batteryguard

Safely charging lithium-ion batteries

Everything about the risks
and what you can do yourself to prevent fire

think safe

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Batteryguard lithium-ion battery safe

+ Tested with lithium-ion batteries by test institute MPA Dresden
  – Meets requirements of many insurers

+ Battery fire remains inside the safe
  – Minimal consequential damage to your property

+ Toxic smoke gases can be vented outside
  – If smoke extraction is connected

+ Personnel are not at risk
  – Control room is alerted (when connected)

think safe

Contents

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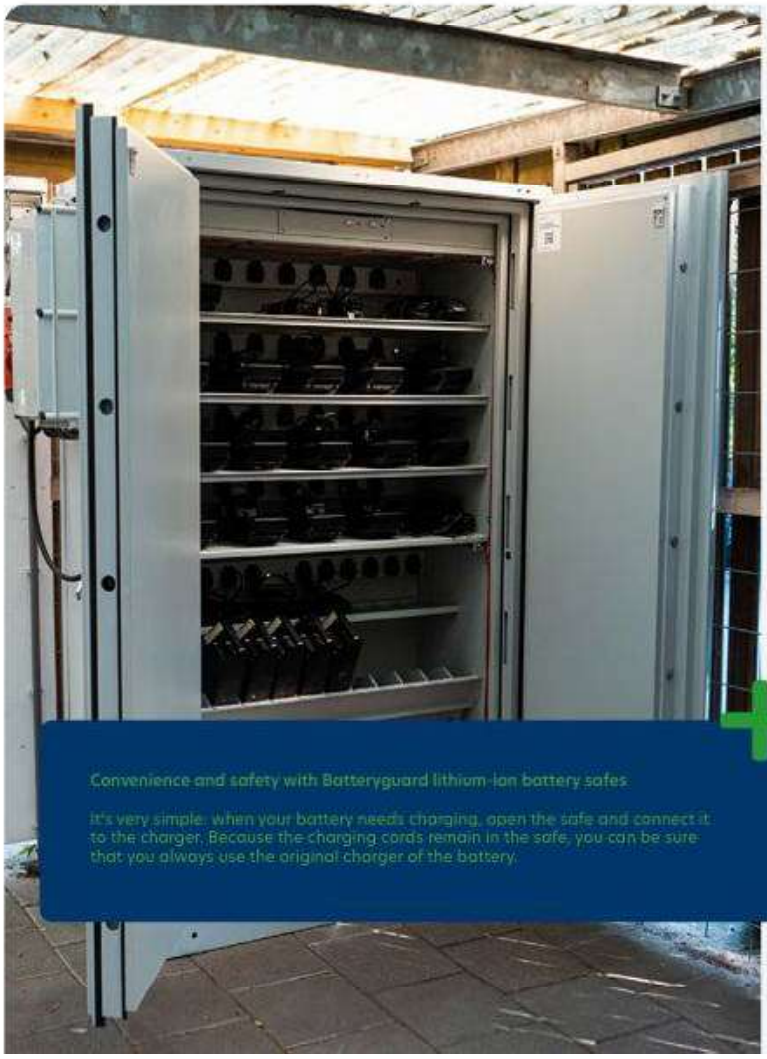

Convenience and safety with Batteryguard lithium-ion battery safes

It's very simple: when your battery needs charging, open the safe and connect it to the charger. Because the charging cords remain in the safe, you can be sure that you always use the original charger of the battery.

Contents

Batteryguard battery safe

Batteryguard safe: tested during the development of VDMA 24994

During the development of the VDMA 24994 paper, we had the Batteryguard battery safe tested by the renowned test institute MPA Dresden.

In this practical test, 20 lithium-ion batteries were deliberately put into thermal runaway. Despite the intense fire and explosions that followed, the doors of the Batteryguard battery safe remained firmly closed.

The Batteryguard battery safe offers proven safety.

Fire and burglary resistant safe construction

The Batteryguard lithium-ion battery safes have a fire-resistant safe construction with robust locking. This is important because:

+ The double walls with fire-resistant concrete and insulating materials keep the fire compartmentalized.

+ Thanks to the sealed seams of the safe, toxic smoke gases remain inside the safe.

+ The solid door lock and robust locking mechanism ensure that the safe doors remain closed if the battery goes into thermal runaway. The battery then becomes extremely hot and, in the worst case, explodes.

