

SAFE HANDLING OF LITHIUM BATTERIES



CONTAIN THE RISK

➔ WWW.DENIOS.DE/LITHIUM

-DENIOS-
ENVIRONMENTAL PROTECTION
& WORK SAFETY

STORING LITHIUM BATTERIES SAFELY

In day-to-day operations, the storage of lithium batteries must comply with insurance requirements and ensure the full protection of employees and the environment. It must also be ensured that the batteries are stored properly in order to retain their long service life and prevent them from being damaged. This means that the storage of lithium batteries is anything but trivial and requires special expertise.

DENIOS offers the most comprehensive selection of certified storage solutions for indoor or outdoor use - high-quality, legally compliant, and tried and tested.



➞ WWW.DENIOS.DE/AKKUS-LAGERN



STORAGE CABINETS SAFESTORE

For the professional indoor storage of lithium batteries, DENIOS offers storage cabinets with 90-minute fire protection both from the outside to the inside in accordance with EN 14470-1 and from the inside to the outside in accordance with EN 1363-1.

The SafeStore Pro model has also been tested in real fire tests for the scenario of a thermal runaway and is certified in accordance with VDMA 24994. Insulated shelves prevent propagation between the storage levels. A 3-point locking system ensures convenient operation and at the same time guarantees tested safety in the event of a fire when the doors are closed. Smoke alarms and temperature sensors even detect incipient fires and can forward alarms at an early stage via a potential-free switching contact. Thanks to an integrated transport base, the cabinet can be transported within the company or evacuated in the event of a fire.

 WWW.DENIOS.DE/LAGERSCHRAENKE



ROBUST BATTERY STORAGE SYSTEM FOR OUTDOOR USE

Our storage room solutions are ideal for larger quantities of batteries or the storage of larger lithium batteries. They can be installed directly on the external wall of neighbouring buildings or as a fire-rated-separated area, e.g. in a production hall.

We offer our battery storage systems in various dimensions and with different equipment features. Our battery storage systems are available in various sizes and with a wide range of equipment features. They are tested and approved as a complete system and offer 90- or 120-minute fire protection (REI90 / REI120) from the inside and outside. They can also be individually equipped with climate regulation, integrated fire extinguishers and alarms.

 [WWW.DENIOS.DE/
LAGER-FUER-LITHIUM-AKKUS](http://WWW.DENIOS.DE/LAGER-FUER-LITHIUM-AKKUS)

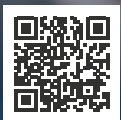


CHARGING LITHIUM BATTERIES PROPERLY

Lithium batteries store enormous amounts of energy in a small space. Conversely, the high energy density, low dead weight and fast charging speed mean an increased risk of fire. Special care must be taken when charging lithium batteries, as there is an increased risk of thermal runaway. This applies in particular if a defective lithium battery is connected to a charger and the energy supplied can no longer be converted correctly. A safe storage and charging concept for lithium batteries is therefore of the utmost importance in order to ensure both the protection of people and systems as well as insurance cover.



WWW.DENIOS.DE/AKKUS-LADEN



SMARTSTORE STORAGE AND CHARGING CABINETS

Thanks to various safety features, the storage and charging cabinets offer a fire resistance of 90 minutes - both from the outside to the inside in accordance with EN 14470-1 and from the inside to the outside in accordance with EN 1363-1.

The SmartStore Pro and Ultra models have also been tested in real fire tests for the scenario of a thermal runaway and are certified in accordance with VDMA 24994. Insulated shelves prevent propagation between the storage levels. A 3-point locking system ensures convenient operation and at the same time guarantees tested safety in the event of a fire when the doors are closed. A pressure relief flap with flue gas connection is also included as standard. The built-in technical ventilation prevents heat build-up when charging the batteries. Integrated sensors and automatic warning messages enable potential hazards to be recognised at an early stage and suitable countermeasures to be initiated immediately.

 WWW.DENIOS.DE/LADESCHRAENKE



CHARGING STATIONS WITH SMART CHARGING MANAGEMENT

DENIOS offers the ready-to-connect WFP Li-Ion Charge charging station for charging lithium batteries on a large scale. Thanks to the certified structural fire protection for 90 or 120 minutes (REI 90/REI 120), even large quantities of lithium batteries can be charged safely. Installation directly on the outside wall of buildings or, for example, in a vehicle hall is possible. The WFP Li-Ion Charge charging station can be equipped with an individual number of sockets. The slots can be implemented with chargers placed on shelves or alternatively mounted conveniently on a wall.

