

Operating rules for cells and battery packs in non-rechargeable lithium technologies FR (1,5V) , BR i CR (3,0V) and ER (3,6V)

Cells in lithium technology FR, BR, CR and ER are high-energy products. Incorrect handling may result in energy release in a short time by short circuit, explosive cell unsealing and release highly harmful substances!



Lithium cells are industrial products designed for professional use with appropriate processing and electrical connection technology. Under no circumstances should they be sold to users who do not know the basic principles of their use and are therefore exposed to **potential personal injury** and **damage to the property** (e.g. short circuit, burn, cell unsealing, caustic or poisonous substances release).

It is absolutely necessary to comply with these Operating Rules and to use the cells only in accordance with the parameters contained in the cell's Data Sheets issued by cell's Manufacturers. The information contained therein defines permissible electrical parameters and has direct impact on the SAFETY of lithium cells and batteries usage.

SAFETY RECOMMENDATIONS



Lithium cells and batteries should be used only in accordance with the manufacturer's cell Data Sheet.

In particular:

- It is forbidden to charge the primary lithium cells. It may cause cells damage, unsealing (even explosive) with caustic or poisonous substances release, or user's burn.
- It is forbidden to short-circuit the cells and battery +/- poles due to the risk of short circuit, cell damage, cell unsealing and caustic or poisonous substances release, personal injury to the user and fire threat to the property.



ATTENTION: Inserting the cell into a pocket with keys or other metal parts can cause short circuit or person's burn.

- Do not subject the cells to excessive electrical stress (excessive discharge current) due to the risk of damage, overheat or cell unsealing with harmful substances release!
- Under no circumstances should the cells and batteries be used in reverse polarity.
- Never allow cells to be heated up above +60°C. Risk of unsealing and harmful substances release.
- Neither cells nor batteries must be thrown into fire or water.
- Do not subject the cells to mechanical shocks, drop or fall, vibrations or mechanical pressure.



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- Always store cells out of the reach of unauthorized persons, especially children.
- It is not allowed to repair, disassemble and deform the cells or battery packs.
- Soldering cables to the surface of cells and batteries is prohibited. Risk of overheating, parameters loss or cell unsealing.
- Do not touch any liquid or substance which leaks from the cell. A leaking battery must be disposed of properly (see section of this document entitled „Disposal and recycling”). In the event of contact of liquid with the eyes, do not rub the eyes. Immediately start rinsing the eyes with water and continue for at least 15 minutes, lifting the upper and lower eyelids until all traces of liquid have disappeared. Then get medical attention.
- Lithium cells and batteries should be disposed of (recycled) after consumption. Disposal of cells and batteries should be made in designated places. Do not dispose them of in municipal waste landfills.

INSTALLING AND USAGE OF LITHIUM CELLS

Besides the explicitly labelled consumer products, industrial lithium cells may be installed by qualified personnel with technical knowledge in the field of safe usage.

Appropriate tools must be used to assure safe and secure connection of cells and their connection to the device or secure connection leads (e.g. correctly selected connectors, wire-sets, etc).

 **ATTENTION:** Failure to comply with these rules, attempting to install, repair or run lithium cells and batteries, making changes in product design by unauthorised and unqualified individuals can jeopardize the user and result in loss of warranty.

GENERAL INFORMATION

Lithium cells provide good performance when used in accordance with the cell manufacturer's guidelines.


Do not leave lithium cells unattended for a long time, above 2 years, both in the product being powered and during storage. If the lithium cell or battery pack is not used for a long time, check its voltage level before use. In case of voltage lower than 2,0V/cell, such cell must be disposed of.

Lithium cells naturally slowly lose their performance during use, in particular electrical capacity. A typical estimated lifetime is from short-time use to fifteen years, depending on power design and device.

During usage and storage, lithium cells are slowly self-discharging (natural self-discharge), annually they lose approximately from 0,5% to 2% of capacity (in temperature +20°C).

Check the status and voltage level of lithium cells. The instructions for using the lithium cells or batteries-powered device usually contain information on how to check the cells status as well as instructions on how to exchange them. Always follow the instructions supplied with the product.

USAGE AND MAINTENANCE OF LITHIUM CELLS

 It is **forbidden to charge** primary lithium cells. Risk of cells damage, unsealing (even explosive) with caustic or poisonous substances release, and possible user's burn.



