

ION-LINE

Safety with Letter & Seal

»» for **safe storage** and **charging** of **lithium-ion batteries**

A SYMBOL OF COMMITMENT AND QUALITY

Our comprehensive testing and certification documentation is your guarantee of quality. This document provides you with comprehensive information, and invites you to contact the asecos expert team with any remaining questions.

When you choose to purchase an ION-LINE cabinet from asecos, you are choosing a product developed, tested and manufactured in Germany. Every cabinet undergoes strict, 100% quality testing. Only after it passes these tests do we proudly award it our test seal, confirming that the cabinet complies with the specified requirements.

The detailed manufacturer declaration is provided on the following pages.



KVA 1000

ULTRA 90 90



SAFETY WITHOUT COMPROMISES

To curtail the potential for danger posed by handling lithium-ion batteries, asecos offers ION-LINE safety storage cabinets as a safe, tested storage and charging solution based on state-of-the-art technology. The ION-LINE has undergone extensive type examination testing. These tests are based on recognised standards relevant to structural fire protection, as well as standardised tests developed by certified testing authorities. These include live fire tests with batteries stored in the cabinet.

The certifications summarized in the manufacturer declaration for the **CORE, PRO** and **ULTRA** product groups are as follows:

1 **Fire resistance test from outside to inside in accordance with EN 14470-1** tested at: kiwa MPA Dresden GmbH, accredited testing laboratory in accordance with EN ISO/IEC 17025 (D-PL-17819-01-01)



During external fire testing, the cabinet to be tested is exposed to flames in a fire chamber according to the uniform temperature time curve (UTTC) pursuant to DIN EN 1363-1. The maximum permitted temperature increase in the interior of the chamber during this test is monitored using a large number of sensors.

Safety storage cabinets which pass a 90-minute test are assigned the Type 90 classification in accordance with EN 14470-1.

All ION-LINE safety storage cabinets fulfil this condition, and are therefore considered a separate fire compartment.

2 **90-minute fire resistance test from inside to outside** tested at: kiwa MPA Dresden GmbH, accredited testing laboratory in accordance with EN ISO/IEC 17025 (D-PL-17819-01-01)



During the fire resistance test, a fire inside the cabinet is simulated through a section cut out of the back of the cabinet. The testing authority uses the external fire curve in accordance with EN 1363-1 as the theoretical basis for carrying out fire testing from the inside. The temperature increase on the outside of the cabinet is measured, and may be a maximum of 180 K.

In addition, the cabinet's capacity to seal off the chamber is evaluated via a cotton ball test. During this test, a highly flammable piece of cotton is held against the outsides of the cabinet and the gap of the door during fire testing. If it does not ignite, the chamber is considered properly sealed.

ION-LINE safety storage cabinets fulfil this condition for longer than 90 minutes, certifying that they safely seal off any fire that occurs in the interior.

3 Certification in accordance with VDMA 24994:2024-08 certified by: European Certification Body (ECB) GmbH, DAkkS accredited as a certification authority in accordance with ISO/IEC 17065



In addition to tests 1 and 2, VDMA 24994:2024-08 describes a fire test with batteries in the cabinet which are experiencing thermal runaway. During thermal runaway, individual battery cells heat up, causing a chain reaction of events such as ignition, outgassing and deflagration. This results in temperatures over 700 °C inside the cabinet, remaining at this level for a longer period of time.

- A worst-case scenario is created during this test, by combining commonly available battery cells¹ into one battery and causing them to undergo thermal runaway by heating them. To successfully pass the test, the overall structure of the cabinet must withstand the complete reaction of the cells, and no flames or fragments may exit the cabinet. The cabinet is assigned type class I if it successfully passes this test.

Note: Conformity with VDMA 24994:2024-08 can only be confirmed by a certificate issued by the ECB. This means that, in addition to successfully completing the test, the cabinet must successfully pass an initial audit of the production facility carried out by the ECB. Annual production audits then ensure an ongoing, high level of product quality.

Type PRO and ULTRA safety storage cabinets have been successfully tested and certified in accordance with VDMA 24994:2024-08.

4 Award of the GS mark certified by: kiwa MPA Dresden GmbH, accredited certification authority in accordance with EN ISO/IEC 17065 (D-ZE-17819-01-00)



The GS test for safety storage cabinets used to charge and store lithium-ion batteries is the most comprehensive testing programme for products of this kind.

