SECTION 1: Product and Company Identification

Trade name:	**LiFePO4 Battery Li100BT**
Product utilisation:	Battery for living quarters in caravan trailers and mobile homes.
Manufacturer/Supplier:	**Reimo Reisemobil-Center GmbH** D-63329 Egelsbach, Boschring 10, Germany Ph.: +49 (0) 6103 8662-310 Fax: +49 (0) 6103 8662-329 E-mail: shop@reimo.com Internet: www.reimo.com
Person in charge:	Technical advice, ph.: +49 (0) 6103-4005-28 Fax: +49 (0) 6150 8662 177
Emergency telephone code:	+49 (0) 6201 989 956 (Mr. Volker Müller)

SECTION 2: Hazards Identification

2.1 Classification and labelling according to Regulation (EC) No 1272/2008 (Directive 1272/2008/EC)

None.

2.2 Information pertaining to particular dangers to man and the environment:

No harmful effects on human health or on the environment are to be expected, if the product is used as specified and as long as the housing of the battery is tight.

Though, the product contains harmful ingredients, which are hermetically and impermeably sealed and will stay sealed upon foreseeable extraneous causes.

According to the UN 38.3 Manual of Tests and Criteria ST/SG/AC.10/11/Rev. 6, Amend 1, the product is tested for impermeability, for consistency against low pressure up to 116 hPa, for temperature stability between -40°C to +72°C, for vibration stability between 7 Hz and 200 Hz, for shock stability up to 150 G (gavitational acceleration), for short circuit stability (0.1 Ω at 57°C +/- 4°C), for electrical overcharge at 22V, etc. (Test Report No. LCS200603069ASA of Shenzhen LCS Compliance Testing Laboratory Limited of 16 July, 2020).

There are considerable hazards for human health and for the environment (refer to SECTION 4, 11 and 12), if the ingredients are set free by fire, by exceptional extraneous causes, by targeted breakup of the housing (refer also to SECTION 7) or whatsoever.

Ion batteries are hazardous waste, and are to be disposed specifically (refer to SECTION 13).

Combustible, may explode when burning or overheating.

SECTION 3: Composition / Information on Ingredients

3.1 Characterization:	Lithium ion battery on the basis of phosphoric acid, iron(2+) lithium salt (1:1:1) with copper and graphite as main components, electrolytes and two different polymers for the housings of the cells (nylon, polypropylene) and the battery (PS/ABS rubber, refer also to SECTION 3.2). The weight of the whole battery is 12,242.7 g and consists of 16 cells. Four cells connected parallel form a unit. Four of these units are

connected in series (4P4S). The ingredients are hermetically and impermeably sealed.

3.2 Ingredients:

Substance	CAS No.	EINECS No.	Characterization	Mass%
PC/ABS rubber housing	not applicable	not applicable	Copolymer acrylnitril/butadiene/styrene/polycarbonate	< 13.2
Nylon, Aluminium foil, Polypropylene of the housings of the inner cells	not applicable	not applicable	2 Polymers and aluminium metal	< 1.8
Battery Management System, electric cables and mountings	not applicable	not applicable	Different materials	< 17.5
Phosphoric acid, iron(2+) lithium salt (1:1:1)*) *Synonyms: Lithium iron(II) phosphate; ferrous lithium phosphate; Triphylite*	15365-14-7	604-917-2	Mixed phosphate	< 16.3
Graphite, powder	7782-42-5	231-955-3	Crystalline carbon	< 20.3
Copper, foil	7440-50-8	231-159-6	Copper metal	< 8.8
Aluminium, foil	7429-90-5	231-072-3	Aluminium metal	< 6.8
Nickel coated steel	not applicable	not applicable	With nickel coated steel	< 3.4
Organic solvents of the electrolyte	Product confidentiality		Not hazardous	< 7.8
1,3-Dioxolan-2-one *Synonyms: Ethylene carbonate; Cyclic ethylene carbonate; Ethylene carbonic acid; Ethylene glycol carbonate, Glycol carbonate; 1,3-Dioxacyclopentan-2-one*	96-49-1	202-510-0	Ester of cabonic acid	< 4.7
Phosphate(1-), hexafluoro-, lithium (1:1) *Synonyms: Lithium hexafluorophosphate(1-); Phosphate(1-), hexafluoro-, lithium*	21324-40-3	244-334-7	Fluorinated lithium phosphate	< 3.1

*) Not classified according to ECHA Substance Information of 7 January, 2021 (most notifiers), https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/91911

This product does not contain substances of very high concern according to directive 1907/2006/EC, article 57.

