

MATERIAL PROPERTIES DATA SHEET



THIN | FLOORING GRADE

High pressure decorative laminates (HPL), less than 2 mm thick, according to EN 438-5:2016, 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 Arpa HPLs are suitable as floor coverings for their special abrasion resistance. They are in compliance with EN 13329. Arpa Flooring grade laminates are bonded on supports, normally wood based panels, by flooring producers.

		EN 438 classification		AC
		Standard		EN 438-5
PROPERTIES	TEST METHOD	PROPERTY OR ATTRIBUTE	UNIT	VALUES
SURFACE QUALITY				
Surface quality	EN 438-2.4	Spots, dirt and similar surface defects	mm <sup>2</sup> /m <sup>2</sup>	≤ 1
		Fibres, hairs and scratches	mm/m <sup>2</sup>	≤ 10
DIMENSIONAL TOLERANCES				
Dimensional tolerances	EN 438-2.5	Thickness tolerance	mm	± 0,10 for thickness 0,5 ≤ t ≤ 1,0
			mm	± 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				
Abrasion resistance	EN 438-2.11	Initial Point	Revolutions	AC2 ≥ 1500 AC4 ≥ 4000
Resistance to water vapour	EN 438-2.14	Appearance	Rating	≥ 4
Dimensional stability at elevated temperatures	EN 438-2.17	Cumulative dimensional change	Longitudinal %	≤ 0,65 for thickness t < 1 mm ≤ 0,45 for thickness 1 mm ≤ t < 2 mm
		Cumulative dimensional change	Transversal %	≤ 1,15 for thickness t < 1 mm ≤ 0,90 for thickness 1 mm ≤ t < 2 mm
Resistance to wet heat (100 °C/20')	EN 438-2.18	Appearance	Rating	≥ 4
Resistance to impact with small diameter ball	EN 438-2.20	Spring force	N	≥ 20
Resistance to impact with large diameter ball	EN 438-2.22	Indentation diameter with 1600 mm drop height laminate bonded to 6 ± 0,3 mm MDF of density 850 +/- 50 Kg/m <sup>3</sup> with PVAc adhesive	mm	≤ 10
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 <sup>9</sup> ÷ 10 <sup>11</sup>
		Vertical resistance	Ω	10 <sup>9</sup> ÷ 10 <sup>11</sup>
Density	EN ISO 1183	Density	g/cm <sup>3</sup>	≥ 1,35
FIRE PERFORMANCES				
Reaction to fire	The reaction to fire of Flooring Grade 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.			
OTHER PROPERTIES				
Thermal resistance / conductivity	EN 12664	Thermal resistance / conductivity	W/mK	0,2 to 0,5
Formaldehyde emission	EN 717- 1	Chamber method	mg/m <sup>3</sup> ppm	0,020 - 0,035 0,015 - 0,030
	EN ISO 12460-3	Gas analysis	mg/(m <sup>2</sup> x h)	0,3 ÷ 0,4
	EN 13986	Classification	Class	E1
Volatile Organic Chemical Emissions	Greenguard Certification Low Chemical Emission UL 2818 according to EPA TO-17 e ASTM D 6196 EPA TO-11A e ASTM D 5197	Individual VOCs	TLV	≤ 0,1
		Formaldehyde	ppm	≤ 0,025
		Total VOC	mg/m <sup>3</sup>	≤ 0,25
		Total Aldehydes	ppm	≤ 0,05
		4-Phenylcyclohexene	mg/m <sup>3</sup>	≤ 0,0033
		Total respirable particles	mg/m <sup>3</sup>	≤ 0,025
Evaluation of micro-organisms action	EN ISO 846	Microbial growth - Smooth finish	Rating	0 - no microbial growth
		Microbial growth - Textured finish	Rating	1 - slight and slow microbial growth

**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 Arpa Industriale. Arpa Industriale 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 Arpa Industriale to evaluate the best solution.

**Disclaimer**  
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