

Li-CFx Primary Batteries

1. Manufacturer and Product Identification

Manufacturer details

Name:	LITRONIK Batterietechnologie GmbH
Address:	Birkwitzer Str. 79 01796 Pirna Germany
Emergency contact (available 24/7)	USA domestic: 1 800 535 5053 International: (001) 352 323 3500
UN 38.3.5 Information	GBK/Infotrac ID 108868

Product details

Trade name:	Lithium carbon monofluoride battery
Electrochemical system:	Anode: lithium metal Electrolyte: organic Cathode: carbon monofluoride (CFx)

This data sheet applies to the battery cells listed below as well as to types of comparable design:

LiS 1370, LiS 2044 K, LiS 3765

2. Hazard Identification

Battery cells are hermetically sealed units that are not hazardous under normal use. Under normal conditions of use, the electrode materials contained within them are not released.

A hazard exists in the event of improper handling (mechanical, chemical, thermal, electrical), which can lead to rupture of the battery container and result in leakage, fire, the generation of hazardous gases, or an explosion.

CAUTION: Improper handling poses a risk of burns or explosions

The following uses are prohibited: any form of destruction, short-circuiting, recharging, puncturing, burning, crushing, immersion in water, forced discharge, or exposure to temperatures exceeding the specified operating temperature range.

3. Composition/Information on Ingredients

Ingredients

Material	CAS No.	Percentage*	CLP Classification**
Lithium	7439-93-2	< 9%	  H: 260; 314 EUH: 014 P: 223; 231+232; 280; 305+351+338; 370+378; 422
Carbon monofluoride (CFx)	51311-17-2	< 23%	 H: 315; 319, 335 P: 261; 264; 271; 280; 302+352; 304+340; 305+351+338; 312; 321
Ethylene carbonate	96-49-1	< 7%	  H: 302; 319; 373 P: 260, 301+312+330; 305+351+338
Propylene carbonate (PC)	108-32-7	< 2%	 H: 319 P: 305+351+338
1,2-Dimethoxyethane (DME)	110-71-4	< 9%	   H: 225; 315; 360FD EUH: 019 P: 201; 210; 240; 308+313; 403+233
Lithium perchlorate (LiClO ₄)	7791-03-9	< 2%	  H: 272; 315; 319; 335 P: 220; 261; 305+351+338

* Based on the total weight of the battery cell

** Full text of H statements in SECTION 16

Lithium mass

Battery Type	Lithium Content
LiS 1370	< 0.5 g
LiS 2044 K	< 0.5 g
LiS 3765	< 1 g

Substances relevant to the EU Battery Regulation (2023/1542)

Material	CAS No.	Percentage
Lead	7439-92-1	< 0.0040%
Cadmium	7440-43-9	< 0.0020%
Mercury	7439-97-6	< 0.0001%

Substances of Very High Concern (SVHC) according to the REACH Regulation (1907/2006)

Material	CAS No.	Percentage
1,2-Dimethoxyethane	110-71-4	> 0.1%

4. First Aid Measures

After inhalation of battery components:	Move away from the source of exposure, rest, and stay warm. Seek medical attention in severe cases.
After skin contact with battery components:	Thoroughly wash skin with water. Remove contaminated clothing and wash before reuse. Seek medical attention in severe cases.
After eye contact with battery components:	Rinse thoroughly with lukewarm running water for at least 15 minutes. Seek medical attention.
After swallowing battery components:	Rinse mouth thoroughly with water and drink plenty of water. Do not induce vomiting. Seek medical attention.
After swallowing batteries:	If a battery is swallowed, seek immediate medical attention via the emergency room. Do not eat or drink to allow for a medical examination (X-ray if necessary). CAUTION: Ingestion can lead to burns, tissue perforation, and even death. Severe burns may also occur with a delay of several hours.
Further treatment	In all cases of eye contamination, persistent skin irritation, and if someone has swallowed these substances or inhaled the vapors, a doctor should be consulted.

5. Firefighting Measures

Extinguishing media:	Metal fire extinguisher (Class D) If only water is available for extinguishing, it must be used in very large quantities.
Unsuitable extinguishing media:	Carbon dioxide (CO ₂) fire extinguishers are not suitable. Small amounts of water can have the opposite effect.
Special protective equipment for firefighting:	Firefighting clothing and self-contained breathing apparatus.
Special hazards:	Battery cells may explode and release metallic particles. Contact between metallic lithium and water can produce highly flammable hydrogen gas.
Environmental protection:	Prevent used extinguishing media from entering surface water or groundwater; thicken with suitable solids if necessary. Dispose of properly.

