



BATTERY SAFETY

Battery storage and charging cabinets

with patented explosion protection system CEMO lockEX

BATTERY SAFETY

CEMO – the hazardous materials expert for operational environmental protection

Storing, separating and transporting lithium batteries



Battery system fire prevention box
Li-SAFE Safe transport and storage system for lithium batteries with special fire prevention lining



NEW

New size 2-L

Battery storage cabinet FMplus
sturdy, heat-insulating double-walled steel cabinet



You can find all of the battery safety products here:



Fire prevention meets explosion protection

Controlled pressure relief as explosion protection

Charging and storage of lithium batteries



NEW

Battery charging cabinet with protection against overpressure and explosion (CEMO lockEX)



lockEX
inside

If a damaged lithium battery explodes, the cabinet doors can burst open. In CEMO battery storage and charging cabinets – unlike those of other manufacturers – a spring mechanism means that the cabinet door is opened very slightly and then immediately retracted and locked again. This dissipates the explosive pressure.



Includes property rights lodged with the German Patent and Trademark Office.

Battery safety cabinet F90
for the storage of lithium batteries



Steel collection container for batteries
ideal for use as a storage container for damaged batteries awaiting disposal



Safety drum for batteries
for the safe storage of faulty batteries



Battery storage cabinet FMplus PG 9

Leaving even a single lithium battery from a battery-powered device lying around in the open could be enough to ignite a fire.

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 an exhaust pipe to 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 of body in light grey (RAL 7035) and door in light red-orange (RAL 2008)
- includes warning labels and safety instructions

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



FMplus US Charger-ready version:

- 1 power socket per shelf
- Battery-powered smoke alarm
- Power disconnection in the event of fire
- Door contact switch for interrupting the charging current if the doors are open



FMplus US Charger-ready version



FMplus US

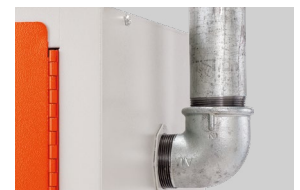
For storing low-power lithium batteries (see VdS 3103). Multiple battery fire tests were carried out on batteries of power tools and e-bikes at TÜV NORD Group.



Accessories: Set of castors



Accessories: Cable duct



Accessories: Adapter for ventilation line

i From autumn 2023, the US version is also available with the latest certification of the TÜV NORD Group.

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.	Shipping
Battery storage cabinet FMplus US	2	43 x 43 x 56	35 x 35 x 46	27	11651	
Battery storage cabinet FMplus US charger-ready NEW	2	43 x 43 x 56	35 x 35 x 46	30	11877	
Battery storage cabinet FMplus S	3	59 x 46 x 89	51 x 38 x 79	47	11652	
Battery storage cabinet FMplus L	4	60 x 46 x 165	52 x 38 x 154	83	11653	

ACCESSORIES

Description	Order no.	Shipping
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 30x10 mm	11659	
Cable duct for FMplus battery storage cabinet (e.g. for installation of in-house fire alarms)	11660	
Adapter for ventilation pipe for FMplus battery storage cabinet	11661	

Battery storage and charging cabinet PG 9

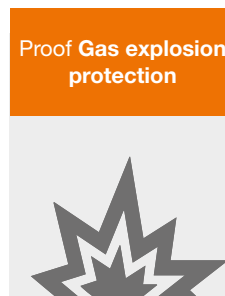
Fire prevention is important when storing and charging lithium batteries. Since 2020, CEMO has offered a safe solution, developed it in line with the latest findings and obtained the latest certifications. Providing important safety equipment can minimise the consequences of these storage devices burning and significantly increase safety.

- storage and/or charging of several lithium batteries in the cabinet
- early warning in the event of damaged batteries
- 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
- certifications of the TÜV NORD Group through the latest test programme with real battery fire testing and induced gas explosions

- MPA-tested fire resistance over 60 minutes from inside to outside according to DIN EN 1363-1
- built using non-combustible, fire-resistant components
- **NEW: Spring-based CEMO lockEX door locking for controlled pressure relief during explosions**
- special fire prevention seals prevent flames escaping
- cold smoke-tight sealing system for openings
- transportable for positioning at the place of installation
- double-leaf, lockable doors with sturdy lock and hinges
- doors painted orange, similar to RAL 2004; body grey, similar to RAL 7035



The 3 proofs of safety & quality



Test component of the new certification programme of the TÜV NORD Group. Available from autumn 2023.

