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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 proccesing 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 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 caustic 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 caustic substances release.
- Neither cells nor batteries must be thrown into fire or water.

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- Do not subject the cells to mechanical shocks, drop or fall, vibrations or mechanical pressure.
- 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 (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 (recycling) 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 persons 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 one 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).

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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 (cell's Data Sheets). 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.

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 one year to fifteen years, depending on powered 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-discharging, 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 a 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.

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6. Long-term storage is possible provided that optimal stored 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 coditions:	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.

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WASTE PREVENTION AND BATTERY WASTE MANAGEMENT

Lithium cells and battery packs are subject to disposal and recycling regulations that vary between countries and regions. At the end of their useful life, cells, batteries, and accumulators are considered hazardous waste. Before disposing of any lithium cell, battery, or battery pack, please check and comply with applicable regulations. To dispose of your battery, contact your local battery recycling facility. Lithium cells and battery packs can be returned to the supplier (who places the cells on the market in the EU country), who will accept them free of charge and forward them to a battery recycling facility.

The most important measure to prevent or reduce waste generation is proper battery design, which ensures maximum battery life and the possibility of reuse in a second-life cycle, allowing for easier recycling. It is also crucial to be aware that following the User Manual affects battery life, allowing the user to maximize its useful life and thereby reduce (slow down) the generation of battery waste.

Under no circumstances should lithium cells and battery packs be disposed of in standard municipal waste. Recycling allows for significant recovery of the raw materials from the cells and their further use. To simplify recycling and treatment, lithium cells and battery packs must not be mixed with other used batteries.

Discharged cells should only be placed in collection containers. To prevent short circuits, protect the leads/contacts/connection points of power cables, e.g., with insulating electrical tape or other approved protective material. A short circuit can cause ignition, damage to the housing, or leakage of harmful chemicals. Always handle used lithium cells and packs with caution. Batteries are high-energy hazardous waste, containing potentially flammable compounds such as lithium and liquid electrolyte, as well as other chemicals harmful to health and the environment. In the worst-case scenario, the battery may ignite.

Improper disposal of used lithium cells and battery packs can have serious consequences, including:

- contamination of soil and groundwater by heavy metals and electrolytes,
- hazard to humans and animals – toxic substances can cause illness. Heavy metals present in cells can cause a range of health problems, including damage to the nervous system, kidneys, and liver, and increase the risk of cancer. For humans, this can lead to a range of illnesses, such as brain damage, pulmonary edema, and skin damage (caused by the corrosive properties of lithium),
- environmental pollution and the loss of the possibility of recovering valuable raw materials such as lithium, nickel, manganese, and cobalt.

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Critical conditions:

1. Under no circumstances should the battery terminals be short-circuited (shorting [+] to [-]); all contacts and connection points must be effectively insulated. Cells can contain a significant amount of energy, which can be a source of strong electric current and, in the event of a short circuit, cause electric shock or burns, release harmful chemicals, or ignition.

2. Do not mechanically damage the battery (e.g., puncture it); this may release harmful/corrosive/toxic chemicals; in the worst case, it may lead to ignition. Used batteries must be effectively packaged to avoid this type of damage.

3. Under no circumstances should cells be disposed of in standard municipal waste. This poses a critical environmental hazard and a potential hazard to people and animals, and in the worst case, a fire hazard. The collection of cells is only possible in special containers, further processing is only permitted by the appropriate institutions/companies dealing with battery processing and having the appropriate environmental permits.

SAFE HANDLING AND STORAGE OF USED BATTERIES

Storing and collecting used lithium battery cells and battery packs requires adherence to specific safety and protection measures, including occupational health and safety regulations. Appropriate storage conditions must be ensured, and mechanical damage to cells/battery packs and contact with hazardous substances must be prevented. Handling used battery cells/battery packs should be performed by trained employees who always wear appropriate personal protective equipment, such as protective clothing, gloves, safety glasses, and a hard hat. Training should identify potential hazards, such as electric shock from high current or voltage, burns, ignition (usually from a short circuit), release of harmful/corrosive/toxic chemicals, and procedures for managing identified hazards.

Conditions for the safe storage of used cells/battery packs:

▪ Used cells/battery packs should be stored selectively in non-conductive containers, resistant to the substances contained in the cells/battery packs, closed and labeled, and compliant with ADR regulations. Limit contact with other waste and flammable substances.

▪ Used cells/battery packs should be stored in a separate, weather-resistant area, away from sources of heat, fire, and moisture.

▪ Ensure adequate ventilation in rooms where used batteries/rechargeable batteries/cells are stored.

▪ The container containing used cells/battery packs should be free of any metal elements that could cause a short circuit.

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- Do not mix damaged and undamaged batteries/rechargeable batteries/cells – separate storage is required.
- Power cable terminals/contacts/connection points in cells/packages must be effectively protected, e.g., with electrical tape or other approved protective material, to prevent short circuits. Ensure access by unauthorized persons is restricted.

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.

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