Not just a cabinet but a safe!

Unlike ordinary (chemical) cabinets, where the doors can spring open due to the pressure of the explosion, the doors of the Batteryguard remain firmly closed. This is because Batteryguard is not a cabinet, but a safe!

Hans Bonsel, General Manager Batteryguard:

"We strongly believe in collaboration and knowledge sharing. That's why we work closely with other key players in the safe industry, insurers, European certification authority for safes ECB-S, lithium-ion battery suppliers, and participate in lithium-ion working groups."

Risks of batteries

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The risks of lithium-ion batteries

Recognising a broken or damaged lithium-ion battery is quite a challenge, especially because it is usually not visible from the outside that something is wrong inside. When you put a defective battery on the charger, it can catch fire. It can lead to a very intense battery fire with toxic smoke gases being released. In some cases, the battery can even explode!

What should you do then?

It is important to know the signs of a defective lithium-ion battery and act quickly when you suspect something is wrong. The tricky part is that you don't always notice that a battery is internally defective. By investing in a lithium-ion battery safe that keeps the fire inside, you protect your property from consequential damage and ensure the safety of your staff. This also gives you enough time to alert the fire brigade.

What is a thermal runaway?

Lithium-ion batteries are made up of cells. If a cell becomes defective, it can ignite. The fire then accelerates through a chemical chain reaction, known as thermal runaway. This results in an uncontrollable fire where the battery can explode, with all the ensuing consequences.

Cell is defective and ignites

Fire accelerates due to chemical chain reaction (thermal runaway)

Uncontrollable fire occurs

Regulations for storage

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The necessity of clear regulation

It's therefore crucial that you opt for a battery safe that is resistant to fire and explosions. This means that the doors of the safe must remain closed, even if a battery catches fire during charging. But how do you make the right choice when so many different charging cabinets are offered on the market? Clear regulation for safe battery storage is now more important than ever.

Why safety cabinets are not adequate

You'll find that many safety cabinets are marketed as secure storage and charging solutions for lithium-ion batteries. These are originally chemical cabinets with the EN 14470-1 certification, intended to protect flammable liquids from fires that occur outside the cabinet.

However, with lithium-ion batteries, the risk of fire actually originates inside the battery, thus inside the cabinet. Such a safety cabinet is not designed to withstand a battery fire and the pressure of an explosion. As a result, the doors may burst open, causing the fire to spread to your premises!

VDMA 24994 paper: new requirements for safe lithium-ion battery storage

Finally, there is clarity for businesses on how to make a good choice for a safe and reliable lithium-ion battery cabinet. It prioritises the end result: battery safes must be designed such that the doors remain closed in the event of ignition or explosion of a battery inside the safe.

The VDMA 24994 paper is not a European standard. Developing a standard takes years, and we cannot afford to wait that long. The issue of battery fires is urgent and the number of incidents is only increasing. Therefore, a VDMA paper is being published first to quickly clarify the requirements for a safe battery cabinet.

ECB•S
MEMBER OF ESSA

European certification authority for safes that will soon publish requirements for safe battery storage.

Document that describes the requirements a safe battery vault must meet.

European lithium-ion working group

Last year, a lithium-ion working group was established by the European certification body for safes, ECB-S. This group includes insurers, research institutes, safe and battery manufacturers from across Europe. Together, they developed the VDMA 24994 paper, which describes the requirements that a battery safe must meet.

An important part of this paper is that the design requirements have also been tested in practice. The German testing institute MPA Dresden conducted these tests and documented the results. Our Batteryguard safe has been tested during the development of the VDMA 24994 paper and offers you proven safety and security.

	Chemical cabinet	batteryguard
Battery fire stays inside	✘	✔
Doors remain closed	✘	✔
Exterior stays cool	✘	✔
Toxic smoke gases are vented	✘	✔

The test:

For this test, 20 batteries in the Batteryguard lithium-ion battery safe were brought into thermal runaway to simulate a situation where a battery spontaneously catches fire. Watch the result in the video.

MPA Dresden

Regulations

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Insurance policy and regulations

The relief among insurers is significant now that there is clarity on the requirements indicating which battery safes are safe. Lithium-ion battery fires have led to significant damage costs in the past. Insurers have therefore long demanded that lithium-ion batteries must be safely stored in a suitable storage medium.

