MATERIAL PROPERTIES DATA SHEET

SOLID | **SOLID CORE**

High pressure decorative laminates (HPL) according to EN 438-9:2013, consisting of a surface of decorative paper(s) impregnated with aminoplastic resins and a core of coloured cellulosic fibrous layers impregnated with 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.
The surface and the core layers have different colours to achieve a succession of coloured layers with particular desing effects resulting from routering and engraving.

	EN 438 classification		BCS
	Standard		EN 438-9

PROPERTIES	TEST METHOD	PROPERTY OR ATTRIBUTE	UNIT	
SURFACE QUALITY				
Surface quality	EN 438-2.4	Spots, dirt and similar surface defects	mm^2/m^2	≤ 1
		Fibres, hairs and scratches	mm/m^2	≤ 10
DIMENSIONAL TOLERANCES				
Dimensional tolerances	EN 438-2.5	Thickness tolerance	mm	± 0,25 for thickness 2,0 ≤ t < 3,0
			mm	± 0,40 for thickness 3,0 ≤ t < 5,0
			mm	± 0,50 for thickness 5,0 ≤ t < 8,0
			mm	± 0,70 for thickness 8,0 ≤ t < 12,0
			mm	± 0,80 for thickness 12,0 ≤ t < 16,0
	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	≤ 12,0 for thickness 2,0 ≤ t < 6,0
			mm/m	≤ 8,0 for thickness 6,0 ≤ t < 10,0
			mm/m	≤ 5,0 for thickness 10,0 ≤ t
GENERAL PROPERTIES				
Resistance to surface wear	EN 438-2.10	Initial Point	Revolutions	≥ 150
Resistance to immersion in boiling water	EN 438-2.12	Mass increase - 2 ≤ t < 5 mm	%	≤ 5
		Mass increase - 5 ≤ t mm	%	≤ 3
		Thickness increase - 2 ≤ t < 5 mm	%	≤ 6
		Thickness increase - 5 ≤ t mm	%	≤ 4
		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
		Appearance - Other finish	Rating	≥ 4
Dimensional stability at elevated temperatures	EN 438-2.17	Cumulative dimensional change - 2 ≤ t < 5 mm	Longitudinal %	≤ 0,60
		Cumulative dimensional change - 5 ≤ t mm	Longitudinal %	≤ 1,00
		Cumulative dimensional change - 2 ≤ t < 5 mm	Transversal %	≤ 0,50
		Cumulative dimensional change - 5 ≤ t mm	Transversal %	≤ 0,80
Resistance to crazing	EN 438-2.24	Appearance	Rating	Surface ≥ 4 Core ≥ 3
Resistance to scratching	EN 438-2.25	Appearance - Smooth Finishes	Rating	≥ 2
		Appearance - Textured Finishes	Rating	≥ 3
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	Surface ≥ 4 Core ≥ 3
Flexural Modulus	EN ISO 178	Stress	Mpa	≥ 9000
Flexural strength	EN ISO 178	Stress	Mpa	≥ 80
Electrostatic properties	EN 61340-4-1	Point to point resistance	Ω	$10^9 \div 10^{11}$
		Vertical resistance	Ω	$10^9 \div 10^{11}$
Density	EN ISO 1183	Density	g/cm^3	≥ 1,40
FIRE PERFORMANCES				
Reaction to fire	The reaction to fire of Solid Core Solid is related to the final installed panel. The manufacturer of the final installed panel 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 13986	Formaldehyde emission classification	Class	E1
Contact with food - Overall migration	EN 1186-3	3% acetic acid 24h at 40°C	mg/dm^2	< 10
	EN 1186-3	50% ethanol 24h at 40°C		< 10
	EN 1186-14	95% ethanol 24h at 40°C		< 10
	EN 1186-14	isooctane 24h at 40°C		< 10
Contact with food - Formaldehyde specific migration	EN 13130-23	3% acetic acid 24h at 40°C	mg/kg	< 15
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 microbal 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 case of thick laminate with the protective film on both sides, it must always be removed from both sides at the same time.
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.

