

# Storage and charging of lithium batteries

## CEMO SAFETY NOTE

### Safety rules for CHARGING

- Never charge in the storage area.
  - Maintain a clearance of several metres from combustible objects.
  - Never charge damaged or faulty batteries.
  - Avoid heat build-up during charging.
  - Use only the original charger.
  - Immediately disconnect the battery from the mains after charging.
  - Avoid charging overnight.
- Unsupervised charging poses a higher risk.

**Fire extinguishing is still the most disputed topic regarding lithium batteries.** Although small quantities of water can worsen the reactions of lithium-ion batteries, large quantities have a cooling effect and, in the ideal case, can interrupt the thermal runaway process.

The fire brigade also fight fires with plenty of water, which at least prevents the flames spreading to the surroundings. It is therefore crucial to alert the fire brigade as soon as possible so they can extinguish the fire.

### Safety rules for STORAGE

- Protect against short circuit of the battery poles.
- Protect against mechanical damage.
- Separate storage, i.e. no mixed storage.
- When storing batteries inside buildings, maintain a distance of 2.5 m from other installations or store them in areas that are isolated in terms of fire prevention (e. g. fire protection containers, safety cabinets).
- Immediately dispose of damaged products properly, even in case of slight abnormalities.
- Do not expose directly and permanently to high temperatures.
- Train employees how to handle lithium batteries properly.
- Provide suitable fire extinguishers.

Damaged/defective batteries, prototypes or batteries for disposal require a hazard assessment and possibly additional protective measures.

## Additional storage solutions for lithium batteries

### STEEL CONSTRUCTION

**F90 F-SAFE fire protection container**  
with DIBt certification



**F90 F-SAFE fire protection container**  
with DIBt certification



Additionally available as a self container.

