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

1.1 Product identifier

Lithium-Ion Battery
Article number: 11011199; 11013997

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

1.2.1 Relevant uses

Battery

1.2.2 Uses advised against

None known.

1.3 Details of the supplier of the material data sheet

Company

Wilhelm Fricke SE
Zum Kreuzkamp 7
27404 Heeslingen / GERMANY
Phone +49-4281-712-0
Fax +49-4281-712-49
Homepage www.fricke.de
E-mail info@fricke.de

Address enquiries to

Technical information info@fricke.de

Safety Data Sheet sdb@chemiebuero.de

1.4 Emergency telephone number

Company +49-4281-712-0 Mo-Fr 7:30-16:30

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture [REGULATION (GB) CLP]

Skin Corr. 1A: H314 Causes severe skin burns and eye damage.
Eye Dam. 1: H318 Causes serious eye damage.
Repr. 2: H361f Suspected of damaging fertility.
STOT RE 2: H373 May cause damage to organs through prolonged or repeated exposure.
Acute Tox. 4: H302 Harmful if swallowed.

2.2 Label elements

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

2.3 Other hazards

Physico-chemical hazards When cell is exposed to an external short-circuit, it will cause heat generation and ignition. The chemicals are contained within a sealed housing. There is only a risk of exposure if the battery is subject to mechanical or electrical misuse.

Environmental hazards Does not contain any PBT or vPvB substances.

Other hazards Further hazards were not determined with the current level of knowledge.

SECTION 3: Composition / Information on ingredients

3.1 Substances

not applicable

3.2 Mixtures

The product is an article.

Range [%]	Substance
20 - 50	Cobaltlithiumdioxide
	CAS: 12190-79-3, EINECS/ELINCS: 235-362-0
	GHS/CLP: Repr. 2: H361f
5 - 20	2-Amino-2-methylpropanol
	CAS: 124-68-5, EINECS/ELINCS: 204-709-8, EU-INDEX: 603-070-00-6
	GHS/CLP: Skin Irrit. 2: H315 - Eye Irrit. 2: H319 - Aquatic Chronic 3: H412
1 - 5	Lithium hexafluorophosphate
	CAS: 21324-40-3, EINECS/ELINCS: 244-334-7
	GHS/CLP: Acute Tox. 3: H301 - Skin Corr. 1A: H314 - Eye Dam. 1: H318 - STOT RE 1: H372
1 - 5	Ethylene carbonate
	CAS: 96-49-1, EINECS/ELINCS: 202-510-0
	GHS/CLP: Eye Irrit. 2: H319 - Acute Tox. 4: H302 - STOT RE 2: H373
1 - 5	Propylene carbonate
	CAS: 108-32-7, EINECS/ELINCS: 203-572-1, EU-INDEX: 607-194-00-1
	GHS/CLP: Eye Irrit. 2: H319

Comment on component parts The contained dangerous materials are not freely available with foreseeable use.
Substances of Very High Concern - SVHC: substances are not contained or are below 0.1%.
For full text of H-statements: see SECTION 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

General information Measures are only needed for damaged cells.

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

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

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

Ingestion Do not induce vomiting.
Consult a doctor immediately.

4.2 Most important symptoms and effects, both acute and delayed

Irritant effects

4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media Metal fire-ex powder.

Extinguishing media that must not be used Full water jet

5.2 Special hazards arising from the substance or mixture

Risk of formation of toxic pyrolysis products.
Bursting batteries can be forcibly projected from a fire.

5.3 Advice for firefighters

Use self-contained breathing apparatus.

Fire residues and contaminated firefighting water must be disposed of in accordance within the local regulations.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Not required under normal conditions.

6.2 Environmental precautions

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

6.3 Methods and material for containment and cleaning up

Take up mechanically.
Dispose of absorbed material in accordance within the regulations.

6.4 Reference to other sections

See SECTION 8+13

SECTION 7: Handling and storage

7.1 Precautions for safe handling

The data of the manufacturer concerning the loading and unloading parameters and the recommended temperature ranges are to be considered.

7.2 Conditions for safe storage, including any incompatibilities

Prevent penetration into the ground.