3.3 Hazardous ingredients:

*Classification of the **pure** ingredients according to Directive 1272/2008/EC (GHS), table 3*

Common or chemical name:

1,3-Dioxolan-2-one Eye Irrit. 2 (Eye irritation, Category 2): H319

Signal word: "Warning"

H319: Causes serious eye irritation.

Phosphate(1-), hexafluoro-, lithium (1:1):

Acute tox. (oral) 3 (Acute toxicity if ingested, Hazard Category 3): H301
Skin corrosion/irritation 1A, (Hazard Category 1A): H314
Eye Dam. 1, (Hazard Category 1): H318
STOT RE 1 [Specific organ toxicity (repeated exposure), Hazard Category 1]: H372

Signal word: "Danger"

H301: Toxic if swallowed.
H314: Causes severe skin burns and eye damage.
H318: Causes serious eye damage (not necessary for labelling)
H372: Causes damage to organs (bones, teeth) through prolonged or repeated exposure.
Classification according to ECHA Substance Information of 7 January, 2021, (update 9 Nov. 2020)
https://echa.europa.eu/substance-information/-/substanceinfo/100.040.289

Nickel metall or nickel plated sheet steel are not classified as hazardous.

The following classification (*Directive 1272/2008/EC (GHS), table 3)* is only valid **for nickel powder** (e. g. if the nickel is welded or grinded, refer to SECTION 8.2, Note)**:**

Signal word: „Danger“

Carc. 2 (Carcinogenicity, Category 2)
H351: Suspected of causing cancer.

STOT RE 1 [Specific target organ toxicity - (repeated exposure), Category 1]
H372: Causes damage to organs through prolonged or repeated exposure.

Skin Sens. 1 (Skin Sensitization, Category 1)
H317: May cause an allergic skin reaction.

Aqu. chron. 3 (Chronic aquatic toxicity, Category 3)
H412: Harmful to aquatic life with long lasting effects (only if particle size < 1 mm).

Flammable solids, Category 2

H228: Flammable solid.

SECTION 4: First Aid Measures

General information:	As long as the housing of the battery is tight no first aid measures are necessary. If the housing of the battery is damaged and ingredients are leaking the following first aid measures are appropriate:
Inhalation of aerosols or vapours:	Move the affected person into fresh air. If symptoms persist give oxygen or artificial respiration and seek medical attention.
Skin:	Wash skin with plenty of water and soap. Change contaminated clothing. If symptoms persist seek medical attention.
Eyes:	Rinse with plenty of water for at least 15 minutes. If symptoms persist seek medical attention.
Ingestion:	If the patient is conscious have him rinse his mouth with water, spit it out and then have him drink water or milk. In case of persisting symptoms put him in a recovery position and - if the patient is conscious - let him vomit. Seek medical attention.
Information for doctor:	None

SECTION 5: Fire Fighting Measures

General information:	Most parts of the product are combustible including the housing (see also „Special hazards“ below).
Extinguishing agents:	Carbon dioxide, foam, dry chemical. Use water spray only if the housing is tight and the battery is not loaded to prevent short circuit.
Not suitable extinguishing agents for safety reasons:	Water jet. Water in general, if the housing is damaged or the battery is loaded and is not protected against short circuit.
Special hazards:	In case of burning the battery might explode! In case of exposure above 70°C or in case of damage of the housing, the battery may leak or spout vaporized electrolytes or their decomposed products, such as very toxic fluorides and hydrofluoric acid, hydrocarbons, carbon monoxide, phosphorous oxides and nitrous oxides. The electrolytes are partly inflammable and may cause serious eye damage and severe skin burns by contact or by aerosols, and severe irritation of the respiratory tract by inhaling aerosols or by inhaling vapours specially when the product is burning.
Special protective equipment for fire-fighters:	Use self-contained breathing apparatus and protection clothes.
Further notice:	In case of fire in the surroundings immediately remove battery to a safe place or at least try to cool the battery, but take care of the possibility of a short circuit by water.

SECTION 6: Accidental Measures after Release of Ingredients

General information: Only if the battery is damaged and ingredients are set free or after a short circuit, accidental measures may be necessary.

Personal precaution: Leave the endangered area immediately and warn co-workers. Ventilate the area until aerosols and vapours are gone before entering the area with protective clothing, chemical resistant gloves (refer to SECTION 8.3) and safety goggles with side shield. Otherwise use fine dust respirator (P3, identification colour: white) or a ventilated breathing hood.