Deutsches  
Institut  
für  
Bautechnik

DIBt



### CONCRETE CONSTRUCTION

**F90 F-SAFE fire protection storage cell**



**F90 F-SAFE fire protection storage**  
walk-in version



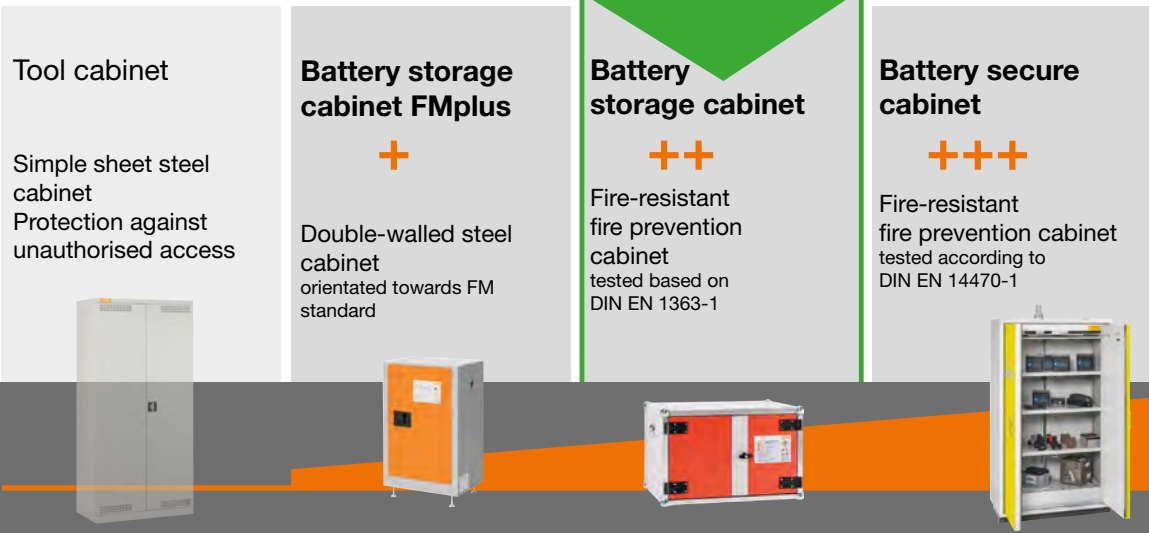
**NEW**

# How to find the right product for your application:



## Safety matrix Storage of Li batteries

Safety class

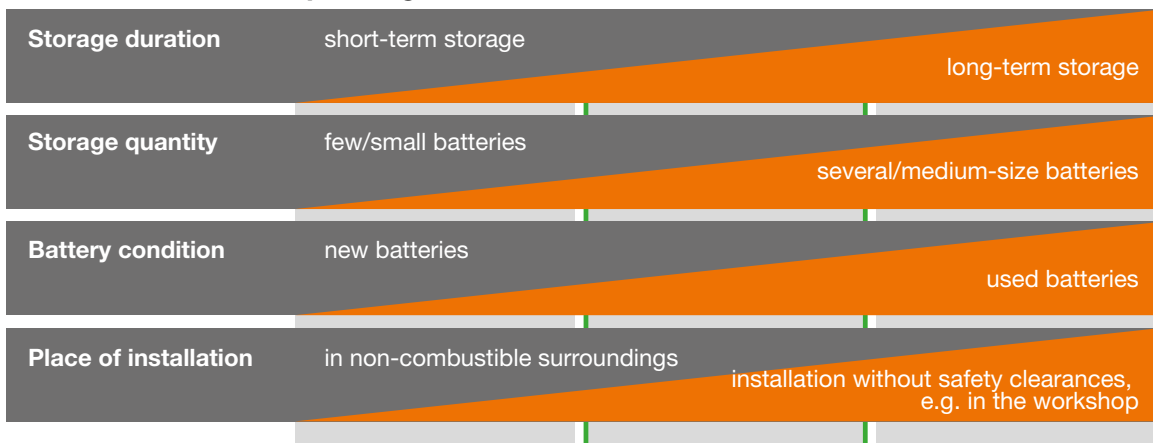


Battery fire suitability  
BBT index

Time window for escape, aid and rescue measures



## Orientation for use depending on result of the risk assessment \*



\* Risk assessment depends on additional factors, such as specifications of the property insurer, sprinkler system or works fire brigade

Risk increase of the situation

### BBT index

The first company to introduce the term “battery fire suitability (BBT)”. The BBT is checked in real-world battery firetests, which involve testing the pressure shock, battery fire, gas generation and thermal insulation. Information gained from these tests was used to develop reference safety classes for storage and charging.

**NEW**

# Battery storage cabinet FMplus

Leaving even a single lithium battery from a battery-powered device lying around in the open could be enough to ignite a fire. This is where the new CEMO FMplus battery storage cabinet as the economical entry-level solution can help.

Based on the risk assessment, this double-walled steel cabinet can be used as a protective measure for new lithium batteries from devices such as power tools or garden equipment.

The cabinet is available in three sizes:

- sturdy, heat-insulating double-walled steel cabinet
- lockable door with three-point lock
- can be locked with a padlock if necessary (profile half cylinder lockable)
- additional door seals keep cold smoke in the housing
- vent for proper connection to the exhaust pipe to the outdoors
- forklift access clearance (8-9 cm) for positioning and removal in the event of an incident
- equipped with smoke detector for audible alarms as standard
- powder coating body light gray (RAL 7035) and door light red orange (RAL 2008)
- includes warning labels and safety instructions

For storing low-power lithium batteries (see VdS 3103)

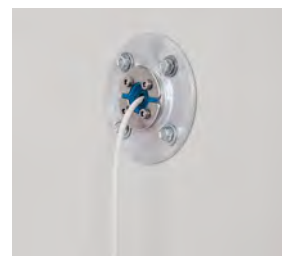
A battery fire test was performed on power tool batteries.

**Safe and cost-effective storage: FMplus, the entry-level model.**

Perfect protection – with safe storage systems  
CEMO expert tip:  
Store and charge separately.  
This minimizes the fire load.



