DEFENSOR-Flex®

BATTERY PROTECTION

DEFENSOR-Flex® ML

The **DEFENSOR-Flex®** multilayers consist of customer-oriented tailor-made combinations of high-tech needle mats, fabrics, high-performance plastics, mica and/or aluminium foils and self-adhesive finishes

As the basis of the **DEFENSOR-Flex®** multilayers, needle mats are used, which are manufactured in a modern manufacturing process, without the addition of binders, by purely mechanical needling.
Alternative high-performance fabrics can be used for producing thinner solutions than with needle mats.

According to WHO guidelines, the fibres used are considered harmless to health as they are not respirable with a diameter of ≥ 6 µm. **DEFENSOR-Flex®** multilayers offer extreme fire protection against the special features of lithium-ion fires. They also have very good cold resistance.

Applications of DEFENSOR-Flex® multilayers:

- ✓ Fire barrier for thermal runaway of lithium-ion batteries
- ✓ High electrical resistance against electric arcs and lightbows
- ✓ Protection of vehicle occupants in the event of an accident against possible fires
- ✓ Protection of adjacent battery cells and modules and delay the thermal runaway propagation of lithium-ion batteries
- ✓ Considering adequate amount and composition of material, we can help stop thermal propagation
- ✓ Provide protection under battery cells and on the exterior walls from fires on the road or when transporting vehicles.
- ✓ Allowing pressure relief in the event of battery explosions, reducing the escape of particles and highly toxic gases prevent the spread of flames and sparks.
- ✓ We can reduce the risk to use when transporting defective batteries in special transport packaging

Delivery forms:

- stamped parts
- panel cuts
- rolls
- all styles available with pressure sensitive adhesive
- all ML are available with synthetic MICA on request

SAINT-GOBAIN

DEFENSOR-Flex®

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DEFENSOR-Flex® applications in the battery

1

C2C • fire protection and compression pad

2

Particle and lid protection for Battery cover and housing

3

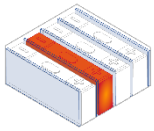
Sealing and fire-protection at module level; BMS and outside walls

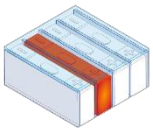
4

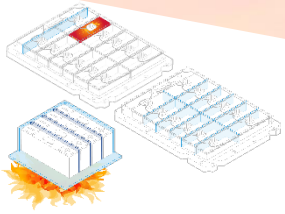
Filter material for particles, flames and gases

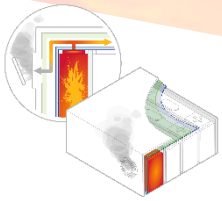
5

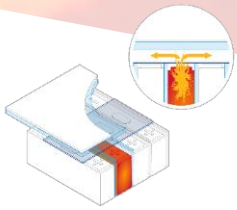
Venting Shield











Use-Case	Style	Core design	Grammage [approx. g/sqm]	Thickness [mm]	Dielectric strength [kV]	max. Temp. [°C]
1	ML 17	nonwoven	930	4,3	>16	600-700
1	ML 24	nonwoven	715	3,4	>9	1.000
1	ML 25	nonwoven	1.170	5,7	>10	1.000
1	ML 51	nonwoven	1.410	6,0	>10	1.000
2	ML 31	fabric	1.215	1,2	>10	1.000
2	ML 38	fabric	1.125	1,1	>10	1.000
2	ML 39	fabric	1.555	1,7	>12	1.000
2	ML 58	fabric	1.115	1,2	>10	1.000
2 / 3	ML 28	nonwoven, stichbonded	1.230	3,8	>12	1.000
2 / 3	ML 29	nonwoven, stichbonded	1.600	5,7	>14	1.000
2 / 3	ML 54	nonwoven, stichbonded	1.310	3,8	>12	1.000
2 / 3	M01	nonwoven, stichbonded	2.520	7,9	>7	800
2 / 3	M03	nonwoven, stichbonded	2.595	8,0	>7	1.000
2 / 3	ML 56	nonwoven, stichbonded	1.055	3,6	>9	1.000
4	ML-Y	nonwoven	1.050	5,7	>12	400-650
4	ML-AC	nonwoven	2.000	14,0	>10	600-700
5	VS01	fabric	450	0,4	1,75	600-700

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