Bart van de Broek, a risk expert at Nationale-Nederlanden, shares his insights on the impact of a battery fire in an interview.

Insurers advise their customers:

- **Charge batteries in a special fire-resistant lithium-ion safe.**
- **Never charge batteries when unattended.**
- **Recycle batteries when they are broken, and do not tamper with them yourself.**

Several insurers have already approved the Batteryguard lithium-ion battery safe, and we have supplied this safe for various large projects.

Bart van de Broek, risk expert at Nationale-Nederlanden (one of the largest insurers in the Netherlands):

"A storage facility for lithium-ion batteries must always remain closed. So the door must be properly shut. Additionally, smoke gases and flammable, toxic gases must stay inside the cabinet, and where necessary, be vented outside. They should not enter the room where the cabinet is located. Those are actually the two most important features of the cabinet."

Batteryguard models

Lithium-ion battery safe suitable for every situation

Whether you have a great many batteries or just a few, large of small, the Batteryguard safe offers a solution for every situation.

We offer compact models that charge 2 to 10 batteries and a spacious double-door safe where you can store up to 20 batteries.

Batteryguard is based on a fire-resistant design, so that our safe satisfies the strictest standards and guidelines.

Batteryguard models

Standard options model *M*

- Compact entry-level model, ideal for small business use
- 2 charging points
- Fire-resistant safe construction, keeps battery fire inside the safe
- Equipped with CE marking, complies with applicable European guidelines
- Flue for smoke extraction
- With door open warning system

Standard options model *L*

- Medium-sizes model, ideal for small business use
- 8 or 10 charging points
- Fire-resistant safe construction, keeps battery fire inside the safe
- Equipped with CE marking, complies with applicable European guidelines
- Connection for venting toxic smoke gases
- Safe alerts if door remains open

Standard options model *XL*

- Professional model, tested with lithium-ion batteries by test institute MPA Dresden(Kiwa Group)
- 16 or 20 charging points
- Tested during the development of VDMA 24994
- Fire and burglary resistant safe construction according to ECB-S, keeps battery fire and smoke gases inside the safe
- Equipped with CE marking, complies with applicable European directives
- Prepared for mechanical smoke gas extraction
- Prepared for connection to alarm system
- With smoke detector and door open warning system
- With controlled charging system: all batteries on the charger at the same time, without modification to the fuse box
- EN 1300 certified security key lock on the door
- 230 volt connection, easy to connect
- Safe is movable thanks to transport base

Extra options model *XL*

- Automatic extinguishing system with cooling effect
- 400 volt power supply connection
- Lockable locker compartments
- Modular construction
- Self-closing doors
- Electronic code lock on the door

Contact us
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Article number	Model	External dimensions HxWxD	Internal dimensions HxWxD	Number of power points	Weight	Shelves	Volume
BATG0010	Batteryguard M	509x444x876 mm	221x341x601 mm	2	75 kg	-	45 liter
BATG0001	Batteryguard L 125/08 230V	1255x711x580 mm	1034x546x418 mm	8	305 kg	2	236 liter
BATG0002	Batteryguard L 160/10 230V	1708x711x580 mm	1487x546x418 mm	10	410 kg	3	339 liter

Article number	Model	External dimensions HxWxD	Internal dimensions HxWxD	Number of power points	Weight	Shelves	Volume
BATG0003	Batteryguard XL 195/16 230V	2050 x940x585 mm	1400x800x390 mm	16	610 kg	4	555 liter
BATG0004	Batteryguard XL 195/20 230V	2050x1250x585 mm	1400x1110x390 mm	20	710 kg	4	773 liter

Extra options *XL*

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+ Automatic extinguishing system with cooling fire foam

When a battery becomes too hot during charging and enters thermal runaway, the Batteryguard lithium-ion battery safe ensures that the fire remains within the safe and the battery burns out in a controlled manner.

Adding the automatic extinguishing system to your safe greatly reduces the risk of a battery fire. This system works preventively because the foam cools the battery and prevents an internal chain reaction, the so-called thermal runaway.

Special foam extinguishing system for lithium-ion fires

Not every extinguishing system is suitable for lithium-ion battery fires. The Batteryguard lithium-ion battery safe uses an extinguishing system that meets the NTA 8133-2021 certification and has been tested by Kiwa.