Accessories: Set of castors



Accessories: Cable duct



Accessories: Adapter for ventilation line

Description	Shelves	External dimensions in cm (w x d x h)	Internal dimensions in cm (w x d x h)	Weight (approx.) in kg	Order no.
Battery storage cabinet <b>FMplus US</b>	2	43 x 43 x 56	35 x 35 x 46	27	11651
Battery storage cabinet <b>FMplus S</b>	3	59 x 46 x 89	51 x 38 x 79	47	11652
Battery storage cabinet <b>FMplus L</b>	4	60 x 46 x 165	52 x 38 x 154	83	11653

## ACCESSORIES FOR BATTERY STORAGE CABINET FMplus

Description	Order no.
Insert shelf for FMplus S battery storage cabinet	11655
Insert shelf for FMplus L battery storage cabinet	11656
Set of castors for FMplus battery storage cabinet	11657
Second smoke detector (can be networked with internal smoke detector)	11658
Padlock with profile half-cylinder NP 30x12 mm	11659
Cable duct for FMplus battery storage cabinet (e.g. for installation of in-house fire alarms)	11660
Adapter for ventilation line for FMplus battery storage cabinet	11661

# Battery storage and charging cabinet PG 9

Fire prevention is important when charging lithium batteries. CEMO now offers a safe solution. Providing important safety equipment can minimise the consequences of these storage devices burning and significantly increase safety.

- storage and/or charging of several lithium batteries in the cabinet
- early alarm in case of damage
- all relevant safety regulations for charging lithium batteries are observed
- ideal for separating batteries on charge from stored units
- can also be used as an under-table cabinet under the workbench

## Properties:

- MPA-tested fire resistance over 60 minutes from inside to outside according to DIN EN 1363-1
- Real battery fire test carried out by an independent university
- built using non-combustible, fire-resistant components
- special fire prevention seals prevent flames escaping
- cold smoke-tight sealing system for openings
- transportable for positioning at the place of installation
- lockable double doors with sturdy lock and hinges
- doors painted orange, matching to RAL 2004; body grey, matching to RAL 7035



Example



Insight into the development work: A real battery fire test with e-bike batteries was successful.

**NEW**



Battery storage cabinet 8/5

Battery storage cabinet 8/10  
with 1 shelf as standard at half height.  
Optionally 2 more shelves possible  
(see accessories).

## BATTERY STORAGE CABINETS

Description		External dimensions cm (l x w x h)	Internal dimensions cm (l x w x h)	Weight approx. kg	Order no.
Battery storage cabinet 8/5	Two battery-operated audible smoke detectors - without power connection, without fan -	80 x 66 x 52	73 x 53 x 45	105	11341
	additionally with stacking feet (required when stacking the cabinets 8/5)	80 x 66 x 62	73 x 53 x 45	108	11576
Battery storage cabinet 8/10	Two battery-operated audible smoke detectors - without power connection, without fan - with feet <b>NEW</b>	80 x 66 x 111	73 x 53 x 91	132	11692



# Battery storage and charging cabinet PG 9



Battery charging cabinet 8/5 Basic

**For all charging versions:**

- heat dissipation by fan during charging
- charging current is interrupted if the doors are opened
- charging stops if a malfunction or accident occurs
- vents sealed with thermocouples

**Battery charging cabinet 8/5**

- power supplied by a four-socket power strip (3500 W, 16 A)

**Battery charging cabinet 8/10**

- Charging versions with 2 vertically arranged 4-way socket strips for power supply
- 230 V version with 1-phase power supply (3500 W / 16 A)
- 400 V version with 3-phase power supply (2 x 3500 W / 2 x 16 A)

**Tip:** The 3-phase version is necessary if, for example, batteries are to be charged with fast chargers that have a greater current requirement than the 1-phase version can provide.

**NEW**



Battery charging cabinet 8/10 Premium Plus 3-phase

**New:** All versions with audible alarm

Premium and Premium Plus:

Now with improved connection option for combination alarm transmitter (12V) and connection to fire alarm system.