Environmental precaution: Do not let the ingredients enter surface water, groundwater or soil. Prevent large amounts of ingredients from entering the sewage system.

Methods for cleaning up: Prevent generation of aerosols, dust and vapours. Pack solid parts into container to be labelled. Take up liquids with liquid-adsorbent material (sand, clay, cat litter, etc.). Fill contaminated adsorbent material into container. Finally clean area with water and soap. Discharge contaminated material according to SECTION 13.

SECTION 7: Handling and Storage

Handling: Under no circumstances, do not open the housing, do not throw the battery into fire, prevent the battery from heating-up and from direct sunlight, do not cause short circuit. Do not install with incorrect polarity. If the battery becomes hot (< 70°C), remove it to a safe place or at least try to cool the battery, but take care of the possibility of a short circuit by water, if the battery is loaded. If the battery is heated above 70°C leave the endangered area immediately and warn co-workers (refer to SECTION 5, *„Special hazards“,* and SECTION 6*, „Personal precaution“*). Prevent battery from exceeding vibrations.

Notes for prevention of fire and explosion: Prevent battery from heat above 70°C, and prevent short circuit.

Storage: Store the battery separated from other materials at a dry, cool and well ventilated place, which is subject to little temperature change. The higher the temperature of storage the sooner the loading capacity will drop. Charge the battery every 6 months to the amount specified by the manufacturer, even if the battery was not used. Prevent short circuit by covering the electrical poles with plastics. Do not store together with inflammable substances. Keep loaded and used batteries separated. German VCI-class of storage: 11 (combustible solids, TRGS 510).

SECTION 8: Exposure Controls / Personal Protection

8.1 Technical protection: Opening of the housing of the battery should only be done by trained personnel. In this case use closed plant with exhaust. Otherwise use at least exhaust and monitor the occupational exposure limit. Avoid generation of aerosols.

8.2 Ingredients with occupational exposure limit values, if ingredients of the battery are set free:

General Limit for Dusts
- *CAS No.:* Not applicable.

- *Exposure limit value:*	1.25 mg/m^3 alveolar dust or alveolar aerosols 10 mg/m^3 inhalable dust or aerosols
- *Short term limit value:*	2 (II)
- *Origin:*	AGW; TRGS 900
- *BLV:*	Aluminium: 50 µg/g Creatinine in urine after long-term exposure and after working shift
- *Remarks:*	H [only Phosphate(1-), hexafluoro-, lithium (1:1)], C [only Phosphate(1-), hexafluoro-, lithium (1:1) and copper], MAK-KOMMISSION, Germany)
- *Exposure limit value:*	0.3 mg/m^3 alveolar dust or alveolar aerosols, not obligatory
- *Short term limit value:*	8 (II)
- *Origin:*	Recommendation of the MAK-KOMMISSION, Germany
- *Note:*	Employment medical examination is to be initiated, if contact of phosphate(1-), hexafluoro-, lithium (1:1) with skin cannot be excluded (GESTIS). There are special exposure limit values for aerosols or dust of metallic nickel (0.006 mg/m^3, TRGS 900, refer also to SECTION 3), and of metallic aluminium (1.5 mg/m^3, MAK-Kommission of Germany, refer to GESTIS). This is only valid, if the metallic ingredients of nickel or aluminium are processed (e.g. welded or grinded) in a way that aerosols are generated.
- *Year:*	2021

Explanations:

- *AGW*	Exposure limit value (refer to TRGS 900, (Technical rules for hazardous substances), Germany, last revision: GMBl, No. 42, p. 109 of 27 Oct., 2020
- *BLV:*	Biological Limit Value (refer to TRGS 903, Germany, last revision of 13 March, GMBl 2020, No. 9-10, p. 200)
- *Short term limit values:*	Exceeding factor X: Exposure may exceed the exposure limit value by the factor X for not longer than 15 minutes. 4 measurements at intervals of 1 hour. Exceeding factor =X=: Exposure must never exceed the exposure limit value by more than the factor X (instantaneous value). If there is no short term limit value, the exeeding factor is 8. (I): Category I: substances for which the exposure limit value is based on local effects or sensitizing substances. (II): Category II: substances effective by resorption.
- *Remarks::*	H : Substances effective by resorption through skin S = Sensitizing substance Y, C (DFG): There is no teratogenic risk if the exposure limit value and the BLV are maintained.

