



# Material - Safety - Data Sheet (MSDS)

for  
**Ansmann Lithium-Ion Batteries**  
single cells and multi-cell battery packs

No.5

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## 1. Product and Supplier Identification

Product name: Ansmann Li-Ion Battery; Ansmann Li-Polymer Battery  
Type: Rechargeable Li-Ion battery  
Models / types: Prismatic and round cells  
Electrochemical system: negative electrode: graphite; positive electrode: metall oxide (proprietary)

Supplier:  
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France

**EMERGENCY CONTACT:** For chemical emergency (spill, leak, fire, exposure or accident)  
call phone no.: +49 6294 4204 0

## 2. Hazards Identification

The rechargeable lithium-ion batteries described in this Product Safety Data Sheet are sealed units which are not hazardous when used according to the recommendations of the manufacturer and as long as their integrity is maintained.

Do not short circuit, puncture, incinerate, crush, immerse in water, force discharge or expose to temperatures above the declared operating temperature range of the product. Risk of fire or explosion.

Under normal conditions of use, the active materials and liquid electrolyte contained in the cells and batteries are not exposed to the outside, provided the battery integrity is maintained and seals remain intact. Risk of exposure only in case of abuse (mechanical, thermal, electrical) which leads to the activation of safety valves and/or the rupture of the battery container. Electrolyte leakage, electrode materials reaction with moisture/water or battery vent/explosion/fire may follow, depending upon the circumstances.



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### 3. Composition and Informations on Ingredients

Each cell consists of a hermetically sealed metallic container containing a number of chemicals and materials of construction of which the following could potentially be hazardous upon release.

Ingredient	Content	CAS No.	Hazard Categories	Hazard Statements
metal oxide compounds e.g. Li-Ni, Li-Mn, Li-Co, Li-FePo	20 - 50%	(proprietary)	Skin Sens. 1; Acute Tox. 1 Resp. Sens. 1; Carc. 1B STOT RE 1; Aquatic Chronic 3	H317, H330 H334, H350 H372, H412
Organic Solvents	10 - 20%			
EA (Ethyl-Acetate)		141-78-6	Flam. Liq 1; Eye Irrit. 2; STOT SE 3	H225, H319, H336
EC (Ethylene Carbonate)		96-49-1	Acute Tox. 4; Eye Irrit. 2; STOT RE 2	H302, H319, H373
DMC (Di Methyl Carbonate)		616-38-6	Flam. Liq. 2	H225
EMC (Ethyl Methyl Carb.)		623-53-0	Flam. Liq. 2	H225
DEC (Diethylcarbonate)		105-58-8	Flam. Liq. 3	H226
Lithium-Hexa-Fluoro Phosphate (LiPF <sub>6</sub> )	1 - 3%	21324-40-3	Acute Tox. 3; Asp. TOX. 1	H301, H314
Polyvinylidene Fluoride (PVDF)	< 5%	24937-79-9	n/a	n/a
Styrene Butadiene Rubber (SBR)	< 5%	9003-55-8	n/a	n/a
Copper (Cu)	2 - 11%	7440-50-8	Flam. Sol. 1	H228
Aluminium (Al)	2 - 10%	7429-90-5	Flam Sol.1; Water-react. 3	H228, H261
Carbon (C) (Graphite)	10 - 30%	7440-44-0	n/a	n/a
stainless steel	0 - 35%	n/a	n/a	n/a

### 4. First Aid Measures

In case of accumulator breakage or burst, please evacuate employees from the contaminated area and ensure maximal ventilation in order to break-up corrosive gas, smoke and unpleasant odors.

If it occurs, by accident, following measures must be taken:

<b>Inhalation</b>	Remove from exposure, rest and keep warm. In severe cases obtain medical attention.
<b>Skin Contact</b>	Wash off skin thoroughly with water. Remove contaminated clothing and wash before re-use. In severe cases obtain medical attention.
<b>Eye Contact</b>	Irrigate thoroughly with water for at least 15 minutes. Obtain medical attention.
<b>Ingestion</b>	Wash out mouth thoroughly with water and give plenty of water to drink. Obtain medical attention.
<b>Further treatment</b>	All cases of eye contamination, persistent skin irritation and casualties who have swallowed this substance or been affected by breathing its vapours should be seen by a doctor.



