

Information Data Sheet

Characteristics and Possibilities of Use for Decorative High Pressure Laminates (HPL)

This application was compiled in the International Committee of the Decorative Laminates Industry (ICDLI).
It considers the conditions of application technology in the European countries.

Contents	Page
Contents	2
1. Usage of HPL	3
2. Properties and advantages of high pressure decorative laminates	3
2.1 Description of the material	3
2.2 Manufacture and composition	3
2.3 Decorative scope	4
2.4 Cleaning & maintenance	4
2.5 Processing	4
2.6 Characteristics in use	4
2.6.1 Mechanical and physical properties	4
2.6.2 Chemical properties	4
2.6.3 Reaction to fire	4
2.6.4 Physiological characteristics of HPL surfaces	4
2.6.5 Diffusion barrier	5
2.6.6 Weather resistance requirements (exterior grades)	5
2.6.7 Durability	5
2.7 HPL grades	5
2.8 Standards and other endorsements	5
2.8.1 Characteristics and properties	5
2.8.2 Reaction to fire	6
3. Application fields for HPL	6

1. Usage of HPL

The objective of this paper is to bring the collected experience of the European HPL industry in the use of high pressure laminates to the attention of architects, designers, manufacturers and specifying authorities. This document covers the following areas:

Market segments

- Private and residential housing
- Hospitals and laboratories
- Public Buildings
- Railway station and airport terminals/infrastructure
- Transportation
- Hotels
- Education
- Retail and commercial buildings
- Sport & Recreation Centers
- Industrial buildings

Applications

Interior

- Walls and Partitions
- Ceilings
- Doors
- Flooring
- Stairs
- Furniture/chairs
- Trims
- Windows sills
- Tables
- Work tops, counter tops
- Vanity units
- Cubicles
- Display-/ Shopsystems

Exterior

- Balconies
- Facades
- Facade parts/soffits
- Furniture and signs
- Urban elements
- Orientation systems

2. Properties and advantages of high pressure decorative laminates

2.1 Description of the material

HPL according to EN 438 are materials with outstanding characteristics e.g. durability, cleanability, wear resistance, combined with a wide range of technical and design possibilities. HPL are easy to process and to maintain and therefore can be used in many applications.

2.2 Manufacture and composition

The excellent characteristics exhibited in use arise from the manufacturing process and the raw materials used. Cellulosic fibrous based core materials (normally paper) impregnated with thermosetting resins are pressed together under simultaneous application of heat (temperature > 120 °C) and high specific pressure ≥ 50 MPa) to obtain a homogeneous non porous material with a density $\geq 1,35$ g/cm³. HPL have one or two decorative surfaces consisting of melamine resins which are one of the hardest surface materials available. The core layers consist of cured phenolic resin.

HPL for exterior use can have an additional outer layer or coating to enhance weather and light protecting properties.

2.3 Decorative scope

HPL are available in a wide range of colours, patterns and abstracts combined with different textures and gloss levels. Excellent reproductions of natural materials such as textiles, fabrics, exotic wood veneers and stone can be achieved.

Different printing technologies e.g. digital, screen and offset printing can be used to produce customized designs. Alternative finishes such as metal, real wood veneer and pearlescent effects are available to widen the designers pallet.

2.4 Cleaning & maintenance

Because of their impervious surfaces, HPL are easy to clean and maintain. Offered in various sizes they allow large areas to be covered without seams. Postforming grades enable the continuation of the surface to cover edges and upstands. Construction with compact laminates has the benefit of avoiding vulnerable adhesive joints. The absence of joints and seams allow the most severe hygienic requirements to be met.

2.5 Processing

HPL can be easily processed with wood working machines.

Compact laminates ≥ 6 mm thick are self supporting while thinner HPL, particularly those ≤ 2 mm thick require bonding to a supporting substrate. There is a wide choice of substrates of which wood based panels are the most common. A wide range of adhesives is available for glueing. HPL are available in various sizes to minimise cutting losses.

For further information on processing, please regard the product data sheets on the ICDLI website (www.icdli.com).

2.6 Characteristics in use

The characteristics of HPL in use are outstanding. Market requirements together with manufacturers response to these demands have produced exacting testing procedures, high levels of performance and of stringent quality control.

The special characteristics and properties of HPL are listed below.

2.6.1 Mechanical and physical properties

- Resistance to scratching
- Resistance to abrasion
- Impact strength
- Resistance to cigarette burns
- Resistance to heat
- Light fastness
- Antistatic up to electrical dissipation

2.6.2 Chemical properties

- Resistance to staining
- Resistance to chemical attack
- Resistance to organic solvents
- Resistance to steam
- Resistance to boiling water

2.6.3 Reaction to fire

HPL are difficult to ignite and have properties that retard spread of flame. In a fire situation they do not soften or release burning droplets.
Through the right selection of quality and thickness (standard or fire retardant grade) HPL can meet the highest fire performance achievable with organic materials.

2.6.4 Physiological characteristics of HPL surfaces

HPL are hygienic, harmless, non toxic and can be safely used in contact with food.

2.6.5 Diffusion barrier

When bonded to a substrate HPL act as a barrier preventing the emission of potential volatile substances.

2.6.6 Weather resistance requirements (exterior grades)

- Resistance to climatic shock
- Resistance to UV light
- Resistance to artificial weathering

2.6.7 Durability

Compared to other decorative materials like paints, thermoplastic foils, veneers etc., HPL offer a significantly longer life time. For indoor applications a minimum life time of 20 years can be expected without loss of appearance and performance.

2.7 HPL grades

The industry offers various grades of standardized HPL with specific characteristics for use in a wide variety of applications

- HPL-Standard
- HPL-Postforming
- HPL-Fire Retardant
- HPL-Compact

The above mentioned grades are further subdivided into several performance categories, e.g. horizontal and vertical applications as well as qualities which are suited for interior or exterior use.
The choice of the correct HPL grade should be made according to the end use.

2.8 Standards and other endorsements

Relevant standards are:

2.8.1 Characteristics and properties:

- ISO 4586, Part 1
- NEMA LD - 3
- EN 438 part 1-7

2.8.2 Reaction to fire:

Construction

DIN 4102

AFNOR NFP 92.507

BS 476 - parts 6, 7

ÖNORM B 3800

EN13501-1

Transportation

DIN 5510-2

BS 476 part 7

NFF 16101





UNI 8465










IMO FTPC annex 1 part 2 and 5

The guidelines for CE-marking are to be considered.

3. Application fields for HPL

Typical application fields and corresponding market areas are given in the following table:

<div style="text-align: center;">Applications</div> <div style="text-align: center;">Market segments</div>	Interior Walls and Partitions, Ceilings, Doors, Flooring, Stairs, Furniture/chairs, Trims, Windows sills, Tables, Work tops, counter tops, Vanity units, Cubicles, Display-/ Shopsystems	Exterior Balconies, Facades, Facade parts, soffits, furniture, signs, urban elements, orientation systems
Private and residential housing		
Hospitals and laboratories		
Public buildings and transportation		

Hotels		
Education		
Retail and commercial		
Sports and recreation		
Industrial buildings	 	

International Committee of the Decorative Laminates Industry (ICDLI)

For more than 40 years the ICDLI is the international representation of the interests of the European laminates manufacturers. Further information about the ICDLI and the data sheets published up to now you will find under

www.icdli.com

If you have further questions, please contact us:

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