8.3 Personal Protection:

The following protection measures apply, if ingredients of the battery are set free:

Respiratory protection:	Use respiratory protection apparatus or ventilated breathing hood.
Hand protection:	If contact with hands cannot be avoided use protection gloves tested according to DIN EN 374. Seek advice from manufacturers of

	protection gloves. If gloves cannot be used for safety reasons (e. g. while working at rotating machines) use skin-protective barrier cream. Consult the company medical officer for the type of barrier cream to be used. Comment: In contrary to the European ordinance 1907/2006/EC (REACH), it is not sufficient to specify only the protective glove material. The break-through-times are dependent not only on the material but also on the manufacturing technique. It is therefore essential to consult the manufacturers of protective gloves. For the ingredients of the battery the following materials should be appropriate: for short-time contact (few minutes) rubber or plastic is sufficient, for long-time contact use gloves of nitrile/latex rubber - NBR (0.35 mm).
Eye protection:	Safety glasses with side shield.
Skin protection:	Use chemical resistant protective clothing if contamination of clothing cannot be avoided. Change contaminated clothing immediately.
General protective measures:	Avoid contact with eyes and skin. Do not inhale aerosols or vapours.
Industrial hygiene:	Wash hands or skin after contact immediately. Do not eat, drink, smoke or take snuff at work.

SECTION 9: Physical and Chemical Properties

9.1 Appearance

Physical state:	Solid.
Colour:	Black.
Odour:	None.

9.2 Relevant data for Safety and Health for the product:

Data which should be mentioned in this SECTION are not relevant for the product. Refer to SECTIONS 2, 6, 7, and 10 for safety-related information.

Nominal Voltage:	12 V
Loading capacity:	100 Ah

SECTION 10: Stability and Reactivity

Thermal decomposition:	Danger of explosion above 130°C.
Conditions to be avoided:	Heating above 70°C. Short circuit. Damage of the housing. Long-time storage under humid conditions.
Substances to be avoided:	Strong oxidizing agents (halogenes, nitriles, hydrogen peroxide, perchloric acid, aqua regia, etc.), strong acids, strong lyes.
Dangerous reactions:	Ingredients may form very toxic fluorides and hydrofluoric acid with strong acids.
Hazardous decomposition products:	Very toxic fluorides and hydrofluoric acid, hydrocarbons, carbon monoxide, phosphorous oxides, low quantities of amines and nitrous oxides.

Dangerous polymerisations: None.

SECTION 11: Toxicological Information

11.1 Product

As long as the housing of the battery is tight and no ingredients are set free, no harmful effects on human health are to be expected.

The following information is valid for all ingredients:

Sensitization:	Intense and repeated skin contact with nickel metall or nickel plated sheet steel may result in sensitization.
Mutagenicity:	No mutagenic effects are known.
Cancer:	No carcinogenic effects are known. All ingredients are not mentioned as carcinogenic in the lists of ACGIH, NIOSH, IARC or TRGS 905.
Reproductive toxicity:	No toxic effects on reproduction are known.

Toxic effects after repeated exposure (subacute to chronic toxicity):

Refer to SECTION 11.2

Practical experience: There are no reports of symptoms of poisoning after handling the ingredients.

11.2 Toxicological information on the pure ingredients:

11.2.1 Phosphoric acid, iron(2+) lithium salt (1:1:1)

The toxicology of this substance is yet hardly investigated. There are no experimental animal data (refer to MSDS of Sigma-Aldrich Inc.). In analogy to iron (III) phosphate no noteworthy hazards to the human health are to be exspected, because the substance is unsoluable and therefore is hardly resorbed in the body.

11.2.2 Graphite

Toxikokinetics, metabolism and distribution:

Resorption in the body is negligible.

Acute toxicity:

There are no LD_{50}-values of animal experiments. There were no deaths of rats after injection of suspensions of graphite (HSDB).

Practical experiences with occupational exposures of graphite (HSDB):

After inhalation:	Slight irritation of the respiratory tract.
After skin contact:	No symptoms.
After eye contact:	Physical irritation.
After ingestion:	No experiences.
Chronic toxicity:	Bronchitis and lung damage after repeated and prolonged inhalation.

11.2.3 1,3-Dioxolan-2-one

Toxikokinetics, metabolism and distribution:

Inhalation and absorption through skin are the main routes of occupational exposure. There is no further information available.

