

Manufacturer's Declaration

We,

DÜPERTHAL Sicherheitstechnik GmbH & Co. KG
 Frankenstraße 3
 63791 Karlstein

hereby declare, that all BATTERY line safety cabinets for storing and charging lithium-ion batteries have been type-tested or tested according to the following criteria.

Fire protection from outside to inside:	
Type testing in cooperation with IBMB Braunschweig and ift Rosenheim (Accredited institutes for building materials, fire protection and certification)	
Test standard:	DIN EN 14470-1
Description of the test:	For the fire protection type test in accordance with DIN EN 14470-1, the safety cabinet is exposed to flames in a test furnace for a period of at least 90 minutes using the standard time-temperature curve according to DIN EN 1363-1.
Scope of testing:	<ul style="list-style-type: none"> - Fire resistance test - Test of automatic door closure in case of fire - Load capacity test in case of fire - Test of the bottom tray after a fire
Test results:	Fire resistance: 90 minutes
	Classification: Type 90

Fire protection from inside to outside:	
Fire tests in collaboration with Fraunhofer ICT (Research institute in the fields of chemical processes, energy and explosives technology)	
(1) Testing with high-capacity batteries and small capacities of individual cells.	
Description of the test:	The BATTERY line safety cabinet was loaded with two batteries, and a thermal runaway was then triggered by means of a heating element.
Purpose of the test:	The objective was to show that thermal runaway is limited to the safety cabinet and the respective propagation area and that the burning batteries can safely react inside.
Capacity of the batteries:	2x 468 Wh
Cell capacity:	<3 Ah
Type of battery cells:	18650 (cylindrical)
Test results:	<ul style="list-style-type: none"> - The explosive burning of the batteries was limited to the propagation area. - Propagation of the thermal runaway to neighbouring propagation areas was prevented. - No particles escaped during the test. - The doors were automatically locked by the backdraft protection system.

(2) Testing with high-capacity battery cells	
Description of the test:	The BATTERY line safety cabinet was loaded with four large individual cells from the automotive sector, distributed across different storage areas. A thermal runaway was then triggered in one cell by means of nail penetration.
Purpose of the test:	The objective was to show that the safety cabinet can also withstand thermal runaway of large individual battery cells and that thermal runaway can be limited to the respective propagation area. Furthermore, it was to be demonstrated that a larger storage distance between the batteries minimises the risk of propagation.
Gas analytics:	Next to the combustion of the battery cells, the escaping flue gases were examined qualitatively and quantitatively using various analysis methods.
Capacity of the batteries:	4x ~205 Wh
Cell capacity:	54 Ah
Type of battery cells:	Prismatic
Test results:	<ul style="list-style-type: none"> - The explosive burning of the batteries was limited to the propagation area. - Propagation of the thermal runaway to neighbouring propagation areas was prevented. - The doors were automatically locked by the backdraft protection system. - The escaping smoke gases were kept to a minimum, allowing the danger zone to be safely evacuated.
Fire test in collaboration with VoltaLabs GmbH (qualified testing laboratory for tests and inspections on lithium-ion batteries)	
(3) Test with high-capacity battery cells	
Description of the test:	The BATTERY line safety cabinet was loaded with 4 battery boxes and a thermal runaway was then triggered by means of a heating element.
Purpose of the test:	The objective was to show that thermal runaway is limited to the safety cabinet and the respective propagation area and that the batteries can safely discharge inside.
Capacity of the batteries:	4x 1030 Wh
Cell capacity:	5 Ah
Type of battery cells:	21700 (cylindrical)
Test results:	<ul style="list-style-type: none"> - The explosive burning of the batteries was limited to the propagation area. - Propagation of the thermal runaway to neighbouring propagation areas was prevented. - Surface temperature of the cabinet surfaces < 150K - Temperature of the escaping gases < 150K - No escaping particles during the test - The doors were automatically locked by the backdraft protection.

Stability and Durability:	
Tests in cooperation with the TÜV Süd Product Service (Accredited testing house in the fields of safety, quality and user-friendliness)	
Test standard:	DIN EN 16121 and DIN EN 16122
Test level:	Min. test level 2
Scope of testing:	<ul style="list-style-type: none">- Testing the stability of the security cabinet- Testing the load capacity of the security cabinet and its fixtures- Testing the durability of the doors (min. 90,000 test cycles)

This means that the BATTERY line safety cabinets comply with the latest fire protection technology standards. As type-tested Type 90 safety cabinets, they meet the structural requirements to be considered a separate fire compartment.

In addition, the BATTERY station line safety cabinets meet the following requirements:

Electrical equipment:	
Tests in cooperation with the TÜV Süd Product Service (Accredited testing house in the fields of safety, quality and user-friendliness)	
Test standard:	DIN EN IEC 61439-2
Scope of testing:	<ul style="list-style-type: none">- Testing electrical safety- Testing of the entire electrical system

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DÜPERTHAL Sicherheitstechnik GmbH & Co. KG



Franz-Josef Hagen
Managing Director