



Product Data Sheet for HPL Composite Panels



Preface

High-pressure laminate (HPL) manufactured in accordance with EN 438 has been used in the construction and furniture sector for decades. The European standard EN 438 defines the material, requirements and properties of HPL.

HPL is a resin and paper-based (cellulose) thermosetting composite material and features a unique, extremely robust, resistant, modern decorative surface. HPL is found in all aspects of our day-to-day lives and can be self-supporting or used bonded to a substrate. The application and usage areas of HPL are extremely diverse and are constantly evolving. This requires regularly updated information about different applications and processing techniques. ICDLI technical bulletins are a valuable source for this knowledge.

This information describes the composition of HPL Composite panels and gives advice for their handling, processing, use, and disposal. Such HPL Composites are used as kitchen worktops, kitchen door fronts, office desktops, restaurant tables, wall panels and windowsills. HPL Composite Panels are not classified as hazardous substances and therefore they do not require a special marking nor a description by a safety data sheet.

The technical leaflet is prepared for manufacturers, processing companies and retailers of HPL Composite Panels.

This technical bulletin is an update and an expansion for the document issued in August 2014 covering the same topic.

This document makes no claim of completeness 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:

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1 Description and composition

The information in this product data sheet applies to HPL Composite panels, consisting of wood-based substrates (chipboards, MDF, fibreboards and plywood) faced on one or both sides with HPL, bonded normally with PVAc, PUR or amino resin adhesives. The components must comply with the following standards:

High-pressure laminates (HPL):	EN 438
Chipboard:	EN 309 / 312
Plywood:	EN 313 / 636
Fibreboard (MDF, HDF):	EN 316 / 622
Adhesives:	EN 204

1.1 HPL

The materials described in this information sheet are usually HPL with a melamine resin top layer. They are supplied in a wide range of dimensions, thicknesses and surface finishes.

HPL basically consists of more than 60% paper and the remaining 30 to 40% consists of phenol-formaldehyde resin for core layers and melamine-formaldehyde resin for the decorative top layer.

For further information see the corresponding "Product Data Sheet for High-Pressure Laminates (HPL)".

1.2 Substrate

Wood-based substrates are produced by pressing wood in various forms (fibres, chips or veneers) with thermosetting bonding agents. They comprise a quality with a minimum formaldehyde emission potential (measured according to EN 717, EN 16516 or EN ISO 12460), meeting the requirements of national regulations, and are therefore officially accepted for indoor use.

1.3 Adhesive

Normally the HPL is bonded to the substrate using water based PVAc, PUR or amino resin adhesives forming an inert glue line. Other types of glues may also be used; in such cases please consult the instructions given by the adhesive supplier. For further information see ICDLI technical leaflet "Gluing table for HPL".

2 Storage and Transportation

For transport and storage, the principles of the General Processing Recommendations for HPL apply; Special safety measures are not necessary.

According to the transport regulations, HPL Composite panels are non-hazardous goods; therefore, labelling is not required.



3 Handling and Machining of HPL Composite Panels

The usual safety requirements of fabrication and machining should be observed regarding dust extraction, dust collection and fire precautions. Use gloves to protect from sharp edges and safety glasses to prevent eye injuries. For the processing of HPL Composite panels, the selection of the correct tools as well as the usual safety rules and processing principles for woodworking must be observed. The contact with dust from HPL Composite panels does not present any special problems, however a small percentage of personnel may be sensitive or even allergic to machining dust in general.

4 Environmental and Health Aspects in Use

HPL are cured and therefore chemically inert. HPL are not considered to be dangerous for humans and animals. There is no evidence of HPL-induced toxicological effects and eco-toxicity.

HPL surfaces are physiologically safe and approved for use in direct contact with foodstuff. Test reports in accordance with EU regulation (EC) No. 1935/2004 and (EC) No.10/2011 confirm the suitability of HPL for food contact.

HPL formaldehyde emission level is far below the limit for wood-based materials. Due to their very low permeability HPL bonded to wood-based substrates act as a barrier against possible formaldehyde emissions coming from the substrates.

The decorative surfaces are resistant to common household solvents and chemicals and have therefore been used for many years in applications where cleanliness and hygiene are important.