Optional technical ventilation or air conditioning prevents heat build-up when charging the lithium batteries and ensures that your temperature requirements can be met. Thanks to the smart PLC-controlled charging management, the available power is distributed efficiently so that grid overloads are avoided and expensive power line adjustments are often not necessary.

 WWW.DENIOS.DE/LADERAEUME-LITHIUM



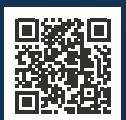
SAFE TESTING OF LITHIUM BATTERIES

Whether testing cells, prototyping or handling raw materials - work processes involving lithium-ion cell materials harbour health risks for employees, particularly due to hazardous cell materials such as the toxic heavy metal cobalt. Comprehensive safety precautions are therefore essential.

DENIOS test rooms equipped with containment systems guarantee effective protection and emission control. High-quality materials minimise emission risks and safeguard the health of employees.



➔ WWW.DENIOS.DE/AKKUS-TESTEN



TEST CONTAINERS FOR TESTS ON LITHIUM BATTERIES

A SAFE ENVIRONMENT FOR DEMANDING PRODUCT TESTS

Whether safety tests, stress tests or material analyses - at DENIOS we offer customised test rooms that are precisely tailored to your needs.

The DENIOS test container provides you with a safe test environment that is delivered ready for connection. You benefit from the system's general technical approval, 90-minute fire protection from the inside and outside, a working environment that is climatically designed for sensitive technology and specialised equipment for demanding activities.



[WWW.DENIOS.DE/
TEST-CONTAINER-LITHIUM](http://WWW.DENIOS.DE/TEST-CONTAINER-LITHIUM)



PLUG & LAB LABORATORY CONTAINER

THE READY-TO-CONNECT SOLUTION FOR CAPACITY BOTTLENECKS

This makes capacity bottlenecks a thing of the past: the Plug & Lab laboratory container is a ready-to-connect solution for the fast and cost-effective expansion of laboratory capacities.

The Plug & Lab laboratory container is the result of a collaboration between three leading manufacturers: DENIOS, Wesemann International and ELA Container. This partnership combines expertise in the areas of hazardous materials storage, laboratory equipment and container construction. With DENIOS as a project partner, customers have a central point of contact for all requirements and also benefit from the comprehensive expertise of the three specialists.



WWW.DENIOS.DE/PLUG-AND-LAB



CORRECT HANDLING OF FAULTY LITHIUM BATTERIES

Even when handled carefully, lithium batteries are susceptible to damage from external influences. In extreme cases, thermal runaway - an unstoppable chain reaction leading to fire or bursting of the battery - can occur, particularly when charging, if stored improperly or in the case of mechanical damage. In order to protect employees, production facilities and the environment in the event of a critical defect, lithium batteries must be separated immediately and stored safely until they can be disposed of properly.

DENIOS provides you with certified solutions for the safe storage and transport of defective or critically defective lithium batteries.



➔ WWW.DENIOS.DE/AKKU-TRANSPORT



STORAGE AND TRANSPORT BOXES

DENIOS offers professional storage and transport boxes that are ideal for use as quarantine containers for defective lithium batteries. The special containers are made of plastic, aluminium, steel or stainless steel and are available in various sizes. Depending on the model, different fire protection agents such as PyroBubbles® or Cirrux® cushions are used as filling material. Depending on the risk assessment, performance and condition of the stored lithium batteries, the boxes provide effective protection and prevent the escape of flames and splinters in the event of an accident.

Many boxes are also suitable for subsequent transport and have the appropriate transport authorisations for defective, damaged or critically defective lithium batteries. The shipping of critically defective lithium batteries requires a case-by-case assessment, as the suitability of the container for the battery to be transported must be checked. Critically defective lithium batteries require steel containers, which you can find in the DENIOS range.

 WWW.DENIOS.DE/BEHAELTER-LITHIUM-IONEN-AKKUS



LARGE-SCALE TRANSPORT AND QUARANTINE SOLUTIONS

DENIOS also offers large-scale safety solutions for the quarantine and transport of defective and critically defective lithium batteries. Our transport boxes and quarantine containers meet the highest safety standards in accordance with current legislation and minimise risks during handling, storage and disposal.