Controlled pressure relief as explosion protection.



If a damaged lithium battery explodes, the cabinet doors can burst open. By means of a spring mechanism, the cabinet door is opened very slightly then immediately retracted and locked again. This dissipates the explosive pressure.



NEW

Includes property rights lodged with the German Patent and Trademark Office.

It has long been known in specialist circles that lithium batteries can suffer not only from catching fire and the explosive burnout of individual cells, but also as a result of leaking cell vapour exploding. This represents the worst case scenario in the event of a battery fire. In case of doubt, however, an explosion can destroy the entire protective effect null and void and is thus the most decisive criterion in performing a risk assessment.

Battery storage and charging cabinet PG 9

Fire prevention meets explosion protection

CEMO now also has the solution for explosion protection.

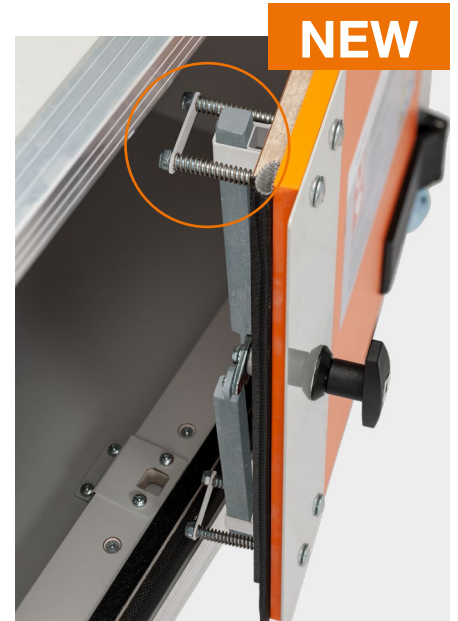
Sequence of a battery fire:

An explosion can happen even before a thermal runaway picks up speed. If the cabinet housing gives way or the doors open, the protective effect can be instantly lost. The burning cells and battery packs

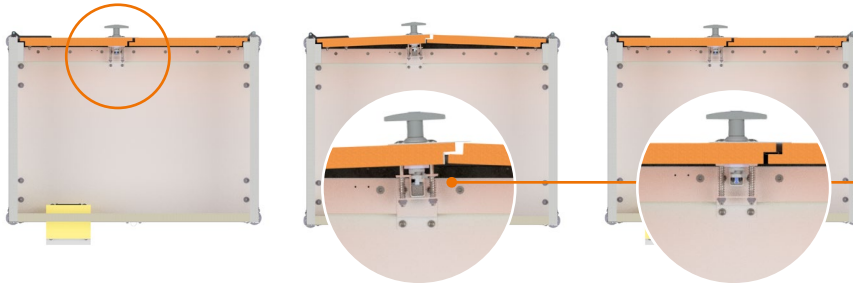
are then ejected unhindered into the area where it has been installed.

The solution:

CEMO lockEX is a spring-based mechanism in the door lock that effectively manages the explosive pressure of gases that ignite inside the cabinet. This NO-BANG technology guarantees retention of the protective effect.



