. Methods and material for containment and cleaning up

For containment

Stop leakage if safe to do so. Batteries and accumulators: Explosive risk through impact, friction, fire or other sources of ignition.

For cleaning up

Collect mechanically. Treat collected material according to the disposal section. Electrolyte: Absorb with liquid-binding material (sand, diatomite, acid binder, universal binder). Treat collected material according to the disposal section.

Other information

Use non-sparking tools.

6.4. Reference to other sections

Safe handling: see section 7
Personal protection equipment: see section 8
Disposal: see section 13

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Advice on safe handling

Handle with care - avoid bumps, friction and impact. Do not force open the container. Do not breathe gas/fumes/vapour/aerosol. Avoid contact with skin, eyes and clothing.

Advice on protection against fire and explosion



Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Take precautionary measures against static discharge.

Advice on general occupational hygiene

Remove contaminated clothing and wash before re-use. Wash hands before breaks and at the end of work. Do not eat, drink, smoke or sniff at the workplace.

Further information on handling

Observe instructions for use to avoid risks for humans and the environment.

7.2. Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels

Store in a cool and dry place. Ensure adequate ventilation and local exhaust at critical points. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Hints on joint storage

Do not store together with: Do not store together with: metals (including alloys), acid, alkalis (lye), halogenated hydrocarbons, strong oxidising agents.

Further information on storage conditions

Keep away from heat. (Temperature > 70 °C) Protect from direct sunlight. Protect from moisture.

7.3. Specific end use(s)

batteries and accumulators

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits

CAS No	Substance	ppm	mg/m³	fib/cm³	Category	Origin
7429-90-5	Aluminium metal (Respirable Fraction)	-	1	—	TWA (8 h)	—
7440-50-8	Copper, fume	-	0.2	—	TWA (8 h)	—
-	Fluorides, inorganic	-	2.5	—	TWA (8 h)	—
7782-42-5	Graphite (all forms except fibres) (Respirable Fraction)	-	2	—	TWA (8 h)	—
-	Iron salts (as Fe)	-	1	—	TWA (8 h)	—
-	—	-	2	—	STEL (15 min)	—
7440-02-0	Nickel	-	0.5	—	TWA (8 h)	—

Biological limit values

CAS No	Substance	Parameter	Value	Test material	Sampling time
7440-02-0	Nickel	Ni	3 µg/L	Urine	After several consecutive working shifts

8.2. Exposure controls

Appropriate engineering controls

Ensure adequate ventilation and local exhaust at critical points.

Individual protection measures, such as personal protective equipment

Eye/face protection

In case of exposure (electrolyte): Wear safety glasses/face shield.

Hand protection



In case of exposure (electrolyte): Wear suitable protective gloves (EN ISO 374). Only chemical protective gloves with CE marking including four-digit test number may be used when handling chemical substances. Chemical protective gloves must be selected specifically for the workplace depending on hazardous substance concentration and quantity. It is recommended to clarify the chemical resistance of the above-mentioned protective gloves for specific applications with the glove manufacturer.

Skin protection

Wear appropriate protective clothing at work.

Respiratory protection

In case of exposure (electrolyte): If ventilation is insufficient, wear respiratory protection.

Thermal hazards

Flame-retardant clothing. Wear antistatic footwear and work clothing.

Environmental exposure controls

Avoid release into the environment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state:	solid
Colour:	No information available.
Odour:	Odourless
Odour threshold:	not applicable
Melting point/freezing point:	Not determined
Boiling point or initial boiling point and boiling range:	Not determined
Flammability:	Electrolyte: Highly flammable
Lower explosion limits:	not determined
Upper explosion limits:	not determined
Flash point:	Not applicable
Auto-ignition temperature:	Not determined
Decomposition temperature:	Not determined
pH-Value:	Not applicable
Viscosity / kinematic:	Not applicable
Water solubility:	Practically insoluble
Solubility in other solvents	not determined
Partition coefficient n-octanol/water:	not determined
Vapour pressure:	Not determined
Density:	Not determined
Relative vapour density:	not determined
Particle characteristics:	not determined

9.2. Other information

No information available.

SECTION 10: Stability and reactivity

10.1. Reactivity

No hazardous reactions when handled and stored according to provisions.

10.2. Chemical stability

The product is stable under normal conditions.

10.3. Possibility of hazardous reactions

Heat / In case of fire: Danger of bursting container. Handle with care - avoid bumps, friction and impact.

10.4. Conditions to avoid

Heat (Temperature > 70 °C). Direct sunlight. Moisture. Impact, friction, shock.

