ICDLI

International Committee of the Decorative Laminates Industry

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.

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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 ºC) and high specific pressure ≥ 50 MPa) to obtain a homogeneous non porous material with a density ≥ 1,35 g/cm^3. 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, particulary 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 bums
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 Diffussion 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

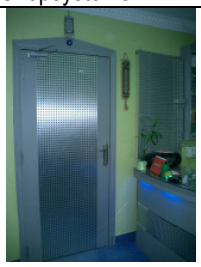
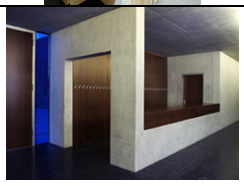
2.8.2 Reaction to fire:

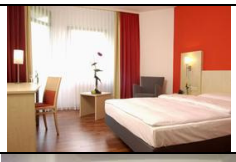
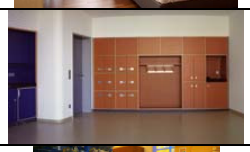
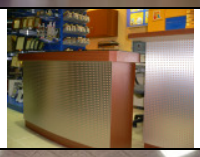
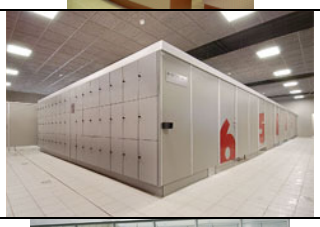
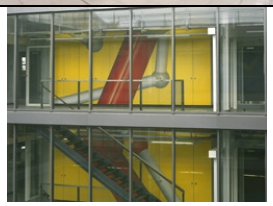
Construction
DIN 4102
AFNOR NFP 92.507
BS 476 - parts 6, 7
ÖNORM B 3800
EN13501-1
Transportation
DIN 5510-2
BS 476 part 7
NFF 16101
UNI 8465
IMO FTPC annex 1 part 2 and 5

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:

Applications / Market segments	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	 	

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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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