OPERATING PRINCIPLE OF THE LOCKEX LOCKING MECHANISM (PLAN VIEW)



1. Battery failure begins, cells emit flammable vapours which spread throughout the cabinet.
2. An ignition source (possibly initiated by electrical sparks or the development of heat inside the battery itself) results in an explosion / ignition of the gas. The lockEX mechanism releases the explosive energy in a controlled way through a narrow gap.
3. The doors are locked again and the batteries can run the course of the incident in safety. The cabinet system remains operational and protects the employees and the surroundings.

lockEX
inside



Battery storage cabinet 8/5



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

BATTERY STORAGE CABINETS

Description	External dimensions in cm (w x d x h)	Internal dimensions in cm (w x d x h)	Weight (approx.) in kg	Order no.	Shipping	
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	80	11890	
	additionally with stacking feet (required when stacking cabinets 8/5)	80 x 66 x 62	73 x 53 x 45	83	11891	
Battery storage cabinet 8/10	Two battery-operated audible smoke detectors – without power connection, without fan – with feet	80 x 66 x 111	73 x 53 x 91	132	11898	
	with castors	NEW 80 x 66 x 115	73 x 53 x 91	144	11722	

Battery storage and charging cabinet PG 9

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 horizontally arranged 4-socket power 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)



Battery charging cabinet 8/10 Premium Plus 3-phase

NEW



Battery charging cabinet 8/5 Basic

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.



















All versions with audible alarm. **Premium and Premium Plus** with improved connection option for combination alarm transmitter (12 V) and connection to fire alarm system.



Battery charging cabinet 8/10 Basic can be supplied on castors

lockEX
inside

BATTERY CHARGING CABINETS

Description	Type	External dimensions in cm (w x d x h)	Internal dimensions in cm (w x d x h)	Weight (approx.) in kg	Order no.	Shipping	
Battery charging cabinet Basic	8/5 1-phase	80 x 66 x 52	73 x 53 x 45	81	11892		
	8/5 with feet*, 1-phase	80 x 66 x 62	73 x 53 x 45	84	11893		
	8/10 with feet, 1-phase	80 x 66 x 111	73 x 53 x 84	135	11899		
	8/10 with feet, 3-phase	80 x 66 x 111	73 x 53 x 84	136	11900		
	8/10, 1-phase on castors NEW	80 x 66 x 115	73 x 53 x 84	146	11723		
Battery charging cabinet Premium	8/10, 3-phase on castors NEW	80 x 66 x 115	73 x 53 x 84	147	11726		
	<u>Addition to charging cabinet Basic:</u> Electrically operated smoke detector	8/5 1-phase	89 x 66 x 52	73 x 53 x 45	82	11894	
	<u>In addition to charging cabinet Basic:</u> power disconnection also in case of smoke detection, audible warning tone, voltage-free output on the outside of the cabinet for connection to a fire alarm system, 12 V connection e.g. for accessory combination alarm unit (visual and audible)	8/5 with feet*, 1-phase	89 x 66 x 62	73 x 53 x 45	85	11895	
		8/10 with feet, 1-phase	89 x 66 x 111	73 x 53 x 88	135	11901	
		8/10 with feet, 3-phase	95 x 66 x 111	73 x 53 x 88	136	11902	
Battery charging cabinet Premium Plus	8/10, 1-phase on castors NEW	89 x 66 x 115	73 x 53 x 88	146	11724		
	8/10, 3-phase on castors NEW	95 x 66 x 115	73 x 53 x 88	147	11727		
		8/5 1-phase	89 x 66 x 52	73 x 53 x 45	82	11896	
		8/5 with feet*, 1-phase	89 x 66 x 62	73 x 53 x 45	85	11897	
	8/10 with feet, 1-phase	89 x 66 x 111	73 x 53 x 88	135	11903		
	8/10 with feet, 3-phase	95 x 66 x 111	73 x 53 x 88	136	11904		
	8/10, 1-phase on castors NEW	89 x 66 x 115	73 x 53 x 88	146	11725		
	8/10, 3-phase on castors NEW	95 x 66 x 115	73 x 53 x 88	147	11728		

New test programme and certification of the TÜV Nord Group

The new test programme of the TÜV Nord Group was developed on the basis of many years of testing experience with lithium batteries in a variety of sizes and performance categories. The result is test requirements that most closely approximate the real dangers of failing and burning lithium batteries.

The scope of testing comprises both battery fire testing and the creation of gas explosions. Propane gas is used for the gas explosion because the explosion characteristics are very similar to those of battery gases and ensure a repeatable test format.