HPL is an article and not a chemical substance and therefore the REACH regulation (EC) No. 1907/2006 does not apply.

5 Cleaning and care

HPL is a homogeneous, non-porous material and is resistant to most household chemicals. The HPL surface and edges are easy to disinfect with hot water, steam and common types of disinfectants used in hospitals and other commercial facilities.

Although liquids cannot penetrate into the material, any soiling or stains should be wiped off immediately. Prolonged contact, mainly with corrosive substances, e.g., descaler, aggressive household cleaners, toilet cleaners and oven cleaners, must be avoided and removed immediately.

The HPL surface is simply cleaned with warm water and then wiped dry with a paper or soft cloth. If impurities cannot be removed with this, common household cleaning agents, such as washing powder, liquid soap or hard soap, which do not have any abrasive ingredients or regreasing properties, will help.

HPL are neither corrosive nor do they oxidize. They do not require any further surface treatment.



6 HPL in Fire Situations

HPL are difficult to ignite, do not melt nor drip and have properties that retard "spread of flame", thus prolonging evacuating time. The properties in case of fire depend on the thickness, construction and composition of the HPL.

Due to incomplete burning, as with many organic materials, hazardous substances are to be found in the smoke. However, HPL can meet the best performance for organic surfacing materials specified in the French standard NFF 16101 (= at least class F2 for smoke density and toxicity).

In dealing with fires involving laminates the same firefighting techniques should be employed as with other wood-based building materials.

HPL is a building material and can be tested as such. These results can be used in the evaluation of a building component.

7 Recovery

Due to their high calorific value, HPL Composite panels are suitable for thermal recycling. The disposal must comply with the currently applicable national and/or regional regulations.

8 Technical Data

The following information refers exclusively to the HPL top layer. The technical data for the respective HPL Composite panel must be requested from the manufacturer.

8.1 Physical characteristics

Physical state	Solid sheets
Density	1,35 g/cm ³
Solubility	Insoluble in water, oil, methanol, ethanol, diethyl ether, n-octanol, acetone
Boiling point	None
Evaporation rate	None
Melting point	HPL do not melt
Calorific value	18 - 20 MJ/kg
Heavy Metals	HPL do not contain toxic compounds of antimony, heavy metals, barium, cadmium, chromium ^{III} , chromium ^{VI} , lead, mercury, selenium
Stability	HPL are stable; they are not considered to be reactive or corrosive.
Hazardous reactions	None
Material incompatibility	Strong acids (descaler) or alkaline solutions will stain the surface
Ignition temperature	Approx. 400 °C
Flash point	None
Thermal decomposition	Possible above 250 °C.
Smoke and Toxicity	HPL are classified as F2 or better when tested according to NF F 16101. Toxic gases such as mainly carbon monoxide, carbon dioxide, ammonia and nitrogen oxides can be produced depending on fire conditions (temperature, oxygen content, etc.)
Flammability	HPL are not considered to be flammable. They will burn only in a fire situation, in presence of open flames.
Extinguishing media	HPL are considered as class A material. Carbon dioxide, water spray, dry chemical foam can be used to extinguish flames. Persons in fire situations should wear self-breathing apparatus and fire protective clothing.
Explosion hazards	The machining, sawing, sanding and routing of HPL produce class ST-1 dust. Safety precautions and adequate ventilation must be observed to avoid airborne dust concentration.
Explosion limits	Dust levels should be kept below 60 mg/m ³
Protection against explosion and fire	In the case of fire, HPL shall be treated as wood-based materials.

Fire classes acc. to EN 13501	Standard (HGS/CGS) and postforming (HGP): D-s2, d0 or better Flame-retardant (HGF/CGF): either B-s2, d0 or C-s2, d0 or better (classification depends on material thickness and substrate)
Working areas	The usual safety regulations for dust extraction are applicable
Formaldehyde emission	< 0.4 mg/h m ² (tested according to EN 717-2) < 0.05 ppm (tested according to EN 717-1)
Pentachlorophenol / Lindan	HPL contain neither PCP (Pentachlorophenol) nor Lindane
Other	HPL are not a hazardous substance in the sense of the Hazardous Substance Ordinance

In addition, the values and specifications for HPL defined in EN 438 apply.

8.2 Chemical