Acute toxicity:

LD_{50} (rat, oral):	> 5,000 mg / kg (Merck)
LD_{50} (rabbit, dermal):	> 2,000 mg / kg (OECD guideline 402)
LC_{50} (female rat, inhalation):	1,268 mg / L / 7 h (Sigma-Aldrich)
After inhalation:	No information is available.
After skin contact:	Slight irritation (rabbit, OECD guideline 402).
After eye contact:	Serious eye irritation OECD guideline 405).
After ingestion:	No information is available.
Sensitization:	No sensitizing effects were found. (Bühler-Test with guinea pig; OECD guideline 406, Sigma-Aldrich)
Mutagenicity:	No mutagenic effects were found. Mutagenicity of bacteria: Ames-Test negative (Merck); in-vitro-test on gene mutation of lymphocytes of mice: negative (Sigma-Aldrich).
Reproduktionstoxizität:	Refer to SECTION 11.1.
Cancer:	Refer to SECTION 11.1.
Chronic toxicity:	No information.

11.2.4 Phosphate(1-), hexafluoro-, lithium (1:1)

Toxikokinetics, metabolism and distribution:

Inhalation and absorption through skin are the main routes of occupational exposure. There is no further information available.

Acute toxicity:

LD_{50} (female rat, oral):	> 50 mg/kg (OECD guideline 423, Sigma-Aldrich)
After inhalation:	Severe irritation of the respiratory tract.
After skin contact:	Severe irritation up to chemical burn (test with artificial skin, Sigma-Aldrich).
After eye contact:	Severe irritation, risk of serious, irreversible eye damage (rabbit, OECD guideline 405).
After ingestion:	Toxic. Severe irritation of the oral cavity, of the oesophagus and the stomach.
Sensitization:	No sensitizing effects were found. In-vitro-test with mouse: negative (OECD guideline 429, Sigma-Aldrich).
Mutagenicity:	No mutagenic effects were found. Mutagenicity of germ cells: Ames-Test with salmonella typhimurium: negativ (Sigma-Aldrich).
Cancer:	Refer to SECTION 11.1.
Reproductive toxicity:	Refer to SECTION 11.1.

Chronic toxicity: After repeated and prolonged exposure hazardous to bones and teeth.

Further information: Fire or strong acids may set free fluorides and hydrofluoric acid, which cause severe health problems.

11.2.5 All other ingredients

The toxicities of the remaining ingredients are negligible in comparison to the substances mentioned in this SECTION, specially because nickel, aluminium and copper are not powdery.

SECTION 12: Ecological Information

12.1 Product:

The product as delivered causes no environmental hazards in normal use. If the product is disposed into the environment the housing will leak after a long period of time or after outside impact, and the ingredients will finally end up in the environment. On behalf of the ingredients the product must be classified as highly water polluting (WGK 3) according to AwSV (Germany). But as long as the battery is in good order and is used as intended it is not water polluting (WGK 0), but must not put into water because of electrical short cut, which might destroy the battery and the ingredients are set free.

*12.2 Information on the **pure** ingredients:*

12.2.1 Phosphoric acid, iron(2+) lithium salt (1:1:1)

Ecotoxic effects: Not biodegradable. On account of its sparing solubility in water no efficient ecotoxic effects are to be expected. Triphylin, Li(Fe, Mn)[PO_4], is a natural mineral, in comparison to phosphoric acid, iron(2+) lithium salt (1:1:1) the iron-II-ions of are partly replaced by manganese-II-ions.

Ecotoxic data: There are no experimental animal data.

Biodegradation: As an anorganic substance a potential of biodegradation is not expected.
Abiotic degradation: On a long term scale a transformation to lithium oxide and iron-III-phosphate is to be expected.

WGK (Water Pollution Category,Germany): 1 (slightly water polluting) (classification by analogy to trilithium phosphate and to iron phoshate (both WGK 1).

12.2.2 Graphite

Ecotoxic effects: Not biodegradable. As a natural substance no ecotoxic effects are to be expected.

Ecotoxic data: There are no experimental animal data.

WGK (Water Pollution Category,Germany): 0 (not water polluting) (BAnz. AT, idendification no.: 801)

12.2.3 Copper

Ecotoxic effects: Bioaccumulation is not to be expected. Metallic copper is mobilised below p_H 2.8 by oxidation to water soluble copper ions, which are very mobile in water but not in soil, because copper ions are strongly adsorbed by solids (HSDB).