Test programme of the
**TÜV
NORD
GROUP**

Special application for fire alarm systems:

The current battery cabinets from CEMO, available in the versions **Premium** and **Premium Plus**, are designed for sending the alarm through to an in-house fire alarm system or internal warning device via the voltage-free contact. This means that it is not possible to create a permanent link to a fire alarm system with direct connection to the fire brigade.

There are now special cabinet versions that are prepared for the fire alarm equipment to be installed in the cabinets by FAS (fire alarm systems) specialists, which will be necessary depending on the requirements on site or the manufacturer-specific system compatibility.

Ask for our "Information sheet for battery cabinets for use with fire alarm systems" and talk to your FAS specialist.

Versions for FAS:

2x cable duct for self-installation for flexible installation of your individual fire alarm equipment by an FAS specialist






Storage cabinet:

Two battery-operated acoustic smoke detectors

Charging cabinet:

Two battery-operated, audible smoke detectors, power supply in the cabinet with socket strip(s), mechanical ventilation, power disconnection in case of heat development or by door contact switch

BATTERY CABINETS FOR FIRE ALARM SYSTEMS

Description	External dimensions in cm (w x d x h)	Internal dimensions in cm (w x d x h)	Weight (approx.) in kg	Order no.	Shipping
Battery storage cabinet 8/5 for FAS	83 x 66 x 52	73 x 53 x 45	82	11885	
Battery storage cabinet 8/10 for FAS (with feet)	83 x 66 x 111	73 x 53 x 91	137	11886	
Battery charging cabinet 8/5, 1-phase, for FAS	83 x 66 x 52	73 x 53 x 45	85	11887	
Battery charging cabinet 8/10, 1-phase, for FAS (with feet)	83 x 66 x 111	73 x 53 x 84	139	11888	
Battery charging cabinet 8/10, 3-phase, for FAS (with feet)	83 x 66 x 111	73 x 53 x 84	140	11889	

ANNOUNCEMENT

Battery storage and charging cabinet 8/20

NEW

The modular cabinet concept and the two existing sizes already provide good opportunities for safe storage space that grows in step with business needs.

However, in the event that storage and charging space is not enough in the current cabinet versions, CEMO has initiated development of the battery storage and charging cabinet 8/20. This will have the same safety level as the current cabinet sizes 8/5 and 8/10.

- CEMO **lockEX** for optimal explosion protection
- Interior equipment for detecting and warning of a fire
- Forkliftable for rapid evacuation
- Fire compartment for separating the cabinet contents
- Separate charging and storage in one cabinet



Available from end of 2023

BATTERY STORAGE AND CHARGING CABINET 8/20

Description	External dimensions in cm (w x d x h)	Weight (approx.) in kg	
Battery storage cabinet 8/20	80 x 66 x 195	195	on request
Battery charging cabinet 8/20, 3-phase	89 x 66 x 195	195	on request
Battery storage and charging cabinet 8/20	89 x 66 x 195	195	on request

Battery storage and charging cabinet ACCESSORIES PG 9

- ① Extremely flexible, e.g. 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
- 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)
- 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



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

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



ACCESSORIES FOR BATTERY STORAGE AND CHARGING CABINETS

Description	Dimensions in cm (w x d x h)	Weight (approx.) in kg	Order no.	Shipping
① Fireproof cable duct	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 m³) 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 cabinet 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	Recommended for socket on the building side without own circuit breaker		11713	(delivered fully assembled)
Circuit breaker box for 3-phase cabinet 8/10			11714	

Battery system fire prevention box Li-SAFE PG 9



Video
Battery system
fire prevention box Li-SAFE

- safe transport and storage system for lithium batteries
- special fireproof lining made of non-combustible materials
- mouldable special pads prevent the batteries shifting inside the box (included)
- boxes are stackable and can be interconnected
- two sturdy latches
- two handles for easy handling
- can be locked with a padlock (not included)
- made of durable, impact-resistant plastic
- including hazardous goods labels



POSSIBLE APPLICATIONS:

