

Storing and charging lithium-ion batteries PRIOLION

Developed and tested according to test principle EK5/AK4 22-01

Tested fire protection



Fire-protected instead
of fire-hazardous



Fire protection especially for the storage and charging of lithium batteries

Lithium-ion batteries have been conquering the market for many years and are being used in ever more products and devices. Hardly any other technology trend has become as unstoppable in recent years as the development of increasingly powerful energy storage systems based on lithium.

Lithium-ion batteries are used in a wide range of different products. The spectrum ranges from power tools and mobile machines to large storage systems in buildings, among others. For this purpose, a corresponding number of cells is combined depending on the required power of the battery.

However, due to their very high energy density, lithium-ion batteries harbour a danger that should not be underestimated. Due to a wide variety of causes, they can ignite fires and explode, sometimes with severe consequences.

Because of this high potential danger and the fact that fires of lithium-ion batteries are difficult to extinguish and water can only serve as a coolant, the highest level of safety should be observed when storing and charging the batteries.

03.11.2022 | www.all-in.de

Lithium-ion battery explodes at Innovapark Kaufbeuren

29.05.2021 | www.ndr.de

Hazard for emergency forces: battery specialist shop in Rostock burns out

Areas of use for lithium-ion batteries





So far, there are no legal regulations for the storage and provision of Li-ion batteries. It is therefore up to each company to take their own security measures.

„Lithium batteries are potentially classified as a hazard from the perspective of the property insurer“

Carsten Tormöhlen, Allianz Deutschland AG

In order to provide companies and users of lithium-ion batteries with safe solutions, a „Principle for the testing and certification of safety cabinets exclusively for the active and passive storage of lithium-ion batteries within the framework of awarding the GS mark“ was developed on the initiative of materials testing institutes.

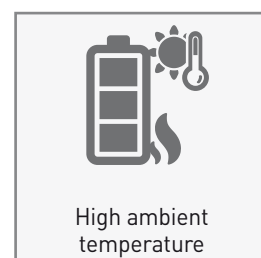
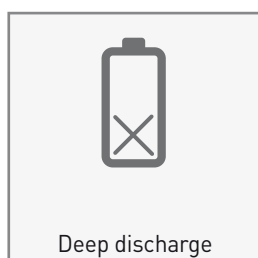
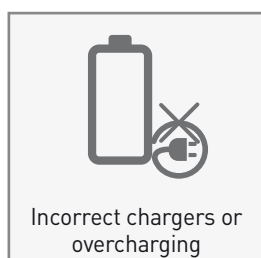
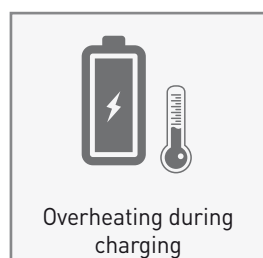
Based on this test principle, the LI92.195.120 storage cabinet was developed and tested.

The newly designed and tested cabinet model has been specially developed for the storage and charging of lithium-ion batteries and offers a fire resistance of 90 minutes both from the inside to the outside and from the outside to the inside in accordance with the test principle. This ensures that a fire inside the cabinet, caused by the batteries inside, does not spread to the outside and that in the event of a fire outside the cabinet, the batteries inside the cabinet are prevented from burning.

This allows staff to get to safety and buys rescue workers time to evacuate the building and carry out fire-fighting measures.