MATERIAL PROPERTIES DATA SHEET

SOLID | **UNICOLOR**

High pressure decorative laminates (HPL) according to EN 438-9:2013, consisting of a surface of decorative paper(s) impregnated with aminoplastic resins and a core of coloured cellulosic fibrous layers impregnated with 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.
The surface and the core layers have the same colour producing a uniformly coloured laminate.
Unicolor is available in the types: BTS less than 2 mm thick and BCS having thickness 2 mm or greater.

		EN 438 classification		**BCS**
		Standard		**EN 438-9**
PROPERTIES	**TEST METHOD**	**PROPERTY OR ATTRIBUTE**	**UNIT**	
SURFACE QUALITY				
Surface quality	EN 438-2.4	Spots, dirt and similar surface defects	mm^2/m^2	≤ 1
		Fibres, hairs and scratches	mm/m^2	≤ 10
DIMENSIONAL TOLERANCES				
Dimensional tolerances	EN 438-2.5	Thickness tolerance	mm	± 0,25 for thickness 2,0 ≤ t < 3,0
			mm	± 0,40 for thickness 3,0 ≤ t < 5,0
			mm	± 0,50 for thickness 5,0 ≤ t < 8,0
			mm	± 0,70 for thickness 8,0 ≤ t < 12,0
			mm	± 0,80 for thickness 12,0 ≤ t < 16,0
	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	≤ 12,0 for thickness 2,0 ≤ t < 6,0
			mm/m	≤ 8,0 for thickness 6,0 ≤ t < 10,0
			mm/m	≤ 5,0 for thickness 10,0 ≤ t
GENERAL PROPERTIES				
Resistance to surface wear	EN 438-2.10	Initial Point	Revolutions	≥ 150
Resistance to immersion in boiling water	EN 438-2.12	Mass increase - 2 ≤ t < 5 mm	%	≤ 5
		Mass increase - 5 ≤ t mm	%	≤ 3
		Thickness increase - 2 ≤ t < 5 mm	%	≤ 6
		Thickness increase - 5 ≤ t mm	%	≤ 4
		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
		Appearance - Other finish	Rating	≥ 4
Dimensional stability at elevated temperatures	EN 438-2.17	Cumulative dimensional change - 2 ≤ t < 5 mm	Longitudinal %	≤ 0,60
		Cumulative dimensional change - 5 ≤ t mm	Longitudinal %	≤ 1,00
		Cumulative dimensional change - 2 ≤ t < 5 mm	Transversal %	≤ 0,50
		Cumulative dimensional change - 5 ≤ t mm	Transversal %	≤ 0,80
Resistance to crazing	EN 438-2.24	Appearance	Rating	Surface ≥ 4 Core ≥ 3
Resistance to scratching	EN 438-2.25	Appearance - Smooth Finishes	Rating	≥ 2
		Appearance - Textured Finishes	Rating	≥ 3
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	Surface ≥ 4 Core ≥ 3
Flexural Modulus	EN ISO 178	Stress	Mpa	≥ 9000
Flexural strength	EN ISO 178	Stress	Mpa	≥ 80
Electrostatic properties	EN 61340-4-1	Point to point resistance	Ω	$10^9 \div 10^{11}$
		Vertical resistance	Ω	$10^9 \div 10^{11}$
Density	EN ISO 1183	Density	g/cm^3	≥ 1,40
FIRE PERFORMANCES				
Reaction to fire	The reaction to fire of Unicolor Solid is related to the final installed panel. The manufacturer of the final installed panel is responsible for the correct			
OTHER PROPERTIES				
Thermal resistance / conductivity	EN 12664	Thermal resistance / conductivity	W/mK	0,2 to 0,5
Formaldehyde emission	EN 13986	Formaldehyde emission classification	Class	E1
Contact with food - Overall migration	EN 1186-3	3% acetic acid 24h at 40°C	mg/dm^2	< 10
	EN 1186-3	50% ethanol 24h at 40°C		< 10
	EN 1186-14	95% ethanol 24h at 40°C		< 10
	EN 1186-14	isooctane 24h at 40°C		< 10
Contact with food - Formaldehyde specific migration	EN 13130-23	3% acetic acid 24h at 40°C	mg/kg	< 15
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
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