- UN certification for lithium batteries in packaging group II
- for lithium battery weighing up to 5 kg
- transport possible on public roads in accordance with the regulations
- also usable as a stationary safety container for storage
- fireproof storage for transport and on construction sites, for example
- ideal for new and used batteries as well as for safely isolating highly hazardous batteries (e.g. faulty or quarantined batteries)



Faulty batteries must be transported safely during work.

i With UN certification and non-combustible interior lining

Battery system fire prevention box Li-SAFE PG 9

Development insights:

All boxes have been tested in battery fire tests with garden tool batteries, here the box 2-S



Essential if battery-powered devices are used in a company, because batteries can fail at any time (fire hazard).

Successful fire test: the CEMO fire prevention box withstands the flames.



Description	Permissible total weight in kg	External dimensions in cm (l x w x h)	Internal dimensions in cm (l x w x h)	Quantity of special pads	Weight (approx.) in kg	Order no.	Shipping
Battery system fire prevention box Li-SAFE 2-S	10	40 x 30 x 21.5	30 x 19 x 9	2	4.5	11563	
Battery system fire prevention box Li-SAFE 3-S	12	40 x 30 x 34	30 x 19 x 21.5	3	6	11564	
Battery system fire prevention box Li-SAFE 2-L NEW	12	50 x 30 x 28	40 x 17 x 15	4	6.7	11872	



In case of the loss or damage of pads or the filling out of empty space



Multi-adapter plate for connecting with box systems of third-party manufacturers (e.g. Systainer, L-BOXX)



Shelf adapter plate for fixing the box in the required place, e.g. in a shelving system in a vehicle

ACCESSORIES

Description	Dimensions cm (L x w x h)	Weight (approx.) in kg	Order no.	Shipping
Special pads for battery system fire prevention box	34 x 21 x 4	0.2	11565	
Multi-adapter plate NEW	44.5 x 30 x 5.5	0.74	11882	
Shelf adapter plate NEW	39.5 x 29 x 2	0.46	11883	

Further sizes on request.

Storage and charging of lithium batteries

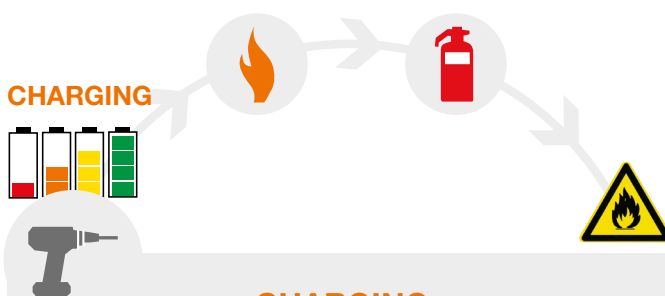
The importance of lithium batteries is increasing constantly in our everyday lives. These powerful batteries are increasingly being used not only in small mobile devices or in bicycles (e-bikes) but, correspondingly sized, also in industrial appliances, vehicles and machines. Lithium batteries are powerful, but not without their hazards. Lithium batteries have long been classified as hazardous goods under transport law and are therefore subject to meticulous hazardous materials regulations which

become stricter every 2 years. Lithium batteries require the utmost care during transport and particularly during storage and handling. If damaged or if handled incorrectly, these batteries can quickly lead to dramatic consequences, usually in the form of a fire. One reason why storing lithium batteries poses a fire safety challenge is that they are not under constant observation, and a fire can spread quickly and unnoticed.

The typical incidence of damage involves the battery igniting and explosively emitting jets of flame and toxic smoke.

Summary of the possible causes of fire:

- mechanical damage (e.g. impact, fall)
- improper charging process
- deep discharging
- overheating due to high ambient temperature



CHARGING

Most of the lithium battery-related fires studied in Germany occurred during the charging process. Safety specialists, fire brigades and property insurers are therefore paying closer attention to this threat.

Unfortunately, practical experience has shown us that there are many (deliberately or unintentionally) incorrect ways to charge batteries. Even a lithium battery which looks perfectly intact from the outside can already be damaged enough on the inside that adding electrical energy via the charger can cause a fire hazard. Charging stresses a lithium battery. Frequent charging, hard use and wear place a burden on the battery to the point that any charging process could be the last one.