Causes of fire in lithium-ion batteries



PRIOLION

Safety cabinet for lithium-ion batteries



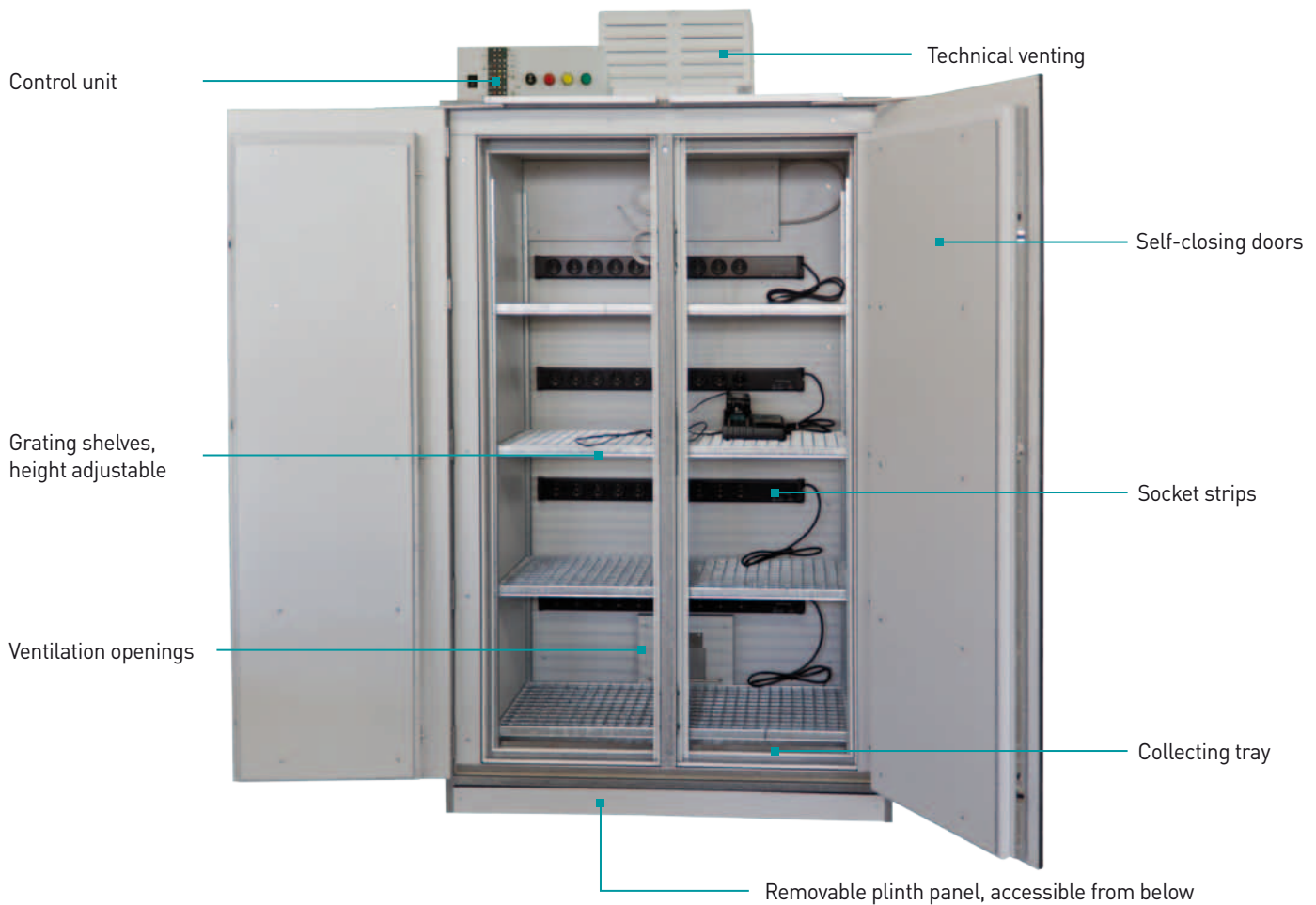
Fire-resistant safety cabinet, specially developed for the storage and charging of lithium-ion batteries. The safety cabinet, which was tested in accordance with test principle EK5/AK4 22-01 as well as in an internal real fire and GS (tested safety) certified, offers a fire resistance of 90 minutes both from the inside and the outside. This prevents a fire spreading from the inside to the outside as well as a burning of the critical stored goods in the event of a fire inside the installation site. A release of toxic fumes/gases in the event of a battery fire is prevented.

The cabinet can be easily moved and transported with a pallet truck or forklift thanks to a drive-under base. The mobile cabinet is designed for free-standing installation in a room, but can also be placed against a wall.

We recommend placing the cabinets in a ground-level location from which rapid evacuation is possible in the event of an incident.