For cooling the battery, BerkiCold foam is used, which conforms to the NEN 1568 standard (A, B, D, and F) and is specifically designed to cool overheated lithium-ion batteries for an extended period.

Why an aerosol extinguishing system is not sufficient

In most fires, you can stop the fire by removing oxygen. This is what an aerosol extinguishing system does.

However, this does not work for a burning lithium-ion battery, as the fire is inside the battery. You can only slow down and gradually stop a lithium-ion fire by cooling the battery. This is exactly what the cooling fire foam of Batteryguard does.

+ 400 volt power supply connection

Do you have a 400 volt connection in your meter box? Then choose the Batteryguard lithium-ion battery safe with a power supply connection. The big advantage of this is that you can charge all batteries simultaneously in the safe.

Fully automatic charging system

To facilitate this, we have placed a fully automatic charging system in the safe. This system charges one shelf of batteries at a time. A green indicator light shows you which level is currently being charged. This charging process is set at two-hour intervals, meaning that after every two hours, a different set of batteries is up for charging.

Extra options *XL*

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Lockable locker compartments in the lithium-ion battery safe

The Batteryguard lithium-ion battery safe can also be used as a central charging service for e-bike batteries in hotels, holiday parks, apartment complexes, schools, etc.

Guests of hotels and holiday parks are increasingly bringing their own e-bikes on holiday. If they then charge the battery in their hotel room or holiday home, this poses significant risks.

A central charging service at the reception offers a solution. Here, bike batteries are safely charged in a separate locked locker compartment in a special lithium-ion battery safe. This service not only guarantees safety but also provides convenience for guests: the battery is safely charged, they always get their own battery back and they can enjoy a carefree stay.

As the manufacturer of Batteryguard, we customise the layout of our lithium-ion battery safes for you.

Modular construction

Our lithium-ion battery safe stands out due to its modular construction. This means you are not tied to a fixed size or capacity. If you currently have a limited number of batteries to store, start with a basic safe.

As your needs grow, you can easily add extra modules. The construction is designed so that expansion is seamless and hassle-free, making your safe infinitely scalable.

Self-closing doors in case of fire

The Batteryguard battery lithium-ion safe alerts you with a loud alarm if you leave the doors of the safe open for more than two minutes. Suppose a battery in the safe catches fire, then you can only keep the fire inside the safe if the doors are closed. This is very important!

For maximum safety, choose the option of self-closing doors. If one of the batteries overheats and the safe doors are open, the doors will automatically close, even if you are not present at the safe!

Electronic coded lock on the door

You lock the Batteryguard safe with a key, but you can also opt to have it fitted with an electronic coded lock. You then open the battery safe with a self-chosen code. When several people have access to the safe, you can set an individual code for each of them.


GAZELLE

Our Customers

Roompot holiday parks

Roompot is the largest provider of holiday parks in the Netherlands, with over 100 locations across the country. Guests are increasingly renting e-bikes and e-choppers there.

Until recently, the batteries were charged outside in the bike parking area near the reception. But when Roompot heard about a severe battery fire in a holiday home at a competitor's park, they were greatly alarmed. They sought a reliable solution and thus discovered the Batteryguard battery safe.

Battery lending procedure adjusted at sports desk

In the past, when you rented an e-bike, you received the charger in the bike bag. It's convenient to keep the charger with the bike. However, this meant guests could take the e-bike with the charger to their holiday home and charge the battery there, with all the associated risks!

To prevent this, Roompot has changed the lending procedure, and now guests must exchange their empty batteries at the sports desk.

The risks of lithium-ion batteries at a holiday park

If a guest accidentally knocks over their e-bike or e-chopper, the battery can be damaged and catch fire during charging.

Often, you can't tell from the e-chopper or battery that something is wrong. And the guest is completely unaware of these risks.

"You want to prevent a fire for the safety of the guests. They should have a carefree stay and feel safe."

Tim Vermeulen,
Employee at Roompot

Our Customers

Thijs Hendriks

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Bike Totaal Thijs Hendriks

In the past, the store was filled with 'regular' bikes, but now the majority of the bikes are electric. Therefore, the mechanics are increasingly maintaining or repairing e-bikes.

