



**DEFENSOR-Flex®**

## DEFENSOR-Flex® ML-54 /ML-54W

ML54 • 9U15E54007

ML54W • 9U15E54009

IMDS available on request

The DEFENSOR-Flex® multilayers can consist of a 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 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-54 and ML-54W can be delivered in rolls or customized as make-to-order-product, designed to functional requirements.

Also available as DEFENSOR-Flex® ML-54-PSA or ML-54W-PSA, one side pressure sensitive adhesive.



**SAINT-GOBAIN**

# ML-54 / ML-54W

functional layers	3
width [mm]	max 1.000
construction	balanced
HAKOTHERM®-1200-mat	Silica
high temperature lamination	
both sides scrim reinforced mica	
operating temperature [°C]	-40 to 1.000
total area weight [g/sqm]	1.310
thickness [mm]	3,8

Specific heat [J/g°K]	at 20°C	0,764
	at 200°C	0,958
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

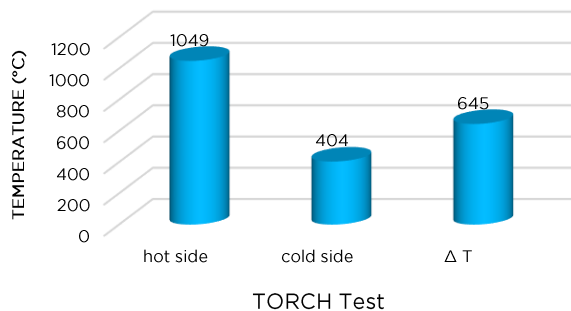
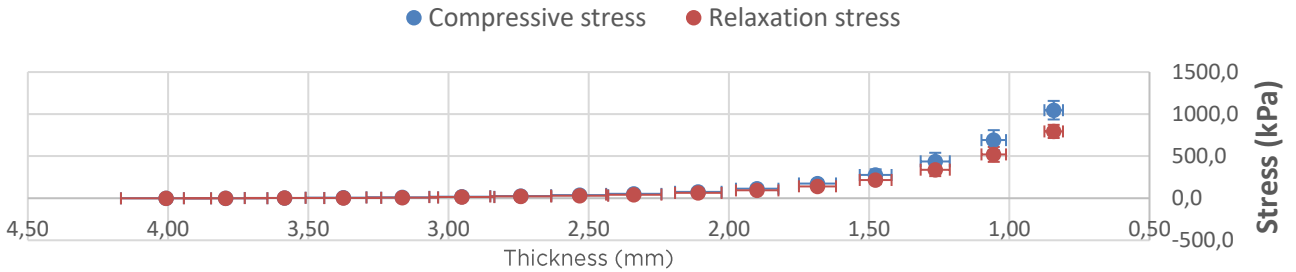
hot side [°C]	1010
cold side [°C]	605
Δ T [°K]	405

burning behaviour

FMVSS-302	SE
UL 94 V	0

Thermal conductivity (GHP):

t in °C	50	100	200	300	400	500	600	700	800	900	1000
λ W/(m°K)	0,052	0,061	0,081	0,104	0,131	0,163	0,198	0,238	0,282	0,331	0,385



## TRUST THE EXPERTS | HKO

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