

Safety data sheet

according to 1907/2006/EC, Article 31

Printing date: 08.05.2015

Version: 1. 0

Revision: 08.05.2015

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

- **1.1 Product identifier**
- Trade name: **Lithium Battery BU191**
Part no.: 21955 / F145068
- Article number: 71092238
- **1.2 Relevant identified uses of the substance or mixture and uses advised against: -**
- **Application of the substance / the preparation:** Lithium batteries
- **Uses advised against -**
- **1.3 Details of the supplier of the safety data sheet**
- **Supplier/Manufacturer:**
Endress+Hauser GmbH+Co. KG
Hauptstraße 1
D-79689 Maulburg
- Telefon +49 (0)7622 280
- **Email competent person:** sds@kft.de
- **Information department:** See supplier/manufacturer
- **1.4 Emergency telephone number:**
Emergency call University of Mainz Tel.+49-6131-19240
www.giftinfo.uni-mainz.de

SECTION 2: Hazards identification

- **2.1 Classification of the substance or mixture**
- **Classification according to Regulation (EC) No 1272/2008**



GHS02 flame

Water-react. 1 H260 In contact with water releases flammable gases which may ignite spontaneously.



GHS05 corrosion

Skin Corr. 1A H314 Causes severe skin burns and eye damage.

Eye Dam. 1 H318 Causes serious eye damage.



GHS07

Acute Tox. 4 H302 Harmful if swallowed.

STOT SE 3 H335 May cause respiratory irritation.

- **Classification according to Directive 67/548/EEC or Directive 1999/45/EC**



C; Corrosive

R35: Causes severe burns.



Xn; Harmful

R20/22: Harmful by inhalation and if swallowed.



Xi; Irritant

R37: Irritating to respiratory system.

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F; Highly flammable

R14/15: Reacts violently with water, liberating extremely flammable gases.

R29: Contact with water liberates toxic gas.

- **Information concerning particular hazards for human and environment:**

Chemical burns have to be treated immediately, as otherwise hardly curable wounds are caused.

- **Classification system:**

These are articles that are not subject to labelling according to the Hazardous Substances Ordinance or Regulation (EC) No. 1272/2008 and Directive 1999/45/EC.

- **2.2 Label elements**

- **Labelling according to Regulation (EC) No 1272/2008** The product is classified and labelled according to the CLP regulation.

- **Hazard pictograms**



GHS02



GHS05



GHS07

- **Signal word** Danger

- **Hazard-determining components of labelling:**

thionyl dichloride

lithium

lithium chloride

aluminium chloride

- **Hazard statements**

H260 In contact with water releases flammable gases which may ignite spontaneously.

H302 Harmful if swallowed.

H314 Causes severe skin burns and eye damage.

H335 May cause respiratory irritation.

- **Precautionary statements**

P223 Do not allow contact with water.

P370+P378 In case of fire: Use CO₂, sand, extinguishing powder to extinguish.

P308+P311 IF exposed or concerned: Call a POISON CENTER/doctor.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

- **Additional information:**

EUH014 Reacts violently with water.

EUH029 Contact with water liberates toxic gas.

- **2.3 Other hazards**

- **Results of PBT and vPvB assessment**

- **PBT:** Not applicable

- **vPvB:** Not applicable

SECTION 3: Composition/information on ingredients

- **3.2 Chemical characterisation: Mixtures**

- **Description:** Article

- **Dangerous components:**

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CAS: 7719-09-7	thionyl dichloride	25-50%
EINECS: 231-748-8	C R35; Xn R20/22	
Index number: 016-015-00-0	R14-29	
	Skin Corr. 1A, H314; Acute Tox. 4, H302; Acute Tox. 4, H332; STOT SE 3, H335	
CAS: 1333-86-4	Carbon black	5-10%
EINECS: 215-609-9	substance with a Community workplace exposure limit	
CAS: 7439-93-2	lithium	1-5%
EINECS: 231-102-5	C R34; F R14/15	
Index number: 003-001-00-4	Water-react. 1, H260; Skin Corr. 1B, H314	
CAS: 7446-70-0	aluminium chloride	1-5%
EINECS: 231-208-1	C R34	
Index number: 013-003-00-7	R14	
	Skin Corr. 1B, H314	
CAS: 7447-41-8	lithium chloride	< 2.5%
EINECS: 231-212-3	Xn R22; Xi R36/38	
	Acute Tox. 4, H302; Skin Irrit. 2, H315; Eye Irrit. 2, H319	

• **Additional information:**

For the wording of the listed risk phrases refer to section 16.

