ICDLI

International Committee of the Decorative Laminates Industry

Technical Leaflet

Gluing Table for High Pressure Laminates (HPL)

May, 2013

Preface

Decorative laminate (HPL = High-pressure laminate) can look back on a long tradition of use and represents an extremely robust, modern and highly decorative surface material. It is a ubiquitous part of daily life, mostly making an appearance as part of a composite material together with derived timber products such as chipboard. Having been developed more than 60 years ago, decorative laminate sheets now have more areas of application than ever before. One reason for this is the extreme durability of decorative laminate boards. No other finishing material can offer anything like the same levels of resilience. The European Standard EN 438 stipulates well over 20 properties which decorative laminate surfaces must fulfill. On the other hand, the extensive variety of attractive finishes decorative laminate panels can be supplied which makes them extremely attractive, provides flexibility of use and enables a wide range of base materials to be deployed. Added to this, the innovative further development of decorative laminate as a material has brought with it a constant expansion of the possible areas of application.

This Information Data Sheet „Gluing table for decorative high pressure laminates (HPL)“ gives an overview and valuable recommendations about adhesives for decorative high pressure laminates. The technical commission of the ICDLI compiled this Data Sheet to the best of its knowledge. No responsibility is taken for the up-to-date-ness, accuracy, completeness or quality of the details provided.

This Data Sheet replaces the one on the same subject from 2008.

This document makes no claim of completion regarding listing the full details of any standards referred to in the text.

All information is based on the current state of technical knowledge, but it does not constitute any form of liability. It is the personal responsibility of the user of the products described in this information leaflet to comply with the appropriate laws and regulations.

For more than 50 years the ICDLI has been the international representative of the interests of European laminate manufacturers. Further information about the ICDLI and the data sheets published up to now can be found at www.icdli.com.

This application was compiled by the International Committee of the Decorative Laminates Industry.
It considers the conditions of application technology in the European countries. If you have further questions, please contact us:

ICDLI aisbl - International Committee of the Decorative Laminates Industry
Rue de la presse 4, 1000 Bruxelles, Belgium
Head office:
Städelstraße 10, 60596 Frankfurt / Main, Germany, phone +49 69 2 71 05-31, fax +49 69 23 98 37,
E-Mail: info@pro-kunststoff.de

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Substrates \ Adhesives			No	Dispersion-Adhesives		Condensation-Adbesives			Contact-Adhesives		Reaction Adhesives	Hot-melt-type adhesives		
				1 part PVAc	2 part PVAc	UF-glue /UF-glue with app.10 % fillers	MUF / MUPF- glue	Phenol-Resorcinolglue	without catalyst	with catalyst	PUR-, Polyester-, Epoxid-adhesive	EVA Ethylen-Vinyl-Acetate	PA / PO Polyamide-Polyolefine	PUR Polyurethane
Classification acc. EN 204 / EN 205				D2 / D3 / D4	D3 / D4	D2 / D3	D3	D3 / D4	no classification acc. to EN 204/EN 205		D3 / D4	classification not applicable		D3 / D4
Temperature Resistance [°C]				- 20 to +100	- 20 to +120	- 20 to +150			- 20 to + 70	- 20 to + 100	- 20 to +100	- 20 to +80	- 20 to +100	- 20 to +120
Wood substrates	Chipboards		1	adhesive applied: 80 - 200 g/m² on HPL or substrate open time: 2 - 30 Min. pressure: app. 2 - 5 bar press temperature/ press time: 20 °C / 2 - 60 Min. 40 °C / 2 - 12 Min. 60 °C / 2 - 6 Min. 80 °C / 1 - 3 Min.		adhesive applied: 90 - 150g/m² on HPL or substrate open time: 5 - 15 Min. pressure: app. 3 - 5 bar press temperature/ press time: 40 °C / 30 - 45 Min. 60°C / 10 - 12 Min. 80°C / app. 5 Min. 100°C /app. 1 Min.		adhesive applied: 100 - 180 g/m² on HPL or substrate open time: 2 - 15 Min. pressure: 3 - 5 bar press temperature/ press time: 20 °C / 9 h open time and press time depends on catalyst system	adhesive applied: 150 - 200g/m² on HPL and substrate open time: depends on adhesive type and spread pressure and press time: momentary pressure is sufficient bonding strength depends on pressure load press temperature: at least +20 °C		adhesive applied: 150 - 200 g/m² on HPL or substrate open time : depends on adhesive type pressure: stack pressure store flat press temperature/ press time:depends on adhesive type and catalyst (in case of metals pretreatment of surface is essential)	adhesive applied: 80 - 150 g/m² on HPL or substrate pressure: nip rolls adhesive application temperature: 160 - 220 °C		adhesive applied: 60 - 100 g/m² on HPL or substrate pressure: nip rolls adhesive application temperature: 120 - 160 °C
	Plywood and blockboard		2											
	Fibreboards MDF, HDF, hardboards		3											
	Solid timber		4											
Honeycombs	Paper-honeycombs	Pay attention to differences in thickness between frame & core, e.g. reduce pressure	5											
	Alu-honeycombs		6	not applicable					not applicable			not applicable		
Foams	Polystyrene foam	use lower pressure	7											
	Phenolic foam		8									mainly for edge bending see lines 1-5		adhesive applied: 80 - 120 g/m² on HPL pressure: nip rolls adhesive application temperature: 120 - 160 °C
	PU foam		9											
	PVC - foam		10											
Mineral Boards	Expanded Mica (Vermiculite)		11	adhesive applied : 110-150 g/m² on HPL or substrate open time: max 10 Min. pressure: app. 2-5 bar press temperature/press-time: 20°C / 30 Min. Surface shuold be primed		Surface should be primed. see lines 1 - 5								
	Calcium-Silicate Boards		12											
	Fibre-Cement Boards		13	not applicable										
	Cement-bonded Chipboard		14			see lines 11 - 13		applicable						
	Gypsum Plaster Board		15	see lines 1 - 5		see lines 1 - 5								
	Gypsum-Fibre Board		16	see lines 11 - 12		see lines 11 - 13								
Metal			17	not applicable				Pretreatment of surface absolutely essential	see lines 1-5			not applicable		pretreatment of surface absolutely essential
HPL			18											applicable
Processing														
HPL-laminating flat surfaces	Block press (cold)	lower surface pressure	19	adhesive coating applied by four-roller, glue-spreader or filling		Catalyst-precoat; adhesive coating applied by four-roller		Catalyst-premixed; adhesive coating applied by four-roller or filling	adhesive coating applied by spraying or spreading		adhesive coating by manual application			
	Single; multi-opening press (cold, warm, hot)		20			Catalyst-precoat or Catalyst - premixed; adhesive coating applied by four-roller or filling								
	Short-cycle press (warm, hot)		21											
	Continous belt press (warm, hot)		22	see line 20										
HPL-laminating	pressed in matched moulds		23	only applicable to big curved shapes in two dimensions										
	Membrane-(vacuum)-press		24											
Postforming	stationary	see technical leaflet "Post-formable HPL"	25	applicable	applicable									
	continous		26		D4 problematic and process related									
Edge-bending	stationary		27	cold-pressing or usage of strip heating					applicable		applicable	precoated edges		not applicable
	continous		28	adhesive reactivating process								hotmelt-coating on substrate or edging material		