

S-Fire Technical Data Sheet (1) :

Characteristics	Test Method	Tested Value	Required Value
Thickness ⁽⁸⁾	EN 438-2 section 5	According to the required thickness	$2.0 \leq t < 3.0 \text{ mm} : \pm 0.20 \text{ mm}$ $3.0 \leq t < 5.0 \text{ mm} : \pm 0.3 \text{ mm}$ $5.0 \leq t < 8.0 \text{ mm} : \pm 0.4 \text{ mm}$ $8.0 \leq t < 12.0 \text{ mm} : \pm 0.5 \text{ mm}$ $12.0 \leq t < 16.0 \text{ mm} : \pm 0.6 \text{ mm}$ $16.0 \leq t < 20.0 \text{ mm} : \pm 0.7 \text{ mm}$ $20.0 \leq t < 25.0 \text{ mm} : \pm 0.8 \text{ mm}$ $25.0 \leq t : \text{According To Agreement customer / producer}$
Density	ISO 1183 - 1	1.4 gr/cm ³	Min. 1.35 gr/cm ³
Wear Resistance	EN 438-2 section 10 VGF ⁽¹⁾ , HGF ⁽²⁾ , CGF ⁽³⁾	IP = 185 Rev. Wear Value = 485 Rev.	Initial Point $\geq$ 150 Rev. Wear Value $\geq$ 350 Rev.
Scratch Resistance	EN 438-2 section 25 VGF, HGF, CGF	3 N 4 N	Flat Surface Min. 2 N Textured Surface Min. 3 N
Impact Resistance	EN 438-2 Big Ball section 21 VGF, HGF, CGF $2.0 \leq t < 6.0 \text{ mm}$ $t \geq 6.0 \text{ mm}$	No Crack, 4.5 mm No Crack, 3.5 mm	1400 mm height : no crack, 10 mm Max. 1800 mm height : no crack, 10 mm Max.
Resistance To Crazing (20 Hours @ 80°C)	EN 438-2 section 24 VGF, HGF, CGF	Level 4	Min. level 4

S-Fire Technical Data Sheet (1) :

Characteristics	Test Method	Tested Value	Required Value
Resistance to Dry Heat at 180°C	EN 438-2 section 16 VGF , HGF , CGF		
	Glossy Surface Finish	Level 4	Min. level 3
	Other Surface Finish	Level 5	Min. level 4
Resistance to Water Vapor	EN 438-2 section 14 VGF , HGF , CGF		
	Glossy Surface Finish	Level 4	Min. level 3
	Other Surface Finish	Level 5	Min. level 4
Resistance to Boiling Water	EN 438-2 section 12 VGF , HGF , CGF		
	$2.0 \leq t < 5.0$ mm	2.2% 3.1%	Max. 7% in weight Max. 9% in thickness
	$t \geq 5.0$ mm	0.55% 0.65%	Max. 3% in weight Max. 6% in thickness
	Glossy Surface Finish	Level 4	Min. Level 3
	Other Surface Finish	Level 5	Min. level 4
Büyük Çaplı Bilye ile Darbe Mukavemeti	EN 438-2		
	Büyük Bilye bölüm 21 VGF , HGF , CGF		
	$2.0 \leq t < 6.0$ mm	Çatlama yok, 4.5 mm	1400 mm yükseklik : çatlama yok, 10 mm Max.
	$t \geq 6.0$ mm	Çatlama yok, 3.5 mm	1800 mm yükseklik : çatlama yok , 10 mm Max.

S-Fire Technical Data Sheet (2) :

Characteristics	Test Method	Tested Value	Required Value
Resistance to Cigarette Burn	EN 438-2 section 30 VGF , HGF , CGF	Level 4	Min. level 3
Resistance to Staining	EN 438-2 section 26 VGF , HGF , CGF		
	Group 1 + 2	Level 5	Min. level 5
	Group 3	Level 5	Min. level 4
Flatness	EN 438-2 section 9 VGF , HGF , CGF		
	$2.0 \leq t < 6.0$ mm	1.23 mm	Max. 8 mm / 1 M length
	$6.0 \leq t < 10.0$ mm	1.46 mm	Max. 5 mm / 1 M length
	$t \geq 10.0$ mm	1.87 mm	Max. 3 mm / 1 M length
Light fastness	EN 438-2 section 27 VGF , HGF , CGF Grey Scale	Level 5	Min. level 4
High Temp. stability 70°C	EN 438-2 section 17 VGF , HGF , CGF		
	$2.0 \leq t \leq 5.0$ mm	L : 0.22 mm W : 0.35 mm	L : Max. 0.4 mm W : Max. 0.8 mm
	$t \geq 5.0$ mm	L : 0.18 mm W : 0.23 mm	L : Max. 0.3 mm W : Max. 0.6 mm
Tensile Strength	EN ISO 527 – 2 CGF	85 MPa	Min. 60 MPa

S-Fire Technical Data Sheet (2) :

Characteristics	Test method	Tested Value	Required Value
Flexural Strength	EN ISO 178 CGF	110.7 MPa	Min. 80 MPa
Flexural Modulus	EN ISO 178 CGF	9854 MPa	Min. 9000 MPa
Coefficient Of Linear Thermal Expansion (COTE)	ASTM D696-08 ⁽³⁾ CGF	 6.0×10^{-6} mm / mm °c	---
Total Volatile Organic Compound Emission	ASTM D5116 CGF	 < 0.010 mg/m ² /hr	< 0.5 mg/m ² /hr
Electrical Resistance Rs (100v) RH = 15% + 60% Rg (100v) RH = 15% + 60%	 DIN EN 61340 -5-1&2 (2001)	 Rs and Rg > 1 x 10 ⁹ Ω	---