## BATTERY CHARGING CABINETS

Description		Version	External dimensions cm (l x w x h)	Internal dimensions cm (l x w x h)	Weight approx. kg	Order no.
<b>Battery charging cabinet Basic</b>	Two battery-operated audible smoke detectors, power supply in cabinet, technical ventilation, power disconnection in case of heat development, door contact switch	8/5 1-phase	80 x 66 x 52	73 x 53 x 45	106	11342
		8/5 with stacking feet*, 1-phase	80 x 66 x 62	73 x 53 x 45	109	11577
		8/10 with stacking feet, 1-phase <b>NEW</b>	80 x 66 x 111	73 x 53 x 84	135	11693
		8/10 with stacking feet, 3-phase <b>NEW</b>	80 x 66 x 111	73 x 53 x 84	136	11696
<b>Battery charging cabinet Premium</b>	Modification to charging Basic: electronic smoke detector (without audible alarm) In addition to charging Basic: power disconnection in case of smoke detection and voltage-free output on the outside of the cabinet for connection to a fire alarm system, 12 V connection for e.g. accessory combination alarm unit (visual and audible)	8/5 1-phase	89 x 66 x 52	73 x 53 x 45	106	11343
		8/5 with stacking feet*, 1-phase	89 x 66 x 62	73 x 53 x 45	109	11578
		8/10 with stacking feet, 1-phase <b>NEW</b>	89 x 66 x 111	73 x 53 x 88	135	11694
		8/10 with stacking feet, 3-phase <b>NEW</b>	95 x 66 x 111	73 x 53 x 88	136	11697
<b>Battery charging cabinet Premium Plus</b>	In addition to charging Premium: internal temperature display, with remote alarm and data transmission via SIM card; additional functions via remote access	8/5 1-phase	89 x 66 x 52	73 x 53 x 45	106	11344
		8/5 with stacking feet*, 1-phase	89 x 66 x 62	73 x 53 x 45	109	11579
		8/10 with stacking feet, 1-phase <b>NEW</b>	89 x 66 x 111	73 x 53 x 88	135	11695
		8/10 with stacking feet, 3-phases <b>NEW</b>	95 x 66 x 111	73 x 53 x 88	136	11698

\* stacking feet (required when stacking the cabinets 8/5)

# Battery storage and charging cabinet PG 9



Forkliftable for simple positioning and rapid removal to the outdoors in the event of a fire



⑥ Ideal for making the best possible use of available space and enlarging the storage area for small-cell lithium batteries (bear in mind the total capacity of the lithium batteries in the event of a fire)



⑧ Shelves can be adjusted to the ideal working height; cabinets can be loaded using a high-platform truck or forklift; including wall mounting materials

① Extremely flexible, eg. for cabling of the in-house fire alarm system

② Stacking feet, set

③ Combination alarm unit (strobe light)  
Visual and audible alarms if an accident occurs, enabling additional protective measures to be taken promptly

④ Set of two network-capable smoke alarms (audible). Included in "Storage" and "charging Basic" as standard

⑤ Effective aerosol extinguishing agent for lithium batteries, for initial, rapid extinguishing and flame suppression, automatic pyrotechnical triggering, maintenance free



⑦ Simple relocation in the building and removal in the event of an accident; two of the four steering castors are fitted with an integral foot brake

## ACCESSORIES FOR BATTERY STORAGE AND CHARGING CABINETS

Description	Dimensions cm (l x w x h)	Weight approx. kg	Order no.
① Fireproof cable entry	14 x 2.5 x 14	1.3	11345
② Stacking feet, set (stacking only for cabinet size 8/5)	10 x 6 x 10	3	11368
③ Combination alarm unit, visual and audible alarm (100 dB) (only for charging Premium and charging Premium Plus)	7.3 x 4.3 x 12.2	-	11389
④ Wireless heat and smoke alarms, set of two, battery operated, network capable, incl. two magnetic plates	ø 12.5 x 4.8	-	11560
⑤ Aerosol extinguisher (0.25 m <sup>3</sup> extinguishing capacity)	ø 6.5 x 3.8	-	11561
⑥ Insert shelf (for floor level or as intermediate level)*	67 x 40 x 3.5	-	11508
⑦ Trolley, 240 kg load capacity, for up to two cabinets 8/5 or one 8/10	80 x 60 x 15	11.3	11461
⑧ Rack, for up to two cabinets, including wall mounting (only in combination with stacking feet)	106 x 53.5 x 200	50	11562
Circuit breaker box for 1-phase cabinet 8/10 (delivered fully assembled)	Recommended for socket on the building side without own circuit breaker	<b>NEW</b>	11713
Circuit breaker box for 3-phase cabinet 8/10 (delivered fully assembled)		<b>NEW</b>	11714

\* Separator for insert shelf available on request.