Ecotoxic data (GESTIS, relevant for copper ions):

Fish toxicity:	LC_{50}:	0.0087 - 21 mg/l / 96 h; median value: 0.665 mg/l / 96 h (114 studies)
Crustacean toxicity:	LC_{50}:	0.000072 - 5.36 mg/l / 48h; median value: 0.044 mg/l / 96 h (135 studies)
Crustacean toxicity:	EC_{50}:	0.0016 - 0.34 mg/l / 48 h; median value: 0.02 mg/l / 96 h (75 studies)
Algae toxicity:	EC_{50}:	0.01 -0.91 mg/l / 72 h; median value: 0.57 mg/l / 72 h (9 studies)
Algae toxicity:	EC_{50}:	0.04 -9.2 mg/l / 96 h; median value: 7.9 mg/l / 96 h (3 studies)

WGK (Water Pollution Category,Germany): 0 (not water polluting) (BAnz. AT, idendification no.: 1443)

Distribution: log P(o/w) = -0,23 (GESTIS, Merck)

12.2.4 Aluminium

Ecotoxic effects: Not biodegradable. Aluminium is insoluble, but in acid soil (pH < 4.5) aluminium is slowly oxidised to soluble ions, which are toxic to water organisms.

Ecotoxic data of dissolved aluminium ions:

Fish toxicity:		LC_{50}: 0.12 - 5.2 mg/l, median value: 1.55mg/l (GESTIS)
Daphnia toxicity:	Daphnia magna:	toxic above 136 mg/l (Merck)
Algae toxicity:	Scenedesmus quadricauta:	toxic above 1.5 mg/l (Merck)

WGK (Water Pollution Category,Germany): 0 (not water polluting) (BAnz. AT, idendification no.: 1443)

12.2.5 1,3-Dioxolan-2-one

Ecotoxic effects: Readily biodegradable. No noteworthy bioaccumulation is to be expected.

Ecotoxic data (Merck):

Fish toxicity:	Leuciscus idus:	LC_{50}: > 1,000 mg/l / 96 h
Daphnia toxicity:	Daphnia magna:	EC_{50}: > 100 mg/l / 48 h
Bacterial toxicity:	Pseudomonas putida:	EC_{50}: > 10,000 mg/l / 17 h

Further information:

Biodegradation: 86.9% / 29 d (aerob, Sigma-Aldrich)

Distribution: log P(o/w) = -0.34 (Merck)

WGK (Water Pollution Category,Germany): 1 (slightly water polluting), (BAnz. AT, idendification no.: 2268)

12.2.6 Phosphate(1-), hexafluoro-, lithium (1:1)

Ecotoxic effects: No information is available.

Ecotoxic data (Sigma-Aldrich):

Daphnia toxicity:	Daphnia magna:	EC_{50}:	> 100 mg/l / 48 h (OECD guideline 202)
Bacterial toxicity:	Pseudomonas putida:	EC_{50}:	> 1,000 mg/l / 3 h (OECD guideline 209)
Algae toxicity:	Pseudokirchneriella subcap.:	EC_{50}:	> 100 mg/l / 76 h (OECD guideline 201)

WGK (Water Pollution Category,Germany): 2 (notedly water polluting), (BAnz. AT, idendification no.: 9245)

12.2.7 All other ingredients

The remaining ingredients are mainly polymers, which are hardly biodegradable and hardly ecotoxic because of their insolubility.

For all the remaining ingredients:

WGK (Water Pollution Category,Germany): 0 (not water polluting) (BAnz. AT, idendification no.: 766)

Do not allow the product to enter water supplies, waste water or soil (refer to SECTION 12.1 and 13.1).

SECTION 13: Disposal Considerations

13.1 Product: For disposal the product has not to be supervised. But before disposal the battery must be pretreated and the ingredients must be partly recovered (BattGDV or Directive 2006/66EG). The battery may be returned to the supplier or must be left over for a disposal company. It is not allowed to dispose the battery either as household waste nor as hazardous waste. This applies also, if the housing of the battery is damaged or/and part of the ingredients together with contaminated adsorbent and filter materials are collected in a container. The disposal of the ingredients or batteries with damaged housing has to be supervised (*).

Waste code: 16 06 05
Waste name: Other batteries and accumulators

13.2 Batteries with damaged housing or the ingredients:

Waste code: 16 06 06*
Waste name: Separately collected electrolyte from batteries and accumulators

* : Hazardous waste must be supervised.