10.5. Incompatible materials

Metals (including alloys), acid, alkalis (lye), halogenated hydrocarbons, strong oxidising agents.

10.6. Hazardous decomposition products

In case of fire may be liberated: Carbon monoxide, Carbon dioxide (CO2), toxic metal oxide smoke, corrosive. Pyrolysis products, toxic, containing fluorine.

SECTION 11: Toxicological information

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

Acute toxicity

Harmful if swallowed. (Electrolyte components: Ethylene carbonate, Ethyl methyl carbonate ATE oral = 500 mg/kg; Lithium hexafluorophosphate(1-) ATE oral = 100 mg/kg).

ATEmix calculated

ATE (oral) Ethylene carbonate: 500 mg/kg; Ethyl methyl carbonate: 500 mg/kg; Lithium hexafluorophosphate(1-): 100 mg/kg; ATE (dermal) not determined; ATE (inhalation vapour) not determined; ATE (inhalation dust/mist) not determined

CAS No	Chemical name				
—	Exposure route	Dose	Species	Source	Method
21324-40-3	Lithium hexafluorophosphate(1-)				
—	oral	ATE 100 mg/kg	—	—	—

Irritation and corrosivity

Causes skin irritation. Causes serious eye damage. (Electrolyte: Lithium hexafluorophosphate causes severe skin burns and serious eye damage).

Sensitising effects

No information available.

Carcinogenic/mutagenic/toxic effects for reproduction

No information available.

STOT-single exposure

Based on available data, the classification criteria are not met.

STOT-repeated exposure

May cause damage to organs through prolonged or repeated exposure. (Ethylene carbonate, Ethyl methyl carbonate: STOT RE 2; H373). Causes damage to organs through prolonged or repeated exposure. (Lithium hexafluorophosphate(1-): STOT RE 1; H372).

Aspiration hazard

Based on available data, the classification criteria are not met.

Information on likely routes of exposure

Electrolyte: oral, skin contact, eye contact, inhalation.

11.2. Information on other hazards

Endocrine disrupting properties

This product does not contain a substance that has endocrine disrupting properties with respect to humans as no components meets the criteria.

SECTION 12: Ecological information

12.1. Toxicity

Copper: Aquatic Chronic 2; H411. Aquatic Chronic 3; H412 (product classification). Electrolyte components may be harmful to aquatic organisms with long lasting effects.

12.2. Persistence and degradability

The product has not been tested.

12.3. Bioaccumulative potential

The product has not been tested.

12.4. Mobility in soil

The product has not been tested.

12.5. Results of PBT and vPvB assessment

The substances in the mixture do not meet the PBT/vPvB criteria according to REACH, Annex XIII.

12.6. Endocrine disrupting properties

No information available.

12.7. Other adverse effects

No information available.

Further information

Avoid release into the environment. Do not allow to enter surface water or drains.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Disposal recommendations

Dispose of waste according to applicable legislation. Do not allow to enter surface water or drains. Do not allow to enter soil/subsoil. Do not pierce or burn, even after use. Batteries and accumulators must be disposed of separately from household waste in accordance with applicable regulations.

Contaminated packaging

Dispose of waste according to applicable legislation.

SECTION 14: Transport information

Land transport (ADR/RID)

14.1. UN number or ID number: UN 3481
14.2. UN proper shipping name: LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT
14.3. Transport hazard class(es): 9
14.4. Packing group: -



Hazard label: 9A

Classification code: M4
Special Provisions: 188 230 310 348 360 376 377 387 390 670
Limited quantity: 0
Excepted quantity: E0
Transport category: 2
Tunnel restriction code: E

Inland waterways transport (ADN)

14.1. UN number or ID number: UN 3481
14.2. UN proper shipping name: LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT
14.3. Transport hazard class(es): 9
14.4. Packing group: -



Hazard label: 9A

Classification code: M4
Special Provisions: 188 230 310 348 360 376 377 387 390 670
Limited quantity: 0
Excepted quantity: E0

Marine transport (IMDG)

14.1. UN number or ID number: UN 3481
14.2. UN proper shipping name: LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT
14.3. Transport hazard class(es): 9
14.4. Packing group: -



Hazard label: 9A

Special Provisions: 188 230 310 348 360 376 377 384 387 390
Limited quantity: 0
Excepted quantity: E0
EmS: F-A, S-I

Air transport (ICAO-TI/IATA-DGR)

14.1. UN number or ID number: UN 3481
14.2. UN proper shipping name: LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT
14.3. Transport hazard class(es): 9
14.4. Packing group: -



Hazard label: 9A

Special Provisions: A48 A88 A99 A154 A164 A181 A185 A213 A22
Limited quantity Passenger: Forbidden
Passenger LQ: Forbidden
Excepted quantity: E0
IATA-packing instructions - Passenger: 965
IATA-max. quantity - Passenger: 35 kg
IATA-packing instructions - Cargo: 965
IATA-max. quantity - Cargo: 35 kg

14.5. Environmental hazards

ENVIRONMENTALLY HAZARDOUS: No

14.6. Special precautions for user

Protect against: Heat, condensation, humidity. Handle with care - avoid bumps, friction and impact.