Charging e-bike batteries: safety first with the lithium-ion battery safe

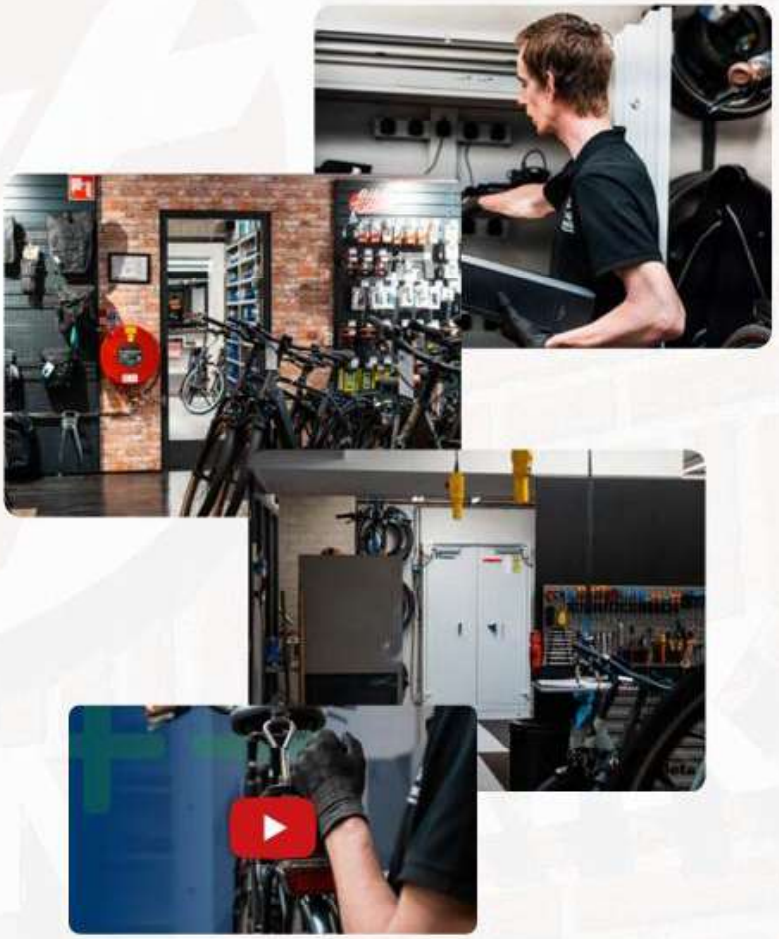
All those bike batteries need to be charged. Previously, they did this at Thijs Hendriks on the workbench, and they were also charged overnight. But such a battery can become extremely hot during charging and catch fire, or even explode! They sought a reliable solution and thus discovered the Batteryguard lithium-ion battery safe.

Safety for staff and family

You hear more and more about bike batteries spontaneously catching fire during charging and causing a huge fire. Rob Hendriks was worried that this could also happen in their workshop.

"I live upstairs with my family. That's the main reason we now have a lithium-ion battery safe."

Rob Hendriks,
Owner of Bike Totaal Thijs Hendriks



Our Customers Domino's

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Domino's Pizza

At Domino's Pizza, sustainable business practices are a high priority. The pizza couriers deliver exclusively with electric vehicles, contributing to a greener future.

Previously, the charging of the lithium batteries for these delivery bikes and scooters was not optimally arranged. They were charged randomly wherever a socket was available. Until one day, a battery spontaneously caught fire in one of their locations, with enormous consequences!

Destruction, temporary closure, and insurance claims

The branch in Houten was completely destroyed and had to remain closed for almost a year. This battery fire not only impacted the Domino's branch but also the residents of the apartments above, who had to stay elsewhere temporarily. Additionally, the insurer faced a considerable claim.

Safety first, collaboration with insurers, and Batteryguard for safe battery storage

Domino's then joined forces with insurers and us as safe manufacturers to find a sustainable solution for safely storing and charging batteries. Together with Domino's Netherlands and some franchisees, we started a pilot project for stores facing the biggest challenges.

A key goal was to centrally store all batteries, previously scattered everywhere, in fire-resistant battery safes.

"If something does go wrong with a battery, I have complete confidence in that safe."

Nico Kruijt
Owner of Domino's Pizza Houten

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