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

Store in a dry place.
Protect from heat/overheating.
Storage: 20 - 30°C

7.3 Specific end use(s)

See product use, SECTION 1.2

SECTION 8: Exposure controls / personal protection

8.1 Control parameters

Ingredients with occupational exposure limits to be monitored (GB)

Substance
Lithium hexafluorophosphate
CAS: 21324-40-3, EINECS/ELINCS: 244-334-7
Long-term exposure: 2,5 mg/m³, Fluoride (inorganic as F)

Ingredients with occupational exposure limits to be monitored (EU)

Substance / EC LIMIT VALUES
Lithium hexafluorophosphate
CAS: 21324-40-3, EINECS/ELINCS: 244-334-7
Eight hours: 2,5 mg/m³, F

DNEL

Substance
Lithium hexafluorophosphate, CAS: 21324-40-3
Industrial, dermal, Long-term - systemic effects, 0.133 mg/kg bw/day
Industrial, inhalative, Long-term - systemic effects, 0.931 mg/m³

8.2 Exposure controls

Additional advice on system design	Measures apply only to the damaged product. Ensure adequate ventilation on workstation.
Eye protection	safety glasses (EN 166:2001)
Hand protection	0.7 mm; Butyl rubber, >480 min (EN 374-1/-2/-3).
Skin protection	Protective clothing (EN 340)
Other	Personal protective equipment should be selected specifically for the working place, depending on concentration and quantity handled. The resistance of this equipment to chemicals should be ascertained with the respective supplier.
Respiratory protection	Short term: combination filter A-P3. (DIN EN 14387)
Thermal hazards	none
Delimitation and monitoring of the environmental exposition	Protect the environment by applying appropriate control measures to prevent or limit emissions.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	Battery
Color	various
Odor	odourless
Odour threshold	not applicable
pH-value	not applicable
pH-value [1%]	not applicable
Boiling point [°C]	not applicable
Flash point [°C]	not applicable
Flammability (solid, gas) [°C]	not applicable
Lower explosion limit	not applicable
Upper explosion limit	not applicable
Oxidising properties	no
Vapour pressure/gas pressure [kPa]	not applicable
Density [g/cm³]	not determined
Relative density	not determined
Bulk density [kg/m³]	not applicable
Solubility in water	not applicable
Solubility other solvents	not applicable
Partition coefficient [n-octanol/water]	not applicable
Kinematic viscosity	not applicable
Relative vapour density	not applicable
Evaporation speed	not applicable
Melting point [°C]	not determined
Auto-ignition temperature	not determined
Decomposition temperature [°C]	not determined
Particle characteristics	not applicable

9.2 Other information

7.4 V; 4400 mAh; 32.56 Wh
11.1 V; 5200 mAh; 57.72 Wh

SECTION 10: Stability and reactivity

10.1 Reactivity

No dangerous reactions known if used as directed.

10.2 Chemical stability

The product is stable under standard conditions.

10.3 Possibility of hazardous reactions

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

10.4 Conditions to avoid

Heating > 50°C

10.5 Incompatible materials

No information available.

10.6 Hazardous decomposition products

No hazardous decomposition products known.

SECTION 11: Toxicological information

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

Acute oral toxicity

Product
ATE-mix, oral, 1000 - 2000 mg/kg

Substance
Propylene carbonate, CAS: 108-32-7
LD50, oral, Rat, 33300 mg/kg (IUCLID)
Lithium hexafluorophosphate, CAS: 21324-40-3
LD50, oral, Rat, > 50 - 300 mg/kg (Lit.)
ATE, oral, 100 mg/kg (category 3)
Ethylene carbonate, CAS: 96-49-1
LD50, oral, Rat, 10000 mg/kg (Lit.)

Acute dermal toxicity

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

Substance
Propylene carbonate, CAS: 108-32-7
LD50, dermal, Rabbit, > 20000 mg/kg (IUCLID)
Ethylene carbonate, CAS: 96-49-1
LD50, dermal, Rabbit, > 3000 mg/kg (Lit.)

Acute inhalational toxicity

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

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

Substance
Lithium hexafluorophosphate, CAS: 21324-40-3
IVIS, Eggs, 16 (20 sek.)

Skin corrosion/irritation May cause burns.
Calculation method

Substance
Lithium hexafluorophosphate, CAS: 21324-40-3
Mean Tissue Viability, dermal, Human, 6 %

Respiratory or skin sensitisation Based on the available information, the classification criteria are not fulfilled.

Specific target organ toxicity — single exposure Based on the available information, the classification criteria are not fulfilled.

Specific target organ toxicity — repeated exposure Based on the available information, the classification criteria are not fulfilled.

Substance
Lithium hexafluorophosphate, CAS: 21324-40-3
NOAEL, oral, Human, 0.133 mg/kg bw/day

NOAEC, inhalative, Human, 2 mg/m³

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

Reproduction toxicity May damage fertility.
Calculation method

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

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

General remarks

Toxicological data of complete product are not available.