13.3 Packing materials :

a) Packing materials made of plastics:
Waste code: 15 01 02
Waste name: Packing material*s* made of plastics

b) Packing materials made of metal:
Waste code: 15 01 04
Waste name: Packing materials made of metal

Waste codes numbers and names in accordance with the European Waste Register Ordinance.

SECTION 14: Transport Information

14.1 **Transportation by land ADR/RID**

UN No.:	3480
UN proper technical name:	Lithium Ion Batteries
: Dangerous goods identification:	UN 3480 Lithium Ion Batteries, 9, (E)
Class	9
Classification code:	M4 Lithium Battery
Packaging group:	Not applicable
Hazard label:	Class 9A Lithium Ion Batteries
Special instructions:	SI 188, 230, 310, 348, 376, 377, 387, 636
Limited quantity:	LQ: 0.0
Exempted quantities:	E0
Packing instructions:	PI 903,908,909,910,911 und LP 903,904,905,906
Tunnel category:	2 (E)

Notice:
The special instruction SI 376 for transport of batteries with damaged housing, and the special instructions SI 377 and 636 for the transport of batteries for disposal are to be complied with.

14.2 **Shipping by sea IMDG Sea:**

UN No.:	3480
Proper shipping name:	Lithium Ion Batteries
Dangerous goods identification:	UN 3480 Lithium Ion Batteries, 9
Class:	9
Additional hazard label:	Not applicable
Marine pollutant:	No
Hazard label (for packages):	Class 9A Lithium Ion Batteries
Packaging group:	Not applicable
Special instructions:	SI 188, 230, 310, 348, 360. 376, 377, 384, 387, 390
Limited quantity:	LQ: 0.0
Exempted quantities:	E0
Packing instructions:	PI 903,908,909,910,911,LP 903,904,905,906
EMS:	F-A, S-I
Packing instructions:	PI 903,908,909,910,911 and LP 903,904,905,906
IMDG-Code:	38 - 16
Handling:	A, SW19

Notice:
The special instruction SI 376 for transport of batteries with damaged housing, and the special instruction SI 377 for the transport of batteries for disposal are to be complied with.

14.3 Shipping by air ICAO-TI und IATA-DGR 61 edition of 7 Nov., 2019:

UN/ID No.:	3480
IATA proper shipping name:	Lithium Ion Batteries
Dangerous goods identification:	UN 3480 Lithium Ion Batteries, 9

Class:	9
Additional hazard label::	Not applicable
Hazard label:	Class 9A Lithium Battery
Packaging group:	Not applicable
Limited quantity:	LQ: 0.0
Exempted quantities:	E0
Packing instruction:	965
Max. gross weight per package:	35 kg
Special instructions:	A88, 99, 154, 164, 183, 201, 206, 213, 331, 334, 802
ERG Code:	12FZ
Additional hazard label on outer case:	

Notice:
The transport with passenger aircrafts is for bidden. Batteries must not be damaged. The battery terminals must be protected against short circuit. The state of charge must not exeed 30% of each battery. The energy content (Wh) must be specified on the type plate. Note that the different airline companies request different terms for transportation (refer to Addendum 1 of IATA-DGR 61 edition 2019).

SECTION 15: Regulatory Information

Directive 1907/2006/EC of 18 Dec. 2006, last revision of 21 Dec., 2020.
Ordinance (EC) No. 1272/2008 (GHS) of 16 Dec., 2008; last revision of 13 Nov., 2020.

15.1.1 There are no safety reports according to 1907/2006/EC (REACH) available.

15.1.2 *Substances of very high concern (SVHC):*

This product does not contain substances of very high concern according to directive 1907/2006/EC, article 57a - 57f or annex XIV and XVII.

15.1.3 *Directive No. 850/2004/EC on (very) persistent organic pollutants and amending directive 79/117/EEC or directive 1907/2006/EC, article 57d + e or annex XIII:*

None of the ingredients are regulated.

15.1.4 *Directive No. 1005/2009/EC on substances that deplete the ozone layer*

None of the ingredients are regulated (Last supplementation: Directive No. 2020/2181/EC of 31 Dec. 2020)

All other relevant regulations are mentioned elsewhere in this Safety Data Sheet.