Function

- Tested fire protection
- Tested fire resistance of 90 minutes from the outside to the inside according to DIN EN 14470-1
- Max. temperature rise in the interior at no temperature measuring point more than 100 K
- Tested fire resistance of 90 minutes from inside to outside according to DIN EN 1363-2
- GS mark - tested according to test principle EK5/AK4 22-01
- Self-closing doors tested for continuous use
- Suitable for the storage and charging of lithium-ion batteries
- Internal real fire test of an equipped cabinet



Structure & equipment

- Safety cabinet with high-quality surface inside and outside
- Permanently self-closing doors with oil-damped door closers
- Double-leaf version, double traffic leaf with centre bar
- Each door can be operated with one hand
- Cupboard doors close automatically from any position
- Doors lockable with profile cylinder (lockable)
- Incl. technical ventilation (to avoid heat accumulation in the interior)
- Closure of supply and exhaust air in case of fire, triggering via thermocouple and smoke detector
- Integrated pedestal that can be moved underneath, height 100 mm with removable pedestal cover, thus easy change of location possible
- Base cover included in scope of delivery
- Four height-adjustable gratings, max. load 75 kg/floor
- Integrated liquid-tight base tray (powder-coated sheet steel) to absorb any leakage that may occur.
- Each storage level can be equipped with a socket strip incl. 10 protective contact sockets
- Ready to plug in for connection to the mains supply
- With control unit as standard (visual and acoustic status indication)
- Smoke detector inside the cupboard automatically triggers in case of fire
- Optional fire suppression system
- A potential-free interface is available for connecting a signal (e.g. to a control centre).
- Complete disconnection of the power supply to the cabinet in the event of an emergency
- Overvoltage protection

Material & surface

- Standard surface CPL
- Non-combustible panel with surface coating, classified A2 - s1, d0: non-combustible
- Standard surface light grey, similar to RAL 7035
- Different decor surfaces on request

Testing requirements & standards

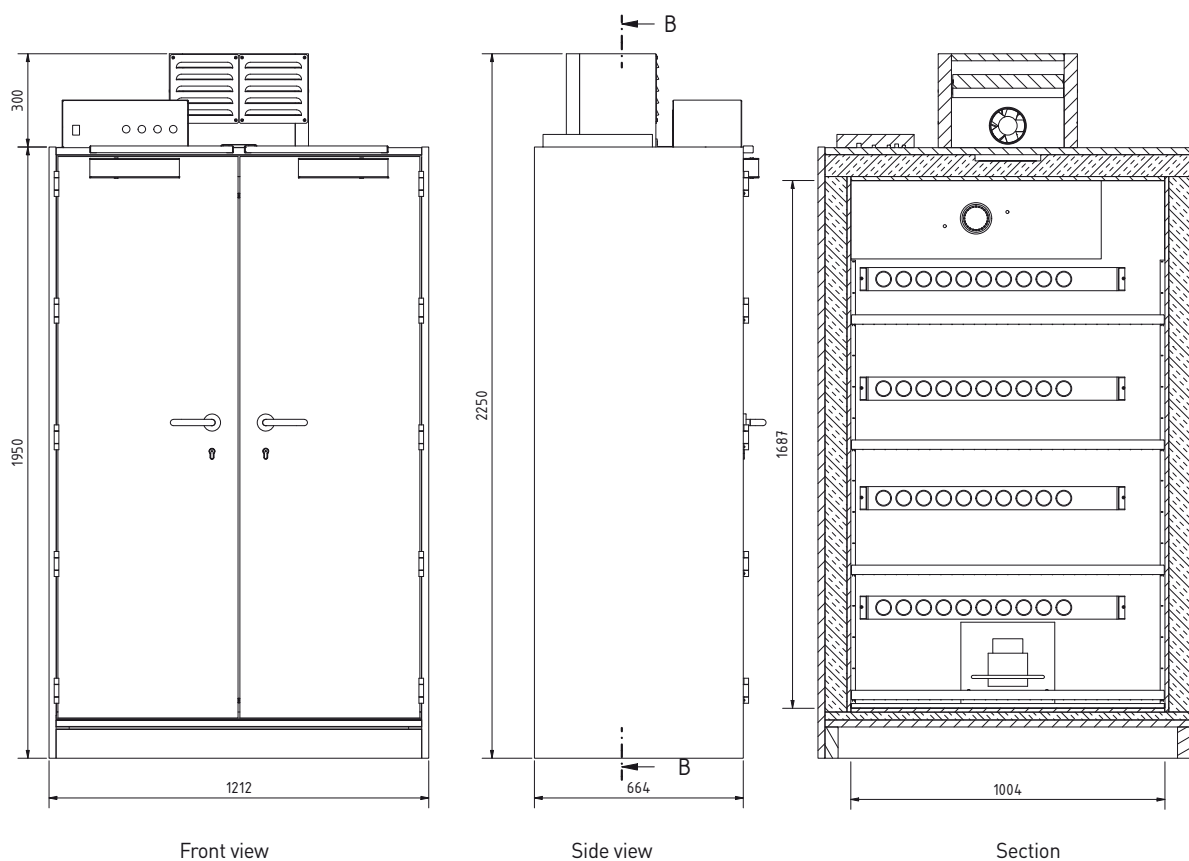
- DIN EN 1363-1: Fire resistance tests
- DIN EN 1363-2: Fire resistance tests
- DIN EN 14470-1: Fire-resistant storage cabinets
- DIN EN 14470-2: Fire-resistant storage cabinets
- DIN EN 16121: Container furniture for non-residential use
- DIN EN 16122: Container furniture for living and non-living areas
- DIN EN ISO 13854: Safety of machinery
- GS certification
- Tested according to test principle EK5/AK4 22-01 as of 3/2022
- Continuous function test of the doors