Charged lithium batteries pose a higher fire hazard (cause) and burn more intensely (effect). Therefore, the charging process must never be underestimated and must always take place under supervision at a designated location. Charging in the workplace therefore requires a risk assessment which takes into account the risk to employees and the environment, as well as the building layout. These findings should be included in the fire prevention plan.

Overheating due to causes such as direct sunlight or heat build-up during charging must also be avoided.

Important:
Lithium batteries are mentioned in German Regulation TRGS 510. Due to their higher hazard level, appropriate fire protection measures must be taken.

STORAGE

So far, there are no statutory regulations for the storage and supply of lithium batteries. Occupational safety obligations and, above all, insurance guidelines nevertheless mean that the information to be observed regarding the storage and operation of lithium batteries is just as comprehensive as that applicable to traditional hazardous materials storage.

VdS Guideline 3103 from the German Insurance Association (GDV) is a current source of important information about storing and supplying lithium batteries.

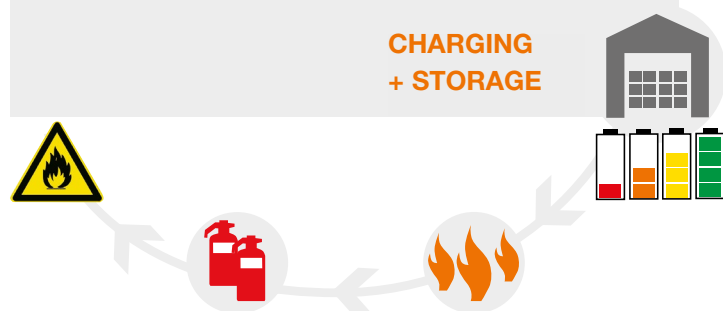
Storage also involves the danger of a nearby fire spreading to the lithium batteries. A small, extinguishable fire source can then become a major challenge to the fire brigade.

A risk assessment in combination with the right charging and storage solution effectively improves safety in the workplace. Not all lithium batteries are the same. Therefore, there is no "one size fits all" protection scheme. In addition, the information provided by the manufacturers of energy storage devices and battery-operated devices must be observed at all times. Suitable technical protective measures, such as tested transport containers, safety cabinets or even fireproof containers, always depend on the circumstances in the workplace.

CHARGING + STORAGE

Practical tip:
Charge and store lithium batteries separately!

More information at: www.battery-secure.com



How to find the right product for your application:

	Tool cabinet	Battery storage cabinet FMplus Size S + L	Battery storage cabinet FMplus Size US	Battery storage and charging cabinet 8/5, 8/10
Safety class	Simple sheet steel cabinet Protection against unauthorised access	Double-walled steel cabinet orientated towards FM standard	Double-walled steel cabinet orientated towards FM standard	Fire-resistant fire prevention cabinet (60 min.) tested based on DIN EN 1363-1
Battery fire suitability BBT index				
Protective functions		<ul style="list-style-type: none"> ✓ Fire protection ✓ Thermal insulation 	<ul style="list-style-type: none"> ✓ Explosion protection ✓ Fire protection ✓ Thermal insulation 	<ul style="list-style-type: none"> ✓ Explosion protection ✓ Fire protection ✓ High thermal insulation ✓ Fire resistance
Qualification		<ul style="list-style-type: none"> ✓ Battery fire performed 	<ul style="list-style-type: none"> ✓ Battery fire performed ✓ From autumn 2023 with TÜV Nord certification 	<ul style="list-style-type: none"> ✓ Battery fire performed ✓ From autumn 2023 with TÜV Nord certification ✓ 60 minutes fire resistance from inside to outside
USE				
Storage duration		short-term storage		long-term storage
Storage quantity		few/small batteries		several/medium-size batteries
Battery condition		new batteries		used batteries
Place of installation		in non-combustible surroundings		installation without safety clearances e.g. in the workshop

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

 Risk increase of the situation



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