

# TECHNICAL SPECIFICATIONS



S. NO.	PROPERTIES	TEST STANDARD, EN 438: 2016	UNIT	SPECIFIED VALUES	GRENLAM VALUES
1	Classification	EN 438-6- 4		EXTERIOR, SEVERE USE FLAME RETARDANT GRADE, EDF	
<b>PHYSICAL &amp; DIMENSIONAL PROPERTIES</b>					
2	Nominal Thickness		mm		6.0
3	Thickness Variation	EN 438-2 – 5	mm	6.0 ± 0.40	6.0 ± 0.30
4	Length and width Variation	EN 438-2 – 6	mm	+10mm /-0mm	+5mm /-0mm
5	Edges Straightness	EN 438-2 – 7	mm/M	1.5 (max)	≤ 1
6	Edges Squareness	EN 438-2 – 8	mm/M	1.5 (max)	Complies
7	Flatness	EN 438-2 – 9	mm/M	5.0 (max)	Complies
8	Density	EN ISO 1183 -1:2004	g/cm <sup>3</sup>	1.35	1.38
9	Dimensional Stability at Elevated Temperature		EN 438-2 -17		
	Longitudinal Direction		%	0.30 (max.)	0.18
	Transverse Direction		%	0.60 (max)	0.38
<b>MECHANICAL PROPERTIES</b>					
10	Resistance to wet conditions,	EN 438-2 : 15			
	Increase in mass		%	8.0 (max)	4.1
	Surface Rating		Rating	4 (min)	5
	Edge Rating		Rating	3 (min)	3
11	Resistance to climatic shock	EN 438-2 : 19	Rating	Appearance -4 (min)	4
			Index	D <sub>s</sub> – 0.80 (min)	≥ 0.95
			Index	D <sub>m</sub> – 0.80 (min)	≥ 0.95
12	Resistance to Impact by Large Diameter Ball				
	Drop Height	EN 438-2 -22	mm	1800	2000
	Diameter of Indentation		mm	10 (max)	7
13	Resistance to Crazeing	EN 438-2 -24	Class	Not worse than 4	5
14	Flexural Strength	EN ISO 178:2003	Mpa	80 (min)	100
15	Flexural Modulus	EN ISO 178:2003	Mpa	9000(min)	10700
16	Thermal Conductivity	EN 12524:2000	W/M <sup>2</sup> K	No requirement	0.24
17	Resistance to fixing (Screw pull out strength)	ISO 13894-1; 9	N	2000 (min)	≥2000
<b>SURFACE PROPERTIES</b>					
18	Resistance to Scratching	EN 438-2 -25	N	3.0 (min)	> 3.0
19	Resistant to wet heat (100°C )	EN 438 -2-18	Class	4 (min)	5
20	Resistance to Water Vapour	EN 438-2-14	Class	Not worse than 4	5
21	Resistance to Dry Heat at 160° C	EN 438-2 -16	Class	Not worse than 4	5
22	Resistance to Surface Wear (Initial Point)	EN 438-2 -10	Rev.	150 (min)	200
23	Resistance to staining	EN 438-2 -26	Class		
	Group 1 & 2			5	5
	Group 3			4	≥ 4
24	Resistance to UV Light, after 1500 hours exposure	EN 438-2-28	Rating	Grey Scale contrast-3 (min) Appearance- 4 (min.)	3~4 4~5
25	Resistance to artificial weathering including light fastness, after 650 MJ/M <sup>2</sup> Radiant exposure	EN 438-2-29	Rating	Grey Scale contrast-3 (min) Appearance- 4 (min.)	3~4 4~5
<b>FIRE PERFORMANCE</b>					
26	Reaction to Fire	EN 13501-1	Euroclass	B-s2, d0	B-s1, d0
27	Calorific Value	ISO 1716: 2010	MJ/kg	19.91 (max)	19.88
<b>HEALTH CHARACTERISTICS</b>					
28	Anti-bacterial Efficacy & activity	JIS 2801-2012			
	% Reduction in 24 hours		%	95.0 (min)	99.99
	Activity after 24 hours		Log Reduction	2.0 (min)	Exceeds
29	Anti-Fungus Efficacy	ASTM G-21-2015			
	Growth after 28 days		Class	1	0 ( No Growth)

**CLASS (RATING) :** 1 = Surface Damage 2 = Severe appearance alteration  
3 = Moderate Change 4 = Slight change visible from certain angle 5 = No Change

**Bacteria Tested:** 1. Pseudomonas Aeruginosa, 2. Enterococcus Faecalis, 3. Candida Albicans, 4. Pseudomonas Aeruginosa, 5. Escherichia Coli, 6. Klebsiella Pneumoniae, 7. MRSA (Methicillin Resistant Staphylococcus Aureus), 8. Salmonella Enterica

**Fungus Tested:** 1. Aspergillus niger, 2. Penicillium funiculosum, 3. Gliocladium virens, 4. Chaetobium globosum 5. Aurobasidium pullulans

**Note:** Greenlam products are manufactured thoroughly to standards. The values given above are to the best of knowledge but without liability/warranty, expressed or implied.



**EN  
438-2**