Technical specifications

- | | |
|-----------------------------------|----------------------|
| ■ Dimensions H x W x D external | 2250 x 1212 x 664 mm |
| ■ Entry width transport pedestal | 1084 mm |
| ■ Entry height transport pedestal | 100 mm |
| ■ Power consumption operation | max. 50 W |
| ■ Rated voltage | 230 V |
| ■ Frequency | 50 Hz |

Total power socket strip

- | | |
|------------------------------|------|
| ■ Fuse protection (1-phase) | 16 A |
| Total power = 3.50 kW; 230 V | |



Art.	Code ¹	 H x W x D mm	 H x W x D mm	 kg	Standard equipment
LI92.195.120	.x .y	1687 x 1004 x 453	2250 x 1212 x 664	706	4 grating shelves, floor tray, control unit 230 V / AC

x	Equipment variants	
	Fire suppression system	Socket strip (total number of sockets)
00	✓	-
01	-	1 (10)
02	✓	1 (10)
03	-	2 (20)
04	✓	2 (20)
05	-	3 (30)
06	✓	3 (30)
07	-	4 (40)
08	✓	4 (40)

y	Equipment variants
	Control unit* 400 V / AC
4	✓

*Increase in overall socket capacity
(3-phase fuse protection = 3 x 16 A; total power = 11.0 kW; 400 V)

Order examples:

- LI92.195.120 → Standard equipment
- LI92.195.120.03 → Standard equipment + additional 2 socket strips with 2 x 10 sockets
- LI92.195.120.04.4 → Standard equipment + additional fire suppression system, 2 socket strips with 2 x 10 slots and a control unit 400 V / AC for a fuse protection 3 x 16 A

Options and accessories

Art.	Accessories	 L x W x H mm	 kg
LI92.Z.GR	1 mesh grid shelf with 4 shelf supports packed in a box	1000 x 400 x 30	8.0
EBEL-GSM	EBEL-GSM telecommunication module, power supply unit, 2x CR123 batteries, SIM card, connection cable (1 m) with suitable plug for PRIOLION		1.0
LI.AG.BEF	Fire suppression system including fixing material		1.7

The handling or storage of lithium-ion batteries usually requires customised solutions that have to be specifically adapted to the respective application scenario.

At this point, we recommend that you contact and involve your responsible property insurer at an early stage and, in the case of structural measures and/or changes of use, that you involve the locally responsible fire protection service at an early stage.

Source: „Notes on operational fire protection for the storage and use of lithium-ion batteries“ Deutsche Gesetzliche Unfallversicherung e.V. Status: 19.06.2020



Products for safe storage of lithium-ion battery

Manufactory and Safety

Our ISO 9001 certification provides safety and peace of mind. All development and production processes of PRIORIT fire protection products comply with internationally recognized regulations. You can be assured of that! That is a certainty!

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