Lithium battery

Weight: 0.3 kg

Lithium content: 10 g

SECTION 4: First aid measures

• **4.1 Description of first aid measures**

• **General information:**

Immediately remove any clothing soiled by the product.

Symptoms of poisoning may occur even after several hours; therefore medical observation is suggested for at least 48 hours after the accident.

• **After inhalation:**

Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.

In case of unconsciousness, place patients on their side in a stable position for transportation.

• **After skin contact:** Immediately wash with water and soap and rinse thoroughly.

• **After eye contact:** Rinse opened eye for several minutes under running water. Then consult a doctor.

• **After swallowing:**

Call a doctor immediately.

Do not induce vomiting.

Drink lots of water and provide fresh air. Call a doctor immediately.

• **4.2 Most important symptoms and effects, both acute and delayed** No further relevant 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 agents:**



CO₂, sand, extinguishing powder. Do not use water.

Use fire fighting measures that suit the environment.

• **For safety reasons unsuitable extinguishing agents:** Water

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· 5.2 Special hazards arising from the substance or mixture

In case of fire, the following can be released:

Lithium oxides
 Sulphur dioxide (SO₂)
 Aluminium oxide
 Hydrogen chloride (HCl)
 Chlorine
 Corrosive gases/vapours

· 5.3 Advice for firefighters

- **Protective equipment:** Wear self-contained respiratory protective device.
- **Additional information:** Move containers from area if it can be done without risk or cool them with water.

SECTION 6: Accidental release measures

· 6.1 Personal precautions, protective equipment and emergency procedures

Use respiratory protective device.



Wear protective equipment. Keep unprotected persons away.

Avoid contact with eyes and skin.

· 6.2 Environmental precautions:

Do not allow product to reach sewage system or any water course.
 Inform respective authorities in case of seepage into water course or sewage system.
 Do not allow to penetrate the ground/soil.

· 6.3 Methods and material for containment and cleaning up:

Absorb with non-combustible material like sand, soil or diatomite.
 Use neutralising agent.
 Ensure adequate ventilation.
 Do not flush with water or aqueous cleansing agents
 Dispose contaminated material as waste according to item 13.

· 6.4 Reference to other sections

See Section 7 for information on safe handling
 See Section 8 for information on personal protection equipment.
 See Section 13 for disposal information.

SECTION 7: Handling and storage

· 7.1 Precautions for safe handling

Ensure good ventilation/exhaustion at the workplace.
 Thorough dedusting
 Avoid inhalation of vapours.

· Information about protection against explosions and fires:



Keep ignition sources away - Do not smoke.

Protect against electrostatic charges.
 Keep respiratory protective device available.
 Dust may combine with air to form an explosive mixture.

· 7.2 Conditions for safe storage, including any incompatibilities

- **Storage:**
- **Requirements to be met by storerooms and receptacles:** Store only in unopened original receptacles.

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- **Information about storage in one common storage facility:**
Store away from foodstuffs.
Store away from feed.
- **Further information about storage conditions:**
Keep receptacle tightly sealed.
Store under cool, dry conditions in well sealed receptacles.
- **Recommended storage temperature:** not above 30 °C
- **Storage class:** 4.3: Materials liberating flammable gases in contact with water
- **7.3 Specific end use(s)** No further relevant information available

SECTION 8: Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see section 7.
- **8.1 Control parameters**
- **Components with limit values that require monitoring at the workplace:**
 - 7719-09-7 thionyl dichloride**
WEL (Great Britain) Short-term value: 4.9 mg/m³, 1 ppm
 - 1333-86-4 Carbon black**
WEL (Great Britain) Short-term value: 7 mg/m³
Long-term value: 3.5 mg/m³
 - 7446-70-0 aluminium chloride**
WEL (Great Britain) Long-term value: 2 mg/m³
- **CAS No. Designation of material % Type Value Unit**
- **Additional Occupational Exposure Limit Values for possible hazards during processing:**
Observe general threshold limit for dust.
- **Additional information:** The lists that were valid during the creation were used as basis.
- **8.2 Exposure controls**
- **Personal protective equipment:**
- **General protective and hygienic measures:**
Keep away from foodstuffs, beverages and feed.
Remove all soiled and contaminated clothing immediately.
Wash hands before breaks and at the end of work.
Avoid contact with eyes and skin.
- **Breathing equipment:**



In case of brief exposure or low pollution use a respiratory filter device. In case of intensive or longer exposure use a respiratory protective device that is independent of circulating air.

