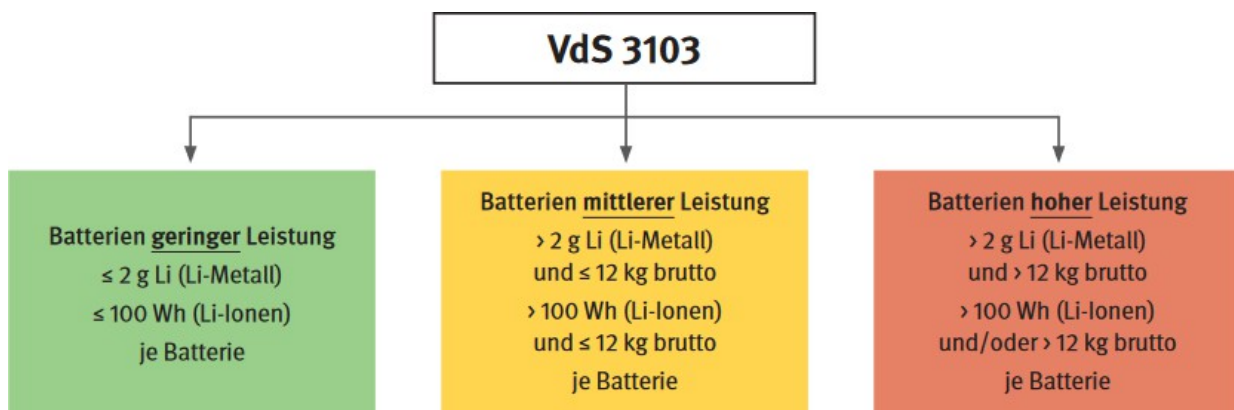


Risk assessment for lithium-ion storage batteries used for business purposes

There are currently no public regulations governing the storage and provision of lithium batteries. Property insurers have issued initial requirements and published an initial publication on this subject via VdS 3103:2019-06. Experts in preventive fire protection also formulate protective measures in individual cases.

The VdS classifies lithium batteries into low, medium, and high performance levels depending on their power, lithium content, and weight (see QR code).

Of course, we find batteries in all of the performance levels described at TU Dortmund University. Therefore, the appropriate protective measures must be considered in each individual case via a risk assessment in accordance with the Occupational Safety and Health Act. TU Dortmund University only procures batteries that are used and charged in accordance with the manufacturer's specifications.



Hazards:

- Mechanical damage
- Overcharging / deep discharge
- Leakage of toxic and flammable substances
- Thermal runaway (sudden bursting)
- Thermal stress
- Arcing / Short circuit
- High fire load

Possible measures:

From low power	Storage in a LIPO bag No fire hazards in the immediate vicinity (1 meter) Fireproof base Smoke detector in monitored area, if necessary
From medium power additionally	Storage in an aluminum/sheet metal box with Pyrobubbles Safety cabinets are also available (see below)
From high power	Only after consultation with Dez 1; 6 and Department 7

Note:

If passive and/or active storage in a safety cabinet is planned, the following parameters should be taken into account.

- Installation location:
 - Only in a storage room/laboratory and not in an office. Consult with Department 6
- Approval:
 - Fire resistance 90 minutes when exposed to fire from the inside to the outside
 - Type-tested in accordance with EN 14470-1
 - CE compliant
- Smoke detector: (safety concept of the cabinet manufacturer)
 - The smoke detectors on the cabinet cannot be connected to the building's fire alarm system or to the control room technology.



Fire extinguishers

If there is a large quantity of lithium batteries, it may be necessary to adapt the fire extinguishers have additional extinguishing units available. Advice from Department 7, Fire Protection. Company fire safety assistants are at high risk when fighting fires involving lithium-ion batteries. In the event of fires involving lithium-ion batteries, it is generally necessary to alert the fire department immediately and take personal safety precautions.



Disposal

Defective batteries must be disposed of immediately via Department 7 and must not be stored in the building. Consult with Department 7. sonderabfall@tu-dortmund.de

Battery swollen, what now?

During working hours, report to Department 7. Outside working hours, call the control room at –3333 and explain the situation. Either the on-call service will be notified, or you can bring the battery to the control room. For the South Campus, a container is kept at the central gatehouse. A box is available for this purpose outside the building.



Examples / Best practice

Low:

- Laptop,
- Small electrical appliances

Practical experience has shown that the risks associated with handling lithium-ion storage media are difficult to assess. This makes it all the more important to take preventive measures to minimize the occurrence of damage and its effects on people and the environment.

When used as intended, no further measures are necessary in the office. If larger quantities are stored/operated, further measures (e.g., Lipo Bag, fireproof mat, etc.) may be necessary based on the risk assessment. The battery of machine tools is not critical when used as intended, but if larger quantities are involved, it must be evaluated more closely in the risk assessment.

Charging stations for tablet/PC pools may require special measures (ventilated charging cabinet, etc.) due to the large number of small devices.

Medium:

- E-bike,
- E-scooters

Requirements for the storage location must be considered in the risk assessment. According to the VdS publication, batteries must be stored in aluminum boxes with pyro bubbles.

Note: Private e-bike batteries must be stored in Lipo bags, as these are only in the building during working hours.



High:

- Car
- Get Racing

Further statements from the expert for preventive fire protection and the property insurer are required to determine whether operation/storage in the buildings of TU Dortmund University is possible.

BEISPIEL