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## 5. Fire Fighting Measures

- Suitable extinguishing media:** Dry powder and water in large amounts are applicable for burning lithium ion batteries. Metal fire extinction powder, rock salt or dry sand are suitable if only a few batteries are involved.
- Extinguishing media with limited suitability:** Carbon dioxide (CO<sub>2</sub>) is only applicable for incipient fire.
- Special protection equipment during fire-fighting:** Contamination cloth including self-contained breathing apparatus.
- Special hazard:** Cells may explode and release metal parts.  
At contact of electrolyte with water traces of hydrofluoric acid may be formed. In this case avoid contact and take care for good ventilation.  
At contact of changed anode material with water extremely flammable hydrogen gas is generated.
- Attention:** Do not let used extinguishing media penetrate into surface water or ground water. If necessary, thicken water or foam with suitable solids. Dispose off properly.

## 6. Accidental Release Measures

- Person related measures:** Wear personal protective equipment adapted to the situation (protection gloves, face protection, breathing protection).
- Environmental protection measures:** Bind released ingredients with powder (rock salt, sand).  
Dispose off according to the local law and rules.  
Avoid leached substances to penetrate into the earth, canalization or water.
- Treatment for cleaning:** If battery casing is dismantled, small amounts of electrolyte may leak.  
Package the battery tightly including ingredients together with lime, sand or rock salt. Then clean with water.

## 7. Precautions for safe Handling and Use

- Storage:** Store in a cool (preferable below 30°C), well ventilated area, away from moisture, sources of heat, open flames, food and drink.  
Elevated temperatures can result in shortened battery life. Temperatures above 70°C may result in battery leakage and rupture.  
Keep adequate clearance between walls and batteries.  
Since short circuit can cause burn, leakage and rupture hazard, keep batteries in original packaging until use and do not jumble them.  
Preferred storage at 30... 50% of nominal battery capacity.  
A fire alarm is recommended in case of storage of large amounts.
- Handling:** Do not crush, pierce, short (+) and (-) battery terminals with conductive (i.e. metal) goods, which would end up into excessive heating.  
Do not directly heat or solder. Do not throw batteries into fire or water.  
Do not mix batteries of different types and brands. Do not mix new and used batteries. Keep batteries in non conductive (i.e. plastic) trays.  
Do not disassemble, mutilate or mechanically abuse cells and batteries.  
Avoid deep discharge.  
Follow manufacturers recommendations regarding maximum recommended currents and operating temperature range.
- Other:** Applying pressure on deforming the battery may lead to disassembly followed by eye, skin and throat irritation.  
The Li-ion cells and batteries are not designed to be recharged from external power sources besides specific Li-ion charger models approved by Ansmann. Connecting to inappropriate power supplies can result in fire or explosion.
- Disposal:** Dispose in accordance with all applicable federal, state and local regulations.






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### 8. Special Protection Information

Ventilation Requirements:		Not necessary under normal conditions. Room ventilation may be required in areas where there are open or leaking batteries.
Respiratory Protection:		Not necessary under normal conditions. Avoid exposure to electrolyte fumes from open or leaking battery. In all fire situations, use self-contained breathing apparatus
Eye Protection:		Not necessary under normal conditions. Wear safety glasses with side shields if handling an open or leaking battery.
Hand Protection:		Not necessary under normal conditions. Use neoprene or natural rubber gloves if handling an open or leaking battery

### 9. Physical and Chemical Properties

**Note: The following points are not applicable unless in case of leaking or damaged batteries with exposed internal components.**

<b>Appearance:</b>	Cylindrical or prismatic shape
<b>Odour:</b>	Odourless (unless in case of damaged product with leaking electrolyte)
<b>Flashpoint:</b>	Not applicable
<b>Flammability:</b>	Not applicable
<b>Relative density:</b>	> 2 g/cm <sup>3</sup>
<b>Solubility (water):</b>	Not applicable unless individual components exposed
<b>Solubility (other):</b>	Not applicable

### 10. Stability and Reactivity

Product is stable under conditions described in Section 7.

<b>Conditions to avoid:</b>	Heat above 70° or incinerate. Deform. Mutilate. Crush. Pierce. Disassemble. Short circuit. Expose over a long period to humid conditions.
<b>Materials to avoid:</b>	Strong mineral acids, alkali solutions, strong oxidising materials and conductive materials
<b>Hazardous decomposition products:</b>	HF, CO, CO <sub>2</sub>

### 11. Toxicological Information

<b>Signs &amp; symptoms:</b>	None, unless battery ruptures. In the event of exposure to internal contents, corrosive fumes will be very irritating to skin, eyes and mucous membranes. Overexposure can cause symptoms of non-fibrotic lung injury and membrane irritation.
<b>Inhalation:</b>	Lung irritant
<b>Skin contact:</b>	Skin irritant
<b>Eye contact:</b>	Eye irritant
<b>Ingestion:</b>	Tissue damage to throat and gastro-respiratory tract if swallowed
<b>Medical conditions generally aggravated by exposure:</b>	In the event of exposure to internal contents, eczema, skin allergies, lung injuries, asthma and other respiratory disorders may occur.