15.2 *Classification and Labelling:* None (refer to SECTION 2)

15.3 National Regulations, Germany:

15.3.1	*StörfallV:*	Annex I, No. 1.1.2: lower threshold: 50 t; upper threshold: 200 t [applies only to Phosphate(1-), hexafluoro-, lithium (1:1)]
15.3.2	*TA-Luft:*	Clause 5.2.1 Total dust including fine dusts: max. mass concentration: 20 mg/m^3 or max. mass flow: 0,20 kg/h (at a max. mass concentration of 150 mg/m^3).
15.3.3	*VCI Storage Class:*	11 (combustible solids, TRGS 510)
15.3.4	*AwSV:*	Batteries with damaged housing are WGK 3 (highly water polluting, German Water Pollution Category 3), batteries in good order are WGK 0 (not water polluting, German Water Pollution Category 0), as long as damaging can be excluded, e. g. by traffic of staplers.
15.3.5	*Volatile components:*	None, VOC: 0
15.3.6	German VCI-class of storage: 11 (combustible solids, TRGS 510).	
15.4	*Further regulations and restrictions:*	Occupational restrictions: Take note of Directive 94/33/EC on the protection of young people at work.

SECTION 16: Other Information

Abbreviations:

ACGIH: American Conference of Governmental Industrial Hygienists
AwSV: Verordnung über Anlagen zum Umgang mit wassergefährdenden Stoffen vom 18 April 2017 (ordinance about facilities for handling with substances hazardous to water of 18 April 2017)
BAnz. AT: Liste der wassergefährdenden Stoffe, veröffentlicht im Bundesanzeiger AT vom 10.08.2017 (list of water polluting substances, published in Bundesanzeiger AT of 8 Aug. 2017, last revision of 17 Dec., 2020)
BOD: Biochemical oxygen demand
CAS No.: Number of the Chemical Abstract System
ChemIDplus: Database of the United States National Library of Medicine
COD: Chemical oxygen demand
DFG: Deutsche Forschungsgemeinschaft (German Society for Research)
GMBl: Gemeinsames Ministerialblatt: Publication of all ministeries of the Federal Republic of Germany Webb: gmbl-online.de
DNEL Derived No-Effect Level
DIN; DIN/ISO: German standard
DOC: Dissolved organic carbon
EC_{50}: Effektive dosis (50% of the tested animals have symptoms)
EN: European standard
EINECS: European Inventory of Existing Commercial Substances
GESTIS: Data base of Berufsgenossenschaftliches Institut für Arbeitsschutz, Germany
GMBl: Gemeinsames Ministerialblatt: Publication of all ministeries of the Federal Republic of Germany Webb: gmbl-online.de
IARC: International Agency for Research on Cancer (World Health Organisation)
IRT: Inhalation risk test
IUCLID: International Uniform ChemicaL Information Database
LC_{50}: Lethal Concentration for 50% of the tested animals
LD_{50}: Lethal Dose for 50% of the tested animals
LOEC: Lowest Observed Effect Concentration
MAK: Maximale Arbeitsplatzkonzentration (maximum concentration in the workplace, out of date)

Merck, Sigma-Aldrich, etc.: Actual MSDS of Merck, Darmstadt, Germany, Sigma-Aldrich, Germany, etc.
MITI: Ministry of International Trade and Industry, Japan
MSDS: Material Safety Data Sheet
NIOSH: National Institute for Occupational Safety and Health (USA)
NOAEL: No Observed Adverse Effect Level
NOEC: No Observed Effect Concentration
NOEL: No Observed Effect Level
OECD: Organisation for Economic Co-operation and Development
OSHA: Occupational Safety and Health Adminstration (USA)
PNEC: Predicted No-Effect Concentration
RTECS: Register of Toxic Effects of Chemical Substances
TG: Test-Guideline
TOC: Total organic carbon
TOD: Theoretical oxygen demand
TRGS: Technische Regel für Gefahrstoffe (Technical rules for hazardous substances, Germany)
TRK: Technische Richtkonzentration (technical concentration in the workplace to comply with [for cancerogenic substances], out of date)
VCI: Verband der Chemischen Industrie e.V. (Chemical Industry Association, Germany)
VOC: Volatile organic carbons
WGK: Wassergefährdungsklasse (Water Pollution Category, Germany)

As of the date of issuance, we are providing available information relevant to the handling of this material in the workplace. All information contained herein is offered in good faith in the belief that it is accurate. This material safety data sheet shall not be deemed to constitute or imply any warranty of any kind. In the event of an adverse incident associated with this material, this safety data sheet is not intended as a substitute for consultation with appropriately trained personnel (refer to SECTION 1). Nor is this safety data sheet intended to be a substitute for any product literature which may accompany the finished product.