In addition to a fire test based on EN 14470-1 with an adjusted maximum temperature increase of 100 K, it also includes a fire test from the inside based on EN 1363-2. Other, application-specific tests are conducted in addition to the fire testing:

- A realistic simulation of waste heat generated during charging and the associated test of exhaust air. In order to prevent the inside of the cabinet from overheating during the intensive use of charging devices, the test simulates the interior of the cabinet when it is fully occupied by heat sources over a period of 10 h.
- Safety-relevant mechanisms, like triggering a door hold-open device and ventilation flaps in case of a fire, are tested thoroughly.
- Mechanical tests of doors/locking mechanism to ensure their durability over more than 80,000 cycles without wear.
- Verification of smoke-tight design over a 90-minute period.

The GS-certified ION-LINE ULTRA meets all of the described properties, and therefore offers the highest level of safety for charging and storing lithium-ion batteries.

¹ Cylindrical NMC 8-1-1, or 9-0.5-0.5 cells with SOC >98% at the start of the test



Need more information?
Please contact our expert team at a location near you!



MANUFACTURER DECLARATION

for the ION-LINE safety storage cabinet models
CORE, PRO and ULTRA

We,

asecos GmbH
Weiherfeldsiedlung 16-18
63584 Gründau,

as a manufacturer of safety storage cabinets for storing and charging lithium-ion batteries, hereby declare:

The safety storage cabinets

Model designation	Usage	Model
CHARGE LOCKER	Charging and storage cabinet	IO90.195.060.L8.WDC
CHARGE UB	Charging and storage cabinet	IO90.078.059.057.U9.S

CORE STORE	Storage cabinet	IO90.195.060.CS.WDC IO90.195.120.CS.WDC
CORE CHARGE	Charging and storage cabinet	IO90.195.060.CC.WDC

PRO STORE	Storage cabinet	IO90.195.120.PS.WDC
PRO CHARGE	Charging and storage cabinet	IO90.195.120.PC.WDC

ULTRA CHARGE	Charging and storage cabinet	IO90.195.120.065.WDC
ULTRA CHARGE	Charging and storage cabinet	IO90.195.120.065.WDEL

have been tested as follows:

1	Fire protection test from outside to inside	
	Type test	in accordance with EN 14470-1
	Test condition	EN 14470-1 Annex A
	Classification Fire resistance	Type 90 / 90 minutes

2	Fire protection test from inside to outside	
	Type test	in compliance with EN 1363-1:2012-10 DIBt draft "Principles for testing and evaluating the fire resistance of fire protection enclosures for distributors for electrical circuit systems – Fires from inside" Last updated: 09/2014
	Test condition	In order to simulate a fire involving lithium-ion rechargeable batteries, the temperature curve was displaced upward by 1.3x.
	Test result	Tests of the different cabinet models verified a certified fire resistance of up to 90 minutes. Therefore, the tested safety storage cabinets offer additional protection in case of a fire from the inside, for instance due to the spontaneous combustion of lithium-ion rechargeable batteries.

Models **PRO | ULTRA**

3a	Fulfilment of the testing requirements for fire resistant storage cabinets in accordance with VDMA 24994		
	Type test	in accordance with VDMA 24994:2024-08	6 Testing process (thermal runaway from the inside)
	Test condition	The fire resistance of the test specimen (safety storage cabinet) was evaluated by triggering a thermal runaway in the test specimen.	
	Test result	Passed, type classification "I"	

additional models **ULTRA**

3b	Fulfilment of the testing requirements for fire resistant storage cabinets in accordance with VDMA 24994		
	Type test	in accordance with VDMA 24994:2024-08	7 Testing process (fire from the outside)
	Test condition	The fire resistance of the cabinet test specimen was determined by heating it up inside a fire chamber. The temperature increase inside the cabinet test specimen did not exceed 100 K over a 90 minute period.	
	Test result	Passed, supplementary type classification "O90"	

4	GS mark awarded based on the principle for testing and certification of safety storage cabinets exclusively for active & passive storage of lithium-ion rechargeable batteries (EK5/AK4 22-01)		
	Type test	Based on the requirements of the Equipment and Product Safety Act (Geräte- und Produktsicherheitsgesetzes (GPSG)) and auxiliary standards (including EN 16121/16122 for testing structural strength and durability)	
	Test condition	see above	
	Test result	GS certification/mark	

Conclusion

Cabinets bearing the model designations CORE, PRO, CHARGE LOCKER and CHARGE UB have been tested in accordance with the latest fire protection technology standards. **Therefore, they meet the structural requirements for fire-resistant (F90), separate compartments and are considered equivalent to such compartments.**

Cabinets bearing the model designations PRO and ULTRA also meet the testing requirements for fire-resistant storage cabinets in accordance with VDMA 24994. ULTRA models are also GS certified.

Gründau, April 2025

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