Filter P2

- **Protection of hands:**
Protective gloves
To avoid skin problems reduce the wearing of gloves to the required minimum.
Only use chemical-protective gloves with CE-labelling of category III.
The glove material has to be impermeable and resistant to the product/substance/preparation.
- **Material of gloves:**
Nitrile rubber, NBR
Chloroprene rubber, CR
The selection of suitable gloves depends upon the material, and also upon the quality of the gloves. The degree of protection will vary from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

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- **Penetration time of glove material:**
The exact penetration time has to be found out by the manufacturer of the protective gloves and has to be observed.
- **Eye protection:** Tightly sealed goggles
- **Body protection:** Protective work clothing

SECTION 9: Physical and chemical properties

· 9.1 Information on basic physical and chemical properties

· General Information:

· Appearance:

Form:	Solid
Colour:	According to product specification
Odour:	Characteristic
Odour threshold:	Not determined

· pH-value: Not applicable

· Change in condition:

Melting point/Melting range:	Not determined
Boiling point/Boiling range:	75 °C

· Flash point: Not applicable

· **Flammability (solid, gaseous):** Contact with water liberates extremely flammable gases.

· **Ignition temperature:** > 300 °C

· **Decomposition temperature:** Not determined

· **Self ignition temperature:** Product is not self-igniting.

· **Danger of explosion:** Not determined

· Explosion limits:

Lower:	Not determined
Upper:	Not determined

· **Oxidizing properties:** Not determined

· **Vapour pressure at 20 °C:** 124 hPa

· **Density:** Not determined

· **Relative density:** Not determined

· **Vapour density:** Not applicable

· **Evaporation rate:** Not applicable

· Solubility in / Miscibility with

Water: Insoluble

· **Partition coefficient (n-octanol/water):** Not determined

· Viscosity:

dynamic:	Not applicable
kinematic:	Not applicable

· Solvent content:

Organic solvents: 0.0 %

Solids content: 50.5 %

· **9.2 Other information** No further relevant information available

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SECTION 10: Stability and reactivity

- **10.1 Reactivity** No further relevant information available
- **10.2 Chemical stability**
- **Thermal decomposition / conditions to be avoided:** No decomposition if used and stored according to specifications
- **10.3 Possibility of hazardous reactions**
 Contact with water releases flammable gases.
 Contact with water releases toxic gases.
 Contact with acids releases toxic gases.
- **10.4 Conditions to avoid**
 Temperatures > 150 °C
 Protect from humidity and water.
- **10.5 Incompatible materials:**
 Strong acids
 Alkalis
 Water and humidity
- **10.6 Hazardous decomposition products:**
 Upon contact with water or humidity formation of the following substances:
 Hydrogen
 Lithium oxides
 Upon thermal decomposition:
 Chlorine
 Sulphur oxides (SO_x)
 Lithiumoxide

SECTION 11: Toxicological information

- **11.1 Information on toxicological effects**
- **Acute toxicity:**
- **LD/LC50 values that are relevant for classification:**
7719-09-7 thionyl dichloride
 Inhalative LC₅₀/4 h 2.7 mg/l (rat)
- **Primary irritant effect:**
- **on the skin:** Strong caustic effect on skin and mucous membranes
- **on the eye:** Strong caustic effect
- **On respiratory tract:** Irritation of respiratory tract
- **Sensitisation:** No sensitising effects known
- **Other information (about experimental toxicology):**
- **Carcinogenic, mutagenic effects and adverse effects on reproduction:**
 Presently available data show no carcinogenic, mutagenic or teratogenic effects.
- **Subacute to chronic toxicity:**
- **STOT-single exposure** Irritation of respiratory tract
- **STOT-repeated exposure:** No classification
- **Aspiration hazard** Not relevant
- **Additional toxicological information:** Irritation of respiratory tract

SECTION 12: Ecological information

- **12.1 Toxicity**
- **Aquatic toxicity:** No further relevant information available
- **12.2 Persistence and degradability** No further relevant information available
- **12.3 Bioaccumulative potential** No further relevant information available
- **12.4 Mobility in soil** No further relevant information available

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- **Additional ecological information:**
- **General notes:**
 - Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous to water
 - According to appendix 4 of VwVwS dated 17.05.1999 (German regulation)
 - Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
 - Danger to drinking water is possible if large quantities leak into the ground or into water course.
 - Must not reach sewage water or drainage ditch undiluted or unneutralised.
- **12.5 Results of PBT and vPvB assessment**
- **PBT:** Not applicable
- **vPvB:** Not applicable
- **12.6 Other adverse effects** No further relevant information available

SECTION 13: Disposal considerations

- **13.1 Waste treatment methods**
- **Recommendation:**
 - Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
 - Disposal according to instructions of local authorities
 - Must be recycled or disposed of according to the regulations. Waste has to be classified according to the European Waste Catalogue based on the identification of the waste generating source.
- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to official regulations.

