Nordisk FireShield+

LI-ION BATTERY TEST SETUP

The test was set up in accordance to ISO 19281, chapter 6.3, but with the adaptation to Li-ion battery load.

5000 LI-ION BATTERIES

The container was filled with 10 boxes containing 500 batteries each. One of the boxes was positioned next to the door at the lower outboard section to simulate a worst case situation.

MATERIAL SELECTION

The FireShield ULDs are a result of years of dedicated research in cargo fires and fire protection technology. Container panels and door material have to pass various mechanical test as well as flame penetration test and vertical burn test.

Nordisk's FireShield+ is currently available in AKE design.

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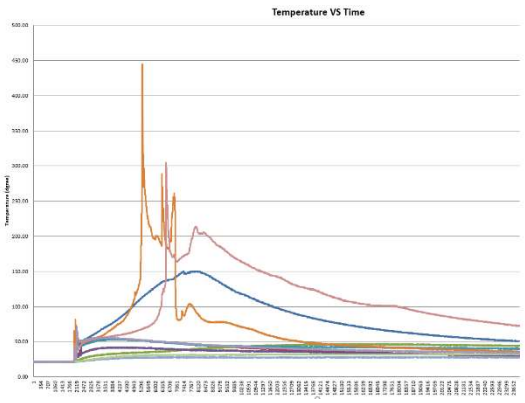
Nordisk AKE FireShield+ container passed Li-ion battery fire tests

The Nordisk FireShield+ AKE container successfully passed a full-scale fire test with 5000 lithium-ion-batteries (type 18650, UN3480). The container resisted the fire for the duration of the test (>6 hours) and there was no flame penetration at any point in time.

Effective protection against Li-ion fires in cargo

- The graphs shows how the ignition source force the surrounding batteries into thermal runaway, causing a sudden increase in battery temperature and subsequent electrolyte breakdown.
- During the following hours several small fires develop but self-extinguish after a short time as the FireShield door effectively vents out CO and CO2 gasses without allowing new oxygen in.
- As the temperature inside the container drops, the container design allows small amount of new oxygen in, causing new small class A fires to erupt, which again will self-extinguish. This cycle will repeat until the fire loses its active energy and dies out.



The ignition sources were active during the entire test to simulate a worst case scenario

Nordisk FireShield+ is tested according to ISO 19281 requirements and upcoming SAE AS8992™ standard, but adapted to Li-ion battery load.

Nordisk
Durable by design