

High pressure decorative laminates (HPL), less than 2 mm thick, according to EN 438-1:2016, EN 438-2:2019, EN 438-3:2016 and EN 438-8:2009, consisting of a surface of decorative paper(s) impregnated with aminoplastic resins and a core made of layers of kraft paper impregnated with phenolic thermosetting resins. All the layers are bonded together with simultaneous application of heat (approximately 150°C) and high specific pressure (> 7 MPa) to obtain a homogeneous non-porous material with increased density.

These thin laminates are normally intended for bonding to supporting substrates, normally wood based, to produce panels by the composite manufacturers.

They are available in the standard HGS, ATS and VGS types and in the flame retardant HGF, ATF and VGF types.

Decor		Plain colours	Printed decors	Iridescent colours	Vertical
EN 438 classification		HGS - HGF	HGS - HGF	ATS - ATF	VGS - VGF
Standard		EN 438-3	EN 438-3	EN 438-8	EN 438-3

PROPERTIES	TEST METHOD	PROPERTY OR ATTRIBUTE	UNIT	VALUES
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SURFACE QUALITY

Surface quality	EN 438-2.4	Spots, dirt and similar surface defects Fibres, hairs and scratches	mm ² /m ² mm/m ²	≤ 1 ≤ 10
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DIMENSIONAL TOLERANCES

Dimensional tolerances	EN 438-2.5	Thickness tolerance	mm mm	± 0,10 for thickness 0,5 ≤ t ≤ 1,0 ± 0,15 for thickness 1,0 < t < 2,0
	EN 438-2.6	Length and width	mm	+ 10 / - 0
	EN 438-2.7	Straightness of edges	mm/m	≤ 1,5
	EN 438-2.8	Squareness	mm/m	≤ 1,5
	EN 438-2.9	Flatness (measured on full-size sheet)	mm/m	≤ 60

GENERAL PROPERTIES

Resistance to surface wear	EN 438-2.10	Initial Point	Revolutions	≥ 150	≥ 100	n.a.	≥ 50
Resistance to immersion in boiling water	EN 438-2.12	Appearance - Gloss finish	Rating			≥ 3	
		Appearance - Other finish	Rating			≥ 4	
Resistance to water vapour	EN 438-2.14	Appearance - Gloss finish	Rating			≥ 3	
		Appearance - Other finish	Rating			≥ 4	
Resistance to dry heat (160 °C/20')	EN 438-2.16	Appearance - Gloss finish	Rating			≥ 3	≥ 3
		Appearance - Other finish	Rating			≥ 4	≥ 4
Resistance to wet heat (100 °C/20')	EN 438-2.18	Appearance - Gloss finish	Rating			≥ 3	≥ 3
		Appearance - Other finish	Rating			≥ 4	≥ 4
Dimensional stability at elevated temperatures	EN 438-2.17	Cumulative dimensional change	Longitudinal %			≤ 0,55	≤ 0,75
		Cumulative dimensional change	Transversal %			≤ 1,05	≤ 1,25
Resistance to impact with small diameter ball	EN 438-2.20	Spring force	N			≥ 20	≥ 15
Resistance to impact with large diameter ball	EN 438-2.21	Drop height	mm			≥ 800	≥ 600
		Indentation diameter	mm			≤ 10	≤ 10
Resistance to cracking under stress	EN 438-2.23	Appearance	Rating			≥ 4	
Resistance to scratching	EN 438-2.25	Appearance	Rating			≥ 3	≥ 2
Resistance to staining	EN 438-2.26	Appearance - Group 1 & 2	Rating			≥ 5	
		Appearance - Group 3	Rating			≥ 4	
Light fastness (Xenon-arc)	EN 438-2.27	Contrast	Grey scale rating			≥ 4	
Electrostatic properties	EN 61340-4-1	Point to point resistance	Ω			10 ⁹ ÷ 10 ¹¹	
		Vertical resistance	Ω			10 ⁹ ÷ 10 ¹¹	
Density	EN ISO 1183	Density	g/cm ³			≥ 1,35	

FIRE PERFORMANCES

Reaction to fire	The reaction to fire of Standard Thin is related to the final composite panel where the laminate is bonded to a substrate. Since the test results also depend on the substrate, the adhesive and the bonding technique applied, the composite manufacturer is responsible for the correct execution of the test in accordance with the applicable standards and test methods required for the specific application field.						
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OTHER PROPERTIES

Hygiene	NSF/ANSI 35	Suitability for use as work and nonwork surfaces of food service equipment on which direct food contact during normal preparation or holding operations is not intended, expected, or reasonable	Suitability	NSF certified
Formaldehyde emission	EN 13986	Formaldehyde emissions	Rating	E1
Volatile Organic Chemical Emissions	Greenguard Certification Low Chemical Emission UL 2818	Volatile Organic Chemical emissions	Suitability	Greenguard certified
Food contact	Regulation EU n° 10/2011 and following amendments	Food Contact Materials performance	Suitability	Compliant - conditions of use reported in the Declaration of conformity

Note to laminates with adhesive protective film
The protective films are designed for temporary surface protection against dirt, scratches and tool marks; they are not designed for protection against corrosion, humidity or chemicals. The laminates covered with the protective film shall be stored in a clean, dry place at room temperature (optimum 20°C), avoiding weathering and UV exposure. The protective film must be removed from the surface of the laminates after the application and before putting into use the finite element. In any case, the removal must be made within six months from the date of shipment by the manufacturer. The manufacturer cannot be responsible for the misuse of the laminates covered with the protective film, nor for the consequences for non-recommended applications.

Note to digital printing decoratives
For the chemical-physical characteristics of digital printing, the laminates with these decors may present a limitation in the applications, such as the repeated and intense contact with water or vapour. Customers are asked to contact the Customer Service of Formica to evaluate the best solution.

Note to surface wear resistance
In the case of structured finishes, the surface wear resistance values may be 10 or more revolutions lower than the nominal values in proportion to how much more is accentuated the shape.

Disclaimer
The Material Properties Data Sheet provides technical information relevant to the performance of the product as tested by the manufacturer or certified testing body. Any information contained within this document must be verified and tested for suitability by the user for his or her particular purpose or specific application. Consideration needs to be given to local or specific circumstances. The content of this document reflects our knowledge and experience at the time of publication. The newest version of the document replaces all previous versions. We advise that the newest version may contain technical changes that must be taken into account when using the products. The latest version of the document may be consulted on our website www.formica.info. Customers should always check whether an updated version of the document is available. We have made every effort to ensure the accuracy of the information in this document, but it cannot be held liable for any oversights, inaccuracies or typographical errors. Formica will not assume any liability if the end-user or customer refer to any other technical information of the products.