SECTION 14: Transport information

<ul style="list-style-type: none"> · 14.1 UN-Number · ADR, IMDG, IATA 	UN3090	
<ul style="list-style-type: none"> · 14.2 UN proper shipping name · ADR · IMDG, IATA 	3090 LITHIUM METAL BATTERIES LITHIUM METAL BATTERIES	
<ul style="list-style-type: none"> · 14.3 Transport hazard class(es) · ADR 	<div style="text-align: center;">  </div> <ul style="list-style-type: none"> · Class · Label 	9 (M4) Miscellaneous dangerous substances and articles. 9
<ul style="list-style-type: none"> · IMDG, IATA 	<div style="text-align: center;">  </div> <ul style="list-style-type: none"> · Class · Label 	9 Miscellaneous dangerous substances and articles. 9
<ul style="list-style-type: none"> · 14.4 Packing group · ADR, IMDG, IATA 	Void	

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<ul style="list-style-type: none"> · 14.5 Environmental hazards: · Marine pollutant: 	No
<ul style="list-style-type: none"> · 14.6 Special precautions for user · Danger code (Kemler): · EMS Number: 	Warning: Miscellaneous dangerous substances and articles. - F-A,S-I
<ul style="list-style-type: none"> · 14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code 	Not applicable
<ul style="list-style-type: none"> · Transport/Additional information: 	
<ul style="list-style-type: none"> · ADR · Limited quantities (LQ): · Excepted quantities (EQ) 	
<ul style="list-style-type: none"> 0 Code: E0 Not permitted as Excepted Quantity 	
<ul style="list-style-type: none"> · Transport category: · Tunnel restriction code: 	
<ul style="list-style-type: none"> 2 (E) 	
<ul style="list-style-type: none"> · IMDG · Limited quantities (LQ) · Excepted quantities (EQ) 	
<ul style="list-style-type: none"> 0 Code: E0 Not permitted as Excepted Quantity 	
<ul style="list-style-type: none"> · IATA · Remarks: 	
<ul style="list-style-type: none"> Packing instructions: No limited Quantity Passenger and Cargo Aircraft: Forbidden Cargo Aircraft only: see 968 	
<ul style="list-style-type: none"> · UN "Model Regulation": 	UN3090, LITHIUM METAL BATTERIES, 9 If shipped in or with equipment use UN3091 LITHIUM METAL BATTERIES CONTAINED IN EQUIPMENT or LITHIUM METAL BATTERIES PACKED WITH EQUIPMENT

SECTION 15: Regulatory information

- **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **National regulations**
- **Information about limitation of use:** Take note of Directive 94/33/EC on the protection of young people at work.
- **Water hazard class:** Water hazard class 1 (Self-assessment): slightly hazardous for water
- **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Relevant phrases**
- H260 In contact with water releases flammable gases which may ignite spontaneously.
- H302 Harmful if swallowed.
- H314 Causes severe skin burns and eye damage.
- H315 Causes skin irritation.
- H319 Causes serious eye irritation.
- H332 Harmful if inhaled.
- H335 May cause respiratory irritation.

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R14 Reacts violently with water.
 R14/15 Reacts violently with water, liberating extremely flammable gases.
 R20/22 Harmful by inhalation and if swallowed.
 R22 Harmful if swallowed.
 R29 Contact with water liberates toxic gas.
 R34 Causes burns.
 R35 Causes severe burns.
 R36/38 Irritating to eyes and skin.

• **Department issuing MSDS:**

KFT Chemieservice GmbH
 Im Leuschnerpark. 3 64347 Griesheim
 Postfach 1451 64345 Griesheim
 Germany

Phone: +49 6155 86829-0 Fax: +49 6155 86829-25

Safety Data Sheet Service: +49 6155 86829-22

• **Contact:** Rebecca Hiltrop

• **Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

GHS: Globally Harmonised System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

Water-react. 1: Substances and Mixtures which, in contact with water, emit flammable gases, Hazard Category 1

Acute Tox. 4: Acute toxicity, Hazard Category 4

Skin Corr. 1A: Skin corrosion/irritation, Hazard Category 1A

Skin Corr. 1B: Skin corrosion/irritation, Hazard Category 1B

Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2

Eye Dam. 1: Serious eye damage/eye irritation, Hazard Category 1

Eye Irrit. 2: Serious eye damage/eye irritation, Hazard Category 2

STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3