

Lithium batteries

e.g. in tools and media devices



Due to a technical defect or improper handling a sudden chemical reaction can lead to an extreme fire ($T > 800^{\circ}\text{C}$), explosion or leakage of hazardous toxic and flammable gases.

Everyday tools and small devices pose a threat as well.



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Facts and critical situations

Li (rechargeable) batteries are chemical energy storage units with a high energy density. They are commonly installed in tablets, phones, tools, boxes, power banks and regarded as safe when handled correctly. BUT: short circuits can cause spontaneous combustion – e.g. due to:

- mechanical damage (e.g. phone batteries got bent during exchange, rechargeable batteries dropped, shock)
- thermal exposure (e.g. solar radiation)
- overheating (supercharging, wrong charger, no battery management, heat build-up, defect)
- overload due to external short circuits
- improper disposal
- quality deficiencies and production fault

Leaking gases and vapours are dangerous and can be toxic, corrosive, flammable and explosive. Fire suppression of batteries is considered to be difficult.

Shipping company/Onboard ship management

Check hazard potentials of Li batteries in work and recreational circumstances – i.e. beyond transport and propulsion matters. Promote awareness of crew. Measures could be:

- Check and update risk assessment for work equipment and private devices
- Preventive and educational measures
- Instructions
- Review and update emergency planning, considering leakage of hazardous gases and fire-fighting measures
- Measures for safe disposal



Find out how to charge and handle batteries safely. Read the manufactures instructions and notes. Follow shipping company's instructions and procedures.



Correct handling:

- Use suitable, safe charger
- Ensure monitoring of temperature and charging process
- Charge on non-flammable surface and away from flammable materials
- Ensure ventilation during charging process
- Do not charge battery when it is too hot or too cold. High power demand requires cooling down prior to charging
- Protect battery from mechanical impacts, heat, cold and fluids
- Dispose of safely

In case of damages, deformation, bubble formation and smoke development, stop charging process immediately. Watch out for hazardous gases/vapours and leave dangerous area. Inform superiors and watch officers.



Never:

- Use defective batteries or chargers
- Expose batteries to solar radiation
- Let heat build-up during the charging process
- Supercharge the battery
- Let battery deep-discharge
- Exchange permanently installed batteries
- Bend or mechanical damage the battery
- Create external short-circuits at the poles