The QEV mobile quarantine container enables the safe parking of an electric vehicle or a removed battery pack in a separate quarantine area - including flooding options for firefighting. The XL transport box is suitable for transporting defective and critically defective HV batteries in accordance with special regulation 376. Their innovative design does not require any additional filling material, making handling and the packaging process much easier.

 WWW.DENIOS.DE/QUARANTAENELOESUNGEN



SAVING ENERGY - BUT SAFELY



POWER SAFE - BATTERY STORAGE IN A CERTIFIED FIRE-RATED STORAGE CONTAINER

The walk-in POWER SAFE with certified fire protection (REI 90 / REI 120) offers its own fire compartment indoors or outdoors.

WWW.DENIOS.DE/POWER-SAFE



POWER STORE - BATTERY STORAGE IN A SAFETY CONTAINER

The POWER STORE battery storage system is equipped with comprehensive safety features and is suitable for outdoor use.

WWW.DENIOS.DE/POWER-STORE



OWN BATTERY TECHNOLOGY - WE SUPPLY THE SAFETY CONTAINER

Do you already have the battery technology, but no suitable safety container yet? We offer you the right technical room system for a safe complete system.

WWW.DENIOS.DE/EIGENE-BATTERIETECHNIK



EFFICIENT CONTAINMENT OF LITHIUM FIRES



FIRE PROTECTION BLANKETS

Immediate measures include fire-fighting blankets made of special high-temperature fabric with a mineral coating on both sides, which serve to protect the surroundings in the event of battery accidents. They reduce the risk of fire spreading and contain any flames that occur. The blankets are large enough to cover entire electric vehicles. They are quick and easy to use, suitable for sprinklers and extinguishing water and therefore create a cooling effect.



AEROSOL EXTINGUISHING TECHNOLOGY

Aerosol extinguishing technology can be used as the first immediate measure to reduce the risk. This permanently operational technical system is used to suppress the fire until the fire brigade arrives and finally extinguishes the fire. Both the safety cabinets and the fire protection rooms for lithium batteries are optionally available with a fire suppression unit with aerosol extinguishing technology.



FIRE EXTINGUISHERS

For extinguishing smaller devices such as laptops, cordless screwdrivers, e-bikes or e-scooters, DENIOS offers fire extinguishers with special suitability for lithium batteries.

The fire extinguishers are easy to use and are suitable for burning lithium batteries up to 1285 Wh or pouch cells up to 700 Wh. Please note that personal safety and saving lives always take priority in the event of a fire.



EXPERT ADVICE AND EXPERTISE

DENIOS DOWNLOAD CENTRE

Would you like to find out more about our solutions for storing, charging, transporting and testing lithium batteries? We have provided various documents such as brochures, posters, and flyers for you to download.

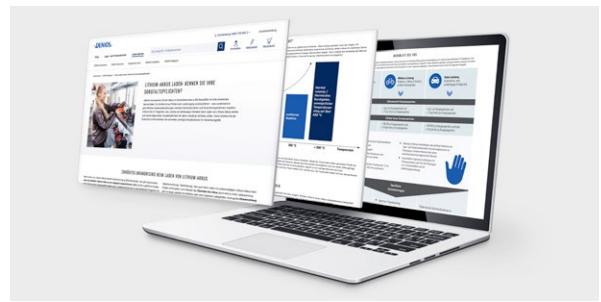
WWW.DENIOS.DE/LITHIUM-DOWNLOAD



DENIOS MAGAZINE

Numerous helpful guides and technical articles as well as exciting case studies on the subject of lithium batteries can be found online in our DENIOS Magazine.

WWW.DENIOS.DE/MAGAZIN-LITHIUM-AKKUS



DIGITAL SOLUTIONS FOR HANDLING LITHIUM BATTERIES - SAFELY AND EFFICIENTLY

DENIOS connect can now be used to monitor the safety and operating status of lithium-ion cabinets and the WFP Li-Ion fire protection storage system during the charging or storage process.

WWW.DENIOS.DE/CONNECT



ACADEMY

The DENIOS Academy is the place where our experts impart their knowledge in a practical way. In our extensive training programme, you will regularly find courses on the safe handling of lithium batteries.

WWW.DENIOS.DE/ACADEMY



MAINTENANCE

We take care of the professional and regular maintenance and servicing of fire-protected safety storage cabinets and room systems for lithium batteries for you. Find out more!

WWW.DENIOS.DE/WARTUNG



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