

PyroBubbles® - LIONGUARD - Box-in-Box

Solutions for collection, storage and transport of lithium-ion batteries

The security system PyroBubbles-LIONGUARD is designed for safe handling of damaged lithium-ion batteries. The inner boxes meet the standards for collection and storage of lithium ion batteries. The batteries are padded with special packing cushions, which come in two sizes. These cushions are filled with PyroBubbles to ensure a high level of safety. For the transport of lithium ion batteries the inner boxes are put into a special carrier box. The combined safety measures of the inner box and the carrier box meet the highest standards. The carrier box is a special container belonging to packing group I, two separate compartments are isolated from each other and the outer casing via a layer of PyroBubbles. The components are carefully matched, even the resulting heat from a thermal runaway does not endanger the surroundings of the container. The responsible national authority in Germany, the Federal Institute for Materials Research and Testing (BAM) has already recognized the permissibility of this packing method.

	Outside L x B x H (mm)	2 usable compartments, inside L x B x H (mm)	Volume (l)	Net weight (kg)	Max. gross weight (kg)
Carrier box	1190 x 1000 x 1478	608 x 408 x 907	225	150	818
Inner box, small	595 x 390 x 380	488 x 288 x 314	44	4	44
Inner box, big	595 x 390 x 810	488 x 288 x 742	104	15	95

The carrier box has two compartments with inner measures of 608 x 408 x 907mm each. The compartments can be loaded as follows:

Variant	Quantity inner boxes small	Quantity inner boxes big
1	4	0
2	2	1
3	0	2



Carrier box



Box with inlay and compartments



Inner box, small

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The compartments are divided via permanent, PyroBubbles filled layers. The thickness of the layers is 200mm to the base plate and 120mm to the side panels. Between the compartments is a permanent layer of 100mm PyroBubbles. Block cushions, which are located above and under the inner boxes protect the contents from vibrations. If the compartment is loaded with two small inner boxes, a small block cushion is arranged between those boxes. The 200mm layer above the compartments consists of four big block cushions. The required hoisting gear for loading of the inner boxes is included.

	Outer (L x B x H, mm)	Volume (l)	weight (kg)
Packing cushion, small	240 x 90 x 30	0,65	0,18
Packing cushion, big	500 x 300 x 30	4,5	1,1
Block cushion, small	610 x 410 x 40	10	2,6
Block cushion, big	880 x 590 x 100	52	12

Carrier box:

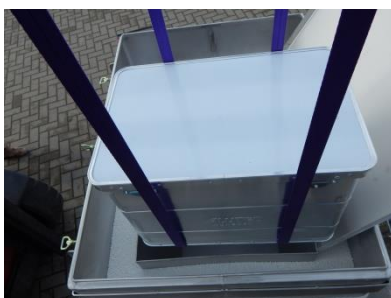
- Clamps, circumferential rubber gaskets, pressure relief valves/bursting disc
- Made of galvanized steel (DIN 50976)
- Easy handling by means of pallet truck, forklift or crane
- Filling opening = container cross-section
- Approved transport container packing group I for lithium-ion-batteries up to 340kg
- Packing concept is eligible for admission by the Federal Institute for Materials Research and Testing (BAM)

Inner boxes:

- Aluminum boxes with powder-coated baskets
- Permanent PyroBubbles layer (to the sides and bottom)
- Packing cushions with PyroBubbles filling for adequate padding of the batteries
- Hoisting gear for loading of the boxes



Big block cushion cover



Loading of the small inner box



Small block cushion cover



Stowage of the hoisting gear

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