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## 12. Ecological Information

Ansmann lithium ion batteries do not contain heavy metals as defined by the European directives 2006/66/EC Article 21.

Mercury has not been "intentionally introduced ( as distinguished from mercury that may be incidentally present in other materials)" in the sense of the U.S.A. "Mercury-Containing and Rechargeable Battery Management Act" (May 13, 1996)

The Regulation on Mercury Content Limitation for Batteries promulgated on 1997-12-31 by the China authorities including the State Administration of Light Industry and the State Environmental Protection Administration defines 'low mercury' as 'mercury content by weight in battery as less than 0.025%', and 'mercury free' as mercury content by weight in battery as less than 0.0001%'. And therefore: Ansmann lithium ion batteries belong to the category mercury-free battery (mercury content lower than 0.0001%).

## 13. Disposal Considerations

USA: Lithium-Ion batteries are classified by the federal government as non-hazardous waste and are safe for disposal in the normal municipal waste stream. These batteries, however, do contain recyclable materials and are accepted for recycling by the Rechargeable Battery Recycling Corporation's (RPBC) Battery Recycling Program. Please go to the RPBC website at [www.rbcc.org](http://www.rbcc.org) ( [www.call2recycle.org](http://www.call2recycle.org)) for additional information.

In the European Union, manufacturing, handling and disposal of batteries is regulated on the basis of the DIRECTIVE 2006/66/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 6 September 2006 on batteries and accumulators and waste batteries and accumulators and repealing Directive 91/157/EEC. Customers find detailed information on disposal in their specific countries using the web site of the European Portable Batteries Association ([http://www.epbaeurope.net/legislation\\_national.html](http://www.epbaeurope.net/legislation_national.html))

Importers and users outside EU should consider the local law and rules

In order to avoid short circuit and heating, used lithium ion batteries should never be stored or transported in bulk. Proper measures against short circuit are:

- Storage of batteries in original packaging
- Coverage of the terminals
- Embedding in dry sand

## 14. Transport Information

**Transport hazard class:** 9 (miscellaneous)

### Note:

Cells and batteries, cells and batteries contained in equipment, or cells and batteries packed with equipment, containing lithium in any form shall be assigned to UN numbers 3090, 3091, 3480 or 3481 as appropriate. They may be carried under these entries if they meet the following provisions:

- a. each cell or battery is of the type proved to meet the requirements of each test of the Manual of Test and Criteria, Part III, sub-section 38.3;
- b. each cell and battery incorporates a safety venting device or is designed to preclude a violent rupture under normal conditions of carriage;
- c. each cell and battery is equipped with an effective means of preventing external short circuits;
- d. each battery containing cells or series of cells connected in parallel is equipped with effective means as necessary to prevent dangerous reverse current flow (e.g. diodes, fuses, etc.)
- e. cells and batteries shall be manufactured under a quality management program.

### Packaging instruction

#### ADR:

UN3480 P903  
UN3481 P903

#### ICAO-TI / IATA-DGR:

UN3480 Packaging instruction 965, part IA  
UN3481 Packaging instruction 966, part I  
Packaging instruction 967, part I



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### 15. Regulatory Information

Regulations specifically applicable to the product:

- ACGIH and OSHA: see exposure limits of the internal ingredients of the battery in section 3.
- IATA/ICAO (air transportation): UN 3480 or UN 3481
- Transportation within the US-DOT, 49 Code of Federal Regulations (special provision 188
- IMDG (sea transportation) : UN 3480 or UN 3481(special provision 188, 230)

#### **REACH regulation (1907/2006/EC)**

#### **Duty to communicate information on substances in articles (REACH, Article 33):**

The product contain the following substance of very high concern (SVHC) in a concentration below 0.1wt%:

1,3-propanesultone (CAS 1120-71-4), 0.04wt%

Thus, our product fulfill the requirements of REACH annex XVII (limitations)

### 16. Other Information

#### **Full text of Hazard Statements referred to under section 3**

H225	Highly flammable liquid and vapour
H226	Flammable liquid and vapour
H228	Flammable solid
H261	In contact with water releases flammable gases
H301	Toxic if swallowed
H302	Harmful if swallowed
H314	Causes severe skin burns and eye damage
H317	May cause an allergig skin reaction
H319	Causes serious eye irritation
H330	Fatal if inhaled
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled
H350	May cause cancer
H372	Causes damage to organs
H412	Harmful to aquatic life with long lasting effects

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