11.2 Information on other hazards

Endocrine disrupting properties Contains no ingredients with endocrine-disrupting properties.

Other information none

SECTION 12: Ecological information

12.1 Toxicity

Substance
Propylene carbonate, CAS: 108-32-7
EC50, (96h), Cyprinus carpio, > 1000 mg/l (IUCLID)
EC50, (48h), Daphnia magna, > 1000 mg/l (IUCLID)
Lithium hexafluorophosphate, CAS: 21324-40-3
EC50, (3h), Activated sludge, > 1000 mg/l (Lit.)
EC50, (72h), Pseudokirchneriella subcapitata, > 100 mg/l (Lit.)
EC50, (48h), Daphnia magna, > 100 mg/l (Lit.)

12.2 Persistence and degradability

Behaviour in environment compartments No information available.

Behaviour in sewage plant No information available.

Biological degradability not applicable

12.3 Bioaccumulative potential

Accumulation in organisms is not expected.

12.4 Mobility in soil

Spillages may penetrate the soil causing ground water contamination.

12.5 Results of PBT and vPvB assessment

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

12.6 Endocrine disrupting properties

Contains no ingredients with endocrine-disrupting properties.

12.7 Other adverse effects

None known.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

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

Product

For recycling, consult manufacturer.

Waste no. (recommended) 200134

Contaminated packaging

Uncontaminated packaging may be taken for recycling.

Waste no. (recommended) 150102

SECTION 14: Transport information

14.1 UN number or ID number

Transport by land according to ADR/RID 3480

Inland navigation (ADN) 3480

Marine transport in accordance with IMDG 3480

Air transport in accordance with IATA 3480

14.2 UN proper shipping name

Transport by land according to ADR/RID Lithium ion batteries (No dangerous goods, according ADR special regulations 188)

- Classification Code M4

- ADR LQ 0 kg

- ADR 1.1.3.6 (8.6) Transport category (tunnel restriction code) 2 (E)

Inland navigation (ADN) Lithium ion batteries (No dangerous goods, according ADR special regulations 188)

- Classification Code M4

Marine transport in accordance with IMDG Lithium ion batteries (No dangerous goods, according IMDG Special regulations 188)

- EMS F-A, S-I

- IMDG LQ 0 l

Air transport in accordance with IATA Lithium Ion Batteries (PI 965 Section II)

14.3 Transport hazard class(es)

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

14.4 Packing group

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

14.5 Environmental hazards

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

14.6 Special precautions for user

Relevant information under SECTION 6 to 8.

The Lithium batteries and cells were tested according the UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria 38.3 Lithium batteries.

14.7 Maritime transport in bulk according to IMO instruments

not applicable

SECTION 15: Regulatory information

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

EEC-REGULATIONS	2008/98/EC 2000/532/EC); 2010/75/EU; 2004/42/EC; (EC) 648/2004; (EC) 1907/2006 (REACH); (EU) 1272/2008; 75/324/EEC ((EC) 2016/2037); (EU) 2020/878; (EU) 2016/131; (EU) 517/2014
TRANSPORT-REGULATIONS	ADR (2021); IMDG-Code (2021, 40. Amdt.); IATA-DGR (2022)
NATIONAL REGULATIONS (GB):	EH40/2005 Workplace exposure limits (Second edition, published December 2011); UK REACH; GB CLP.
- Observe employment restrictions for people	none
- VOC (2010/75/CE)	not applicable

15.2 Chemical safety assessment

SECTION 16: Other information

16.1 Hazard statements (SECTION 3)

H372 Causes damage to organs through prolonged or repeated exposure.
H318 Causes serious eye damage.
H314 Causes severe skin burns and eye damage.
H301 Toxic if swallowed.
H373 May cause damage to organs through prolonged or repeated exposure.
H302 Harmful if swallowed.
H412 Harmful to aquatic life with long lasting effects.
H319 Causes serious eye irritation.
H315 Causes skin irritation.
H361f Suspected of damaging fertility.

16.2 Abbreviations and acronyms:

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

16.3 Other information

Classification procedure

Skin Corr. 1A: H314 Causes severe skin burns and eye damage. (Calculation method)
Eye Dam. 1: H318 Causes serious eye damage. (Calculation method)
Repr. 2: H361f Suspected of damaging fertility. (Calculation method)
STOT RE 2: H373 May cause damage to organs through prolonged or repeated exposure. (Calculation method)
Acute Tox. 4: H302 Harmful if swallowed. (Calculation method)

Modified position none