6. Measures in Case of Accidental Release

Personal protection measures:	Leaking batteries may release irritating or flammable vapors; evacuate all personnel from the area. Do not inhale the vapors and do not touch the liquid with bare hands. If the skin has come into contact with the liquid, wash the skin with water. Wear appropriate protective equipment, e.g., chemical-resistant gloves, face protection, and a respirator.
Environmental protection measures:	Absorb spilled liquids with absorbent material. Sand or soil can be used to absorb spilled material. Leaking batteries and components, as well as the contaminated absorbent material, should be sealed in plastic bags and disposed of in accordance with local regulations.
Cleaning procedures:	After removing the battery and absorbent material, electrolyte residues can be removed with isopropyl. Finally, clean with water.

7. Handling and Storage

Handling:	Do not short-circuit the battery or expose it to temperatures above the permissible temperature range (< 60°C). Do not recharge, force-discharge, immerse in water, puncture, or crush. The battery could catch fire and/or explode.
Storage:	Store in cool locations (recommended: < 30°C) but avoid condensation on cells and batteries. Elevated temperatures can shorten battery life and impair performance. Do not store batteries in locations with high humidity for extended periods.
Other:	The lithium cells or batteries are not rechargeable and should therefore not be charged under any circumstances. Observe the operating temperature range. Applying pressure to deform the battery may cause it to burst.

8. Exposure Limits and Monitoring/Personal Protective Equipment

Under normal conditions, no special protective equipment is required, as no release of battery components can occur.



Respiratory protection: Do not inhale electrolyte vapors from open or leaking batteries. In the event of a fire or leak, use a self-contained breathing apparatus.



Hand protection: In the event of a leak, wear neoprene or natural rubber gloves.



Eye protection: Safety goggles are recommended when working on an open or leaking battery.



Other: In the event of a leak, wear a chemical-resistant apron.

9. Physical and Chemical Properties

Not applicable when sealed/in the condition as delivered.

10. Stability and Reactivity

Conditions to avoid:	Temperatures > 60°C or burning, deforming, crushing, piercing, disassembling, charging, short-circuiting.
Materials to avoid:	Oxidizing agents, corrosive chemicals, acids, alkaline solutions, salts, water.
Hazardous reactions:	Temperatures >180°C can cause bursting or an explosion. Lithium metal reacts with water to form highly flammable gases.
Hazardous decomposition reactions:	Release of toxic vapors in the event of a leak or rupture.

11. Toxicological Information

Under normal conditions, no components of the battery are released. In the event of accidental release, refer to the preceding sections.

Conditions to avoid:	Temperatures > 60°C or burning, deforming, crushing, piercing, disassembling, charging, short-circuiting.
Materials to avoid:	Oxidizing agents, corrosive chemicals, acids, alkaline solutions, salts, water.
Hazardous reactions:	Temperatures >180°C can cause bursting or an explosion. Lithium metal reacts with water to form highly flammable gases.
Hazardous decomposition reactions:	Release of toxic vapors in the event of a leak or rupture.

12. Environmental Information

LITRONIK primary battery cells comply with the requirements of Battery Regulation 2023/1542 regarding the restriction of substances (Art. 6).

Effects on mammals:	None currently known when used and disposed of properly.
Ecotoxicity:	None currently known when used and disposed of properly.
Bioaccumulation potential:	Slowly biodegradable.
Environmental hazard:	None currently known when used and disposed of properly.

13. Disposal Instructions

- EU Within the EU, the manufacture, handling, and disposal of batteries are subject to Regulation (EU) 2023/1542 (Battery Regulation).
- Non-EU Outside the EU, the respective local laws apply.



The battery must be disposed of as a lithium metal battery.

Separate collection of batteries.



Dispose of only when fully discharged. Avoid deep discharge!

To prevent short circuits and overheating, do not collect or transport in loose piles and/or insulate contacts.

Do not burn cells or expose them to temperatures above 60°C. Such misuse can lead to leakage and/or fire.

When used and disposed of properly, the battery poses no danger to the environment.

The batteries do not contain mercury, cadmium, or lead. Dispose of in accordance with local regulations.

14. Transport Information

LITRONIK primary battery cells meet the requirements for the transport of batteries in accordance with the UN Manual of Tests and Criteria, Part III, Subsection 38.3 (3rd edition, Amendment 1, or subsequent editions), as described in the IATA DGR, Section 3.9.2.6.

The summary test reports in accordance with UN 38.3.5 are available from LITRONIK or can be requested by calling the emergency contact number listed in Section 1.

LITRONIK primary battery cells are manufactured under a quality management system certified according to ISO 13485 and meet the following requirements according to ADR (2.2.9.1.7 (e)), IATA (3.9.2.6. (e)), and the IMDG code (2.9.4 (5)).