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S-Fire Technical Data Sheet (3) :

Characteristics	Test Method	Tested Value	Required Value
Fire Classification	EN 13501-1		
	3.0 ≤ t < 5.9 mm	B S2 d0 TS 40945 (9.1.2009)	B S2 d0 B S2 d0
	6.0 ≤ t < 25.0 mm	B S1 d0 ERA – 14 – 095 (22.10.2014)	B S2 d0
	t ≥ 0.6 mm(4) HPL HGF/VGF	B S1 d0	C S2 d0
	ASTM E 84 – 10	Class A	Class A
	BS 476 Part 7 : 1997	Class 1	Class 1
	DIN 5510-2:2009-05		
	0.8 mm	S4 ; SR2 ; ST2	--
	1.2 mm	S2 ; SR2 ; ST2	--
	NF P 92-501		
	6 - 10 mm	M1	M1
	GOST⁽⁵⁾		
	t ≥ 6 mm(6)		
	30244-94 Combustibility	G1	---
	30402-96 Critical areal Heat Flow Density	B2	---
	12.1.044-2018 Smoke Development Index	117.5 m2/Kg	---
	12.1.044-018 Toxicity Index	41.1 g/m2	---
	GOST 31251 cl.10	K0	---

S-Fire Teknik Data Bilgileri : (3)

Özellikler	Test Metodu	Test Edilen Değer	İstenilen Değer
Fire Classification	GOST 31251 cl.10.1a	N.E. ⁽⁷⁾	---
	GOST 31251 cl.10.1b	N.E.	---

S-Fire Technical Data Sheet (4) :

Characteristics	Test method	Tested Value	Required Value
Fire Classification	GOST⁽⁹⁾		
	GOST 31251 cl.10.1c	N.E.	---
	GOST 31251 cl.10.1d	N.E.	---
Smoke Density and Toxicity	CEN/TS 45545-2-2010		
	1.2 mm	R1 ; HL2	--
	4 mm	R1/R7 ; HL1-HL2-HL3	--
	8 mm	R1 ; HL2	
Flammability of interior materials in passenger cars , Multipurpose Passenger Vehicles, Trucks and busses according to FMVSS 302 (USA) CMVSS 302 (Canada)	Horizontal Burning rate Test acc. To 95/28/EC Annex IV and ECE-R 118.01 Annex VI		
	t ≥ 2.5 mm	Horizontal burning rate ≤ 0 mm/min	Horizontal burning rate Max. 100 mm/min
	Drop rate test acc. To 95/28/EC Annex V and ECE-R 118.01 Annex VII		
	t ≥ 2.5 mm	Material has not dropped and cotton wool is not inflamed	Material will not drop and cotton wool will not inflamed

S-Fire Technical Data Sheet (4) :

Characteristics	Test method	Tested Value	Required Value
Burning Behavior and / or the capability to repel fuel or lubricant of materials used in the interior construction With regard to directive / regulation (EC/ EU) / Regulation No. ECE-R118 Part II Taking into consideration amendment No. 02 , Supplement 03	Horizontal Burning rate Test acc. To ECE-R 118.02 Annex 6 FMVSS 302 (USA) CMVSS 302 (Canada) $t \geq 6 \text{ mm}$	Horizontal burning rate 0 mm/min	Horizontal burning rate Max. 100 mm/min
Burning Behavior and / or the capability to repel fuel or lubricant of materials used in the interior construction With regard to directive / regulation (EC/ EU) / Regulation No. ECE-R118 Part II Taking into consideration amendment No. 02 , Supplement 03	Melting Behavior Test acc. To ECE-R 118.02 Annex 7 $t \geq 6 \text{ mm}$	Material has not dropped and cotton wool is not inflamed	-- Material will not drop and cotton wool will not inflamed

S-Fire Technical Data Sheet (5) :

Characteristics	Test Method	Tested Value	Required Value
Burning Behavior and / or the capability to repel fuel or lubricant of materials used in the interior construction With regard to directive / regulation (EC/ EU) / Regulation No. ECE-R118 Part II Taking into consideration amendment No. 02 , Supplement 03	Vertical Burning rate Test acc. To ECE-R 118.02 Annex 8 $t \geq 6 \text{ mm}$	Vertical burning rate 0 mm/min	Vertical burning rate Max. 100 mm/min

Remarks :

- (1) VGF = Vertical Grade Flame Retardent Laminate
- (2) HGF = Horizontal Grade Flame Retardent Laminate
- (3) CGF = Compact Grade Flame Retardant Laminate
- (4) The Fire Classification for thin refer to laminates bonded with FR adhesive on Non Combustible A Class Core substrate (Such as Calcium Silicate boards). For further detailed information, Please Refer to Fire Resistance Explanation Sheet
- (5) In case of a need for a laminate that will comply with GOST standards – a specific request should be Submitted to sales
- (6) Test report is available upon request
- (7) N.E. = No Effect
- (8) For thickness < 2.0 mm · Please refer to S-Lam HPL / CPL TDS