

Workplace: Test Center and Installation & Service
Field of activity: -

Wheelabrator Group GmbH
Location: Metelen

AREA OF APPLICATION

Dealing with LIB (Lithium-ion accumulators/batteries)

HAZARDS to HUMANS and ENVIRONMENT



- **Fire hazard**
due to heating, short circuit, overcharging, deep discharge or a secondary hazard due to the spread of fire.
- **Explosion hazard**
The blowing off of flammable electrolyte vapors can lead to the formation of a dangerous explosive atmosphere, particularly in poorly ventilated, enclosed spaces, which can ignite and thus explode.
- **Chemical hazards** (hazardous substances) due to damaged LIB
 - leaking substances, such as electrolyte or hazardous substances in the fire smoke
 - additional battery components escaping as dust or particles (some carcinogenic hazardous substances such as nickel, cobalt and their compounds)
- **Mechanical hazards**
due to bursting housing parts of LIBs because of a fire, e.g. due to flying splinters.
- **Electrical hazards**
due to electrical body currents or voltage in the LIB that cannot be switched off (only for batteries with a voltage greater than 120 V DC).



PROTECTIVE MEASURES and RULES OF CONDUCT



- Special Protective Measures
 - Immediate proper storage of defective LIBs and LIBs in an undefined condition:
 - in a special fuse box
 - outdoors (no flammable materials within a radius of 10 metres)
 - undefined: Impacts, dropping, heat, fire, cold and direct sunlight.
 - Checking LIBs after external influences for persistent or rising temperatures and leakage of liquids, as well as in the event of a scorching odour, to be able to initiate suitable measures promptly.
- Safe Handling
 - Avoidance of external mechanical and thermal influences
 - Mechanical impacts: e.g. blows, falling to the ground or shaking in the boot of a vehicle
 - Thermal effects: e.g. fire, high temperatures and solar radiation
 - Prevent the ingress of water (e.g. when cleaning work equipment with LIBs)
 - LIB contacts must not be connected by conductive objects (e.g. paper clips, coins, keys, screws, rings). This will lead to a short circuit.
 - Avoid charging LIBs that are too cold or too hot, which can lead to overcharging and thus to fires, for example.
 - Avoid deep discharging and excessively fast discharge-charge cycles.
 - When installing / removing LIBs, ensure that they are energised.
=> Ensure that the LIB is not removed under load (during operation).
 - LIBs and their chargers may only be used as intended (observe the manufacturer's product data sheets).
 - Only use undamaged LIBs intended for the respective device.
 - Carry out fire protection measures in accordance with the following parameters:
 - Battery type
 - Battery condition (normal / critical / defective)
 - Storage quantity
 - State of charge
 - Storage
 - Storage location
 - Use
 - Operational conditions

AREA OF APPLICATION**Dealing with LIB** (Lithium-ion accumulators/batteries)**PROTECTIVE MEASURES and RULES OF CONDUCT**

- Training and Examinations
 - Explain safe handling of LIBs at annual safety briefing.
- General Information
 - Safe handling of LIBs during transport, storage and loading.
 - Structural measures to prevent the spread of fire are ensured by the new building (test centre).
 - Fire protection measures during storage are ensured by the safety box, so that no major danger can arise in the event of a fire.
 - A smoke and heat extraction system and various fire extinguishers are available as preventive fire protection measures.
- Wearing PPE
 - Protective goggles or face shield
(when changing a LIB on a mobile phone or laptop)
- Wearing PPE during Firefighting
 - Protective gloves
 - Protective clothing
 - Safety shoes
 - face protection
 - Self-contained breathing apparatus

=> therefore, firefighting only by fire brigade if possible

BEHAVIOUR IN THE EVENT OF TROUBLES


- Suitable fire-fighting equipment
 - Water spray jet
 - Foam
 - General: Extinguishing agent with a high cooling effect
 - Sand (to prevent the fire from spreading)
- Unsuitable fire-fighting agents
 - Carbon dioxide (CO₂)
 - ABC powder
 - Full water jet
- Rules of conduct for employees
 - Do not inhale vapours and combustion gases produced by fire. Leave the danger zone immediately.
- Rules of conduct not for employees
 - When fighting fires, firefighters must wear self-contained breathing apparatus and extended personal protective equipment.
 - Due to the fact that batteries can re-ignite even after a long period of time, they must be safely stored in water basins or other suitable containers, such as emergency containers, after extinguishing.
- Environmental protection measures, retention and cleaning instructions
 - none

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FIRST AID




- Principle: Keep calm and secure the accident site.
- Depending on the accident, provide first aid as far as possible and inform first aiders.
- Do not give the injured person anything to eat or drink and do not leave them alone.
- Alert the emergency services (and police). Instruct helpers and point out special dangers.
- Inform the supervisor immediately in the event of an accident.
- Always report all first aid provided to the occupational health and safety management officer using the 'Accident report form_first aid' form.




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First Aider: see notice board	Doctor: see notice board	Safety officer: see notice board
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MAINTENANCE and DISPOSAL



- Maintenance Instructions
 - Damaged batteries must not be repaired. They must be disposed of directly.
- Waste Disposal
 - Waste batteries are batteries that are waste within the meaning of the Closed Substance Cycle Waste Management Act (KrWG). In order to protect people and the environment and recover valuable materials to a high degree, they must be collected separately from unsorted municipal waste and recycled.
- Product
 - Waste code number: 16 02 15*
 (hazardous components removed from used appliances)
 - Disposal in compliance with local regulations
 - Special notes: none
- Packaging
 - none



APPROVAL

Test Center	Installation & Service
<p style="color: #FF8C00; font-weight: bold; font-size: 1.2em;">The approval of this policy takes place via German policy with digital signature of the executives!</p>	
Electrical Engineering	Office