ADR/RID

UN number	UN 3090 (UN 3091 = Lithium metal batteries in or with equipment)
Proper shipping name	Lithium metal batteries
Hazard classification	The batteries are classified in Class 9.
Packing group	Not classified
Packaging instructions	P903, P908, P909, P910, LP903, LP904
Special provisions	188, 230, 310, 376, 377, 387, 636, 677
Tunnel restriction code	E
Transport label	Miscellaneous hazardous substances and articles, Hazard Class 9 (ADR 5.2.2.2.2 Figure 9A) Lithium battery label (ADR Figure 5.2.1.9.2)

IATA

UN number	UN 3090
Proper shipping name	Lithium metal batteries
Hazard classification	The batteries are classified in Class 9.
Packing group	Not classified
Packaging instructions	PI968
Special provisions	A88, A99, A154, A183, A201, A213, A334, A802
Transport label	Miscellaneous hazardous substances and articles, Hazard Class 9 (7.3.X) Cargo aircraft only (7.4.B) Lithium battery label (7.1.C)

UN number	UN 3091
Proper shipping name	Lithium metal batteries in equipment
Hazard classification	The batteries are classified in Class 9.
Packing group	Not classified
Packaging instructions	PI970 (if Li content: < 1 g/cell or 2 g/battery)
Special provisions	A48, A88, A99, A154, A181, A185, A213, A220
Transport label	Miscellaneous hazardous substances and articles, Hazard Class 9 (7.3.X) Cargo aircraft only (7.4.B) Lithium battery label (7.1.C)

UN number	UN 3091
Proper shipping name	Lithium metal batteries, with equipment
Hazard classification	The batteries are classified in Class 9.
Packing group	Not classified
Packaging instructions	PI969 (if Li content: < 1 g/cell or 2 g/battery)
Special provisions	A88, A99, A154, A181, A185, A213, A802
Transport label	Miscellaneous hazardous substances and articles, Hazard Class 9 (7.3.X) Cargo aircraft only (7.4.B) Lithium battery label (7.1.C)

IMDG code

UN number	UN 3090 (UN 3091 = Lithium metal batteries in or with equipment)
Proper shipping name	Lithium metal batteries
Hazard classification	The batteries are classified in Class 9.
Packing group	Not classified
Packaging instructions	P903
Special provisions	188, 230, 310, 360, 376, 377, 384, 387, 390
Transport label	Miscellaneous hazardous substances and articles, Hazard Class 9 (IMDG 5.2.2.2.2 Figure 9A) Lithium battery label (IMDG Figure 5.2.1.10.2)

15. Regulations

Regulations taken into account

Transport regulations

Air IATA DGR 2026 (67th edition)

Road ADR 2025

Sea IMDG code 2024

EU Battery Regulation

Regulation (EU) 2023/1542 (version of July 23, 2025)

Labeling of battery cells

 LITRONIK primary battery cells comply with the Battery Regulation (EU) 2023/1542 and therefore bear the CE mark.



Separate collection of batteries.

16. Other Information

Full text of hazard statements

Code	Description
EUH: 014	Reacts violently with water.
EUH: 019	May form explosive peroxides.
H: 225	Highly flammable liquid and vapor.
H: 260	In contact with water releases flammable gases which may ignite spontaneously.
H: 272	May intensify fire; oxidizer.
H: 302	Harmful if swallowed.
H: 314	Causes severe skin burns and eye damage.
H: 315	Causes skin irritation.
H: 319	Causes serious eye irritation.
H: 332	Harmful if inhaled.
H: 335	May cause respiratory irritation.
H: 360FD	May damage fertility. May damage the unborn child.
H: 373	May cause damage to organs through prolonged or repeated exposure (brain if inhaled, kidneys if swallowed).

Full text of the safety instructions

Code	Description
P: 201	Obtain special instructions before use.
P: 210	Keep away from heat, hot surfaces, sparks, open flames, and other ignition sources. No smoking.
P: 220	Keep away from clothing and other combustible materials.
P: 223	Avoid contact with water at all costs due to violent reaction and possible flash fire.
P: 231+232	Handle and store contents under inert gas. Protect from moisture.
P: 240	Ground and bond container and receiving equipment.
P: 260	Do not breathe dust/fume/gas/mist/vapors/spray.
P: 261	Avoid breathing dust/fume/gas/mist/vapors/spray.
P: 264	Wash thoroughly after handling.
P: 271	Use only outdoors or in a well-ventilated area.
P: 280	Wear protective gloves/protective clothing/eye protection/face protection.
P: 301+312+330	If swallowed: Call a poison center or doctor if you feel unwell. Rinse mouth.
P: 302+352	If on skin: Wash with plenty of water.
P: 304+340	If inhaled: Remove person to fresh air and keep comfortable for breathing.
P: 305+351+338	If in eyes: Rinse continuously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P: 308+313	If exposed or affected: Seek medical attention.
P: 312	Call a POISON CENTER or doctor if you feel unwell.
P: 370+378	In case of fire: Use Class D fire extinguisher to extinguish.
P: 403+233	Store in a well-ventilated place. Keep container tightly closed.
P: 422	Store contents in/under dry conditions and in tightly closed containers.

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