DISCHARGING



The range of parameters for discharging lithium cells specified by the Manufacturer must not be exceeded (see cell's Data Sheet). Exceeding the maximum operating parameters may cause cell unsealing and overheating, harmful substances release and possible user's burn.

- Do not exceed allowed ranges of discharge (operational) current and end-discharge voltage (cut-off voltage) specified in the cell Data Sheet.
- Do not exceed allowed operational temperature ranges of cells and temperature-dependent operational current values (according to cell's Data Sheet).

CELL LIFE



Lithium technology is characterised by low self-discharge and relatively the highest resistance to aging processes among chemical power sources.

Lithium cells and batteries naturally slowly lose their parameters during usage and storage. A typical estimated lifetime of lithium cells and batteries is from short-time use to fifteen years, depending on power profile and powered device.

STORAGE



1. Lithium cells and batteries should be stored in manufacturer's packaging or other packaging ensuring electrical insulation and tightness not less than that of the cell manufacturer.
2. Do not store lithium cells and batteries under the direct sun exposure.
3. Lithium cells and batteries must be stored not connected to any electrical circuit.
4. Unused lithium cell or battery naturally slowly self-discharges, therefore it is recommended to check periodically the level of voltage/ state of charge during long-term storage.
5. A brand new lithium cell or battery can be stored for maximum 2 years without losing performance under the recommended optimal temperature and humidity conditions. Maintenance activities are not required in the first cycle of storage.
6. Long-term storage is possible provided that optimal storing conditions are preserved, in particular low level of humidity and low temperature from +5°C to +15°C.
7. In the event of long-term storage, it is necessary to check the level of lithium cell's voltage before use, in case of voltage lower than 2.0V/cell, such cells must be disposed of.

Recommended storage conditions:

Storage temperature: +5°C - +25°C (recommended)

Allowed temperature ranges: -20°C - +45°C up to 6 months of storage;



Relative humidity: < 70% , no condensations on cells and/or packaging

General conditions: Dry, cool and clean room, in particular free from corrosive agents. Cells in the manufacturer's factory packaging (or similar), ensuring good insulation and protection.

At temperature higher than +25°C, chemical self-discharge and aging processes occur faster. Avoid storage at higher temperatures.

Do not store or use deeply discharged lithium cells and batteries. Used lithium cells are considered as hazardous waste (see „Disposal” below).

TRANSPORT

Transport of cells, batteries and accumulators is regulated by strict safety rules.

Most cells and batteries in lithium technologies are DANGEROUS GOODS in transport and are subject to special regulations according to ADR / IATA / IMO shipping contracts (transport of dangerous goods by road / air / sea).

Before transporting the lithium cells and batteries, check the local, national and international regulations in force. The easiest way is to order transport to a professional transport company with documented authorization for dangerous goods transport.

Used (discharged) lithium cells are considered as hazardous waste. Transport of a used (withdrawn from usage) lithium cells and batteries, defective or withdrawn from the market, may in some circumstances be clearly restricted or prohibited.

LITHIUM CELLS DISPOSAL AND RECYCLING

Lithium cells and batteries are subject to disposal and recycling regulations that vary from country to country, and region to region. Cells and batteries are considered as hazardous waste after use.

Before disposing of any cell, battery or battery pack, check the applicable local regulations and comply with them. To dispose of the cells and batteries, contact your local organization of chemical power sources.

Dispose of used electronic equipment, including all accumulators and batteries, in standard waste containers (municipal waste landfill) is **prohibited**.

Used (discharged) lithium cells and batteries may only be placed in collection containers. To prevent short circuits, secure the leads / contacts / connection points of the power cables, e.g. with electrical insulation tape or other approved protective material.



COUNTERPARTY'S STATEMENT



Wamtechnik Limited Liability Company (hereinafter referred to as the „Company”) shall not be liable for damages that may result from the use of the offered lithium cells and batteries made of lithium cells contrary to their intended use and these Operating Rules (hereinafter referred to as the "Manual").

The purchase of lithium cells and batteries offered by the Company is connected with getting acquainted with and accepting the above mentioned Manual. The Company's Counterparty, purchasing the cells and batteries in question from the Company, declares that he has familiarized himself with this Manual and is aware of the risks and threats that may result from using, storing and transporting the cells and batteries in a manner inconsistent with this Manual.