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 regulatory information

Restrictions on use (REACH, annex XVII):
Entry 27, Entry 40, Entry 75
Information according to Directive 2012/18/EU (SEVESO III): Not subject to 2012/18/EU (SEVESO III)
Marketing and use of explosives precursors (Regulation (EU) 2019/1148):
This product is regulated by Regulation (EU) 2019/1148: all suspicious transactions, and significant disappearances and thefts should be reported to the relevant national contact point.

Additional information

There is no requirement for the product to be specially labelled according to EC directives or the corresponding national laws.

National regulatory information

Water hazard class (D): 2 - obviously hazardous to water

Additional information

Observe in addition any national regulations!

15.2. Chemical safety assessment

Chemical safety assessments for substances in this mixture were not carried out.

SECTION 16: Other information

Abbreviations and acronyms

Water-react: Substance and mixture which, in contact with water, emits flammable gas
Flam. Sol: Flammable solid
Acute Tox: Acute toxicity
Skin Corr: Skin corrosion
Eye Dam: Eye damage
Skin Sens: Skin sensitisation
Carc: Carcinogenicity
STOT RE: Specific target organ toxicity - repeated exposure
Aquatic Acute: Acute aquatic hazard
Aquatic Chronic: Chronic aquatic hazard
CLP: Classification, labelling and Packaging
REACH: Registration, Evaluation and Authorization of Chemicals
GHS: Globally Harmonised System of Classification, Labelling and Packaging of Chemicals
UN: United Nations
CAS: Chemical Abstracts Service
M-Factor: Multiplication Factor
DNEL: Derived No Effect Level
DMEL: Derived Minimal Effect Level
PNEC: Predicted No Effect Concentration
ATE: Acute toxicity estimate
LC50: Lethal concentration, 50%
LD50: Lethal dose, 50%
LL50: Lethal loading, 50%
EL50: Effect loading, 50%
EC50: Effective Concentration 50%
ErC50: Effective Concentration 50%, growth rate
NOEC: No Observed Effect Concentration
BCF: Bio-concentration factor
PBT: persistent, bioaccumulative, toxic
vPvB: very persistent, very bioaccumulative
ADR: Accord européen sur le transport des marchandises dangereuses par Route
RID: Regulations concerning the international carriage of dangerous goods by rail
ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
IMDG: International Maritime Code for Dangerous Goods
EmS: Emergency Schedules
MFAG: Medical First Aid Guide
IATA: International Air Transport Association
ICAO: International Civil Aviation Organization
TI: Technical Instructions
DGR: Dangerous Goods Regulations
MARPOL: International Convention for the Prevention of Marine Pollution from Ships
IBC: Intermediate Bulk Container
VOC: Volatile Organic Compounds
EG or EC: European Community
IE: Industrial Emissions
SVHC: Substance of Very High Concern

Key literature references and sources for data

For abbreviations and acronyms, see: ECHA Guidance on information requirements and chemical safety assessment, chapter R.20 (Table of terms and abbreviations). (v.1.2, 2013)

Classification for mixtures and used evaluation method according to Regulation (EC) No 1272/2008 [CLP]

Classification	Classification procedure
Acute Tox. 4; H302	Calculation method

Skin Irrit. 2; H315	Calculation method
Eye Dam. 1; H318	Calculation method
STOT RE 2; H373	Calculation method
Aquatic Chronic 3; H412	Calculation method

Relevant H and EUH statements (number and full text)

H301	Toxic if swallowed.
H302	Harmful 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.
H373	May cause damage to organs through prolonged or repeated exposure.
H400	Very toxic to aquatic life.
H412	Harmful to aquatic life with long lasting effects.

Further Information

The information is based on the present level of our knowledge. It does not, however, give assurance of product properties and establishes no contract legal rights. The receiver of our product is singularly responsible for adhering to existing laws and regulations.

(The data for the relevant ingredients were taken respectively from the last version of the sub-contractor's safety data sheet.)