



# THE GUND COMPANY

MANUFACTURERS & FABRICATORS OF ENGINEERED MATERIAL SOLUTIONS

## G-FLEX™ FB Para-Aramid Flame Barrier

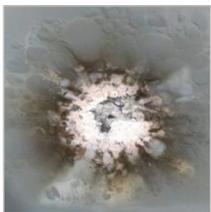
G-Flex™ FB is a coated para-aramid flame barrier used in high-temperature applications such as electric vehicles and energy storage. The low thermal conductivity of makes it ideal for thermal runaway mitigation while keeping a low profile. Its thin and flexible material property allows application in areas within a pack, module, and cell. In situations where temperatures reach over 1000°C, G-Flex™ FB is a thermal barrier solution designed with the effects of a thermal event in mind.

		ASTM/IEC	Units	TYPICAL VALUES
PROPERTIES		Test Method		G-Flex™ FB
PHYSICAL	Density		kg/m <sup>2</sup>	0.7±0.2
	Thickness		mm	0.7±0.2
MECHANICAL	Tensile Strength	ASTM D412-16	N	273
	Tensile Strength: 500 ≥10 min.	ASTM D412-15	MPa	145
	Tensile Strength: 700 ≥10 min.	ASTM D412-15	MPa	168
	Tensile Strength: 900 ≥10 min.	ASTM D412-15	MPa	144
	Tensile Strength: 1,000 ≥10 min.	ASTM D412-15	MPa	145
	Right-angle Tear Strength	ASTM D412-15	KN/m	101
	Tear Strength (thermal aging): 150°C/1000h	ASTM D624-00(2012)	N/mm	154.5
	Tear Strength (moisture aging): 85°C/93% RH/1000h	ASTM D624-00(2012)	N/mm	78.3
Tear Strength (high and low temperature aging): 85°C/-40°C/0.5h/500 cycles	ASTM D624-00(2012)	N/mm	126.6	
THERMAL	Back-side Heat Conduction Temperature	1,000°C/10 min.	°C	≤400
	Flame resistance	UL 94		V0

### FLAME BARRIER COMBUSTION TEST

The materials were tested at a 1,000°C flame for 15 minutes with no breakage.

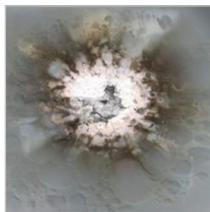
PART	Test Temp. (°C)	Test Period (min.)	Thickness (mm)	Base Weight (kg/m <sup>2</sup> )
Sample 01	1,000	15	0.70	0.76
Sample 02	1,000	15	0.70	0.80



SAMPLE 1 FLAME SIDE



SAMPLE 1 BACK SIDE



SAMPLE 2 FLAME SIDE



SAMPLE 2 BACK SIDE

## G-FLEX FB

The Gund Company custom fabricates insulation materials to the exact specifications and drawings specified by our customers. We offer our customers the proper product for their specific application. A variety of dimensions and diameter sizes are available. Product colors vary according to material type.

The data supplied are typical values. They are not to be considered specification values. All of the information, suggestions, and recommendations about these properties and uses of the products herein are based on tests and data believed to be accurate; however, the final determination regarding the suitability of any material described herein for the contemplated application, the manner of such use, and whether the use infringes any patents is the sole responsibility of the user. There is no warranty - expressed or implied - including, without limitation, warranties of merchantability or fitness for a particular purpose. Under no circumstances shall we be liable for incidental or consequential loss or damage.



# THE GUND COMPANY

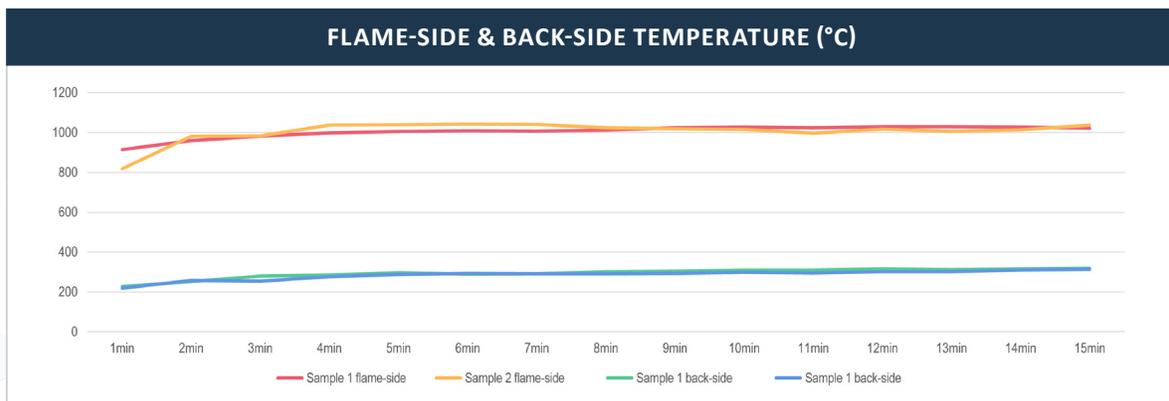
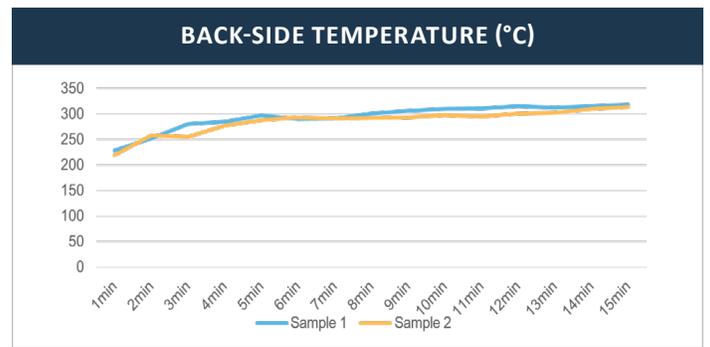
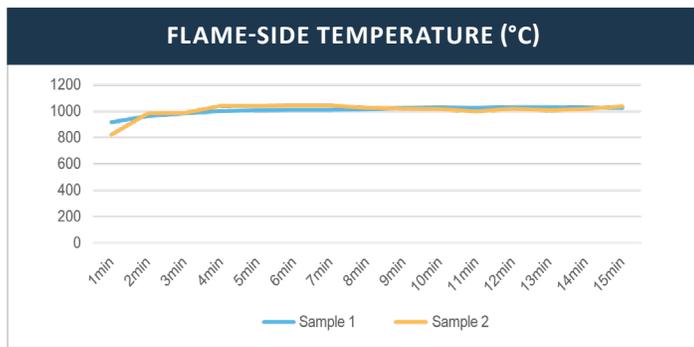
MANUFACTURERS & FABRICATORS OF ENGINEERED MATERIAL SOLUTIONS

## G-FLEX™ FB Para-Aramid Flame Barrier

### FLAME BARRIER COMBUSTION TEST RESULTS

The materials show good heat resistance after 1,000°C 15-minute tests. G-Flex™ FB did not break and the back-side temperature was lower than 400°C.

		Time by Minutes/Back Temperature in °C Units														
PART	Condition	1 min.	2 min.	3 min.	4 min.	5 min.	6 min.	7 min.	8 min.	9 min.	10 min.	11 min.	12 min.	13 min.	14 min.	15 min.
Sample 01	Flame Temp./°C	915	961	982	999	1006	1,009	1,008	1,012	1,024	1,028	1,025	1,029	1,029	1,028	1,022
Sample 01	Back-face Temp./°C	228	252	280	285	297	290	291	301	306	310	311	315	312	315	318
Sample 02	Flame Temp./°C	819	982	984	1,038	1,040	1,043	1,041	1,024	1,019	1,016	997	1,018	1,006	1,014	1,037
Sample 02	Back-face Temp./°C	219	258	255	277	288	293	291	292	293	298	295	301	302	310	314



The Gund Company custom fabricates insulation materials to the exact specifications and drawings specified by our customers. We offer our customers the proper product for their specific application. A variety of dimensions and diameter sizes are available. Product colors vary according to material type.



The data supplied are typical values. They are not to be considered specification values. All of the information, suggestions, and recommendations about these properties and uses of the products herein are based on tests and data believed to be accurate; however, the final determination regarding the suitability of any material described herein for the contemplated application, the manner of such use, and whether the use infringes any patents is the sole responsibility of the user. There is no warranty - expressed or implied - including, without limitation, warranties of merchantability or fitness for a particular purpose. Under no circumstances shall we be liable for incidental or consequential loss or damage.