



## DEFENSOR-Flex® ML-38

ML38W • 47MLE28023-99D  
IMDS available on request

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

As the basis of the **DEFENSOR-Flex®** multilayers of the HKO Heat Protection Group, 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  $\geq 6$   $\mu\text{m}$ . **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
- 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
- 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 highly toxic gases and prevent the spread of flames and sparks.
- Use when transporting defective batteries in special transport packaging

**DEFENSOR-Flex®** ML-38 can be delivered in rolls or customized as make-to-order-product, designed to functional requirements.

Also available as **DEFENSOR-Flex®** ML-38-PSA, one side pressure sensitive adhesive.

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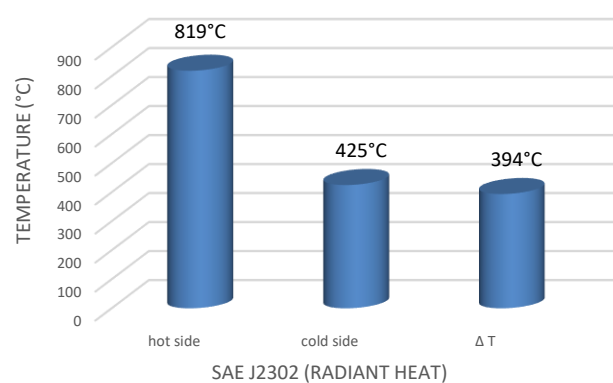
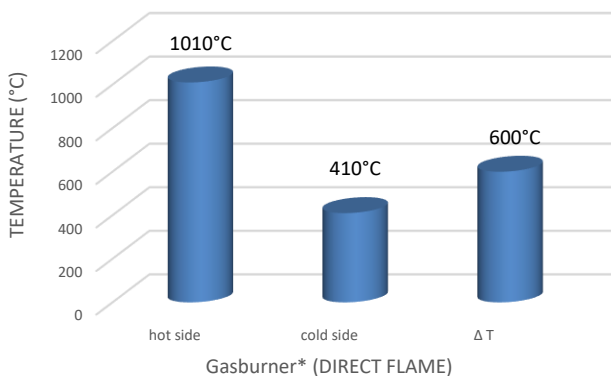
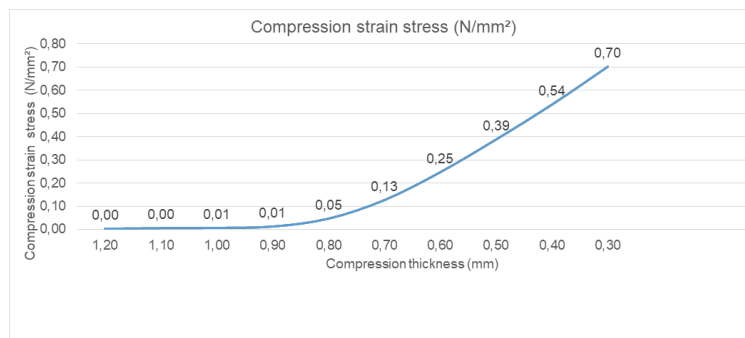
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|   |              |               |
|---|--------------|---------------|
| functional layers                                   | 3            |               |
| width [mm]  | max 1.000    |               |
| construction  | balanced     |               |
| <b>THERMO-E-Glass fabric TG650/9LHD vermiculite</b> | E-Glass      |               |
| <b>treatment</b>                                    |              |               |
| high temperature lamination                         |              |               |
| both sides scrim reinforced mica                    |              |               |
| operating temperature [°C]                          | -40 to 1.000 |               |
| total area weight [g/sqm]                           | 1.125        |               |
| thickness [mm]                                      | 1,1          |               |
| Electrical resistance [kV]                          | IEC 60243-1  | > 10          |
| CTI [V] (classification)                            | IEC 60112    | 600 (class I) |

REACH / RoHS compliant

## Thermal Performance:

| Tested according  | HKO FLAME TORCH TEST | SAE J2302             |
|-------------------|----------------------|-----------------------|
|                   | Gasburner            | heat source hot plate |
|                   | hot side [°C]        | hot side              |
|                   | 1.010°C              | 819°C                 |
|                   | cold side [°C]       | cold side             |
|                   | 410°C                | 425°C                 |
|                   | ΔT [°K]              | ΔT                    |
|                   | 600°C                | 394°C                 |
| burning behaviour | FMVSS-302            | DNI                   |
|                   | UL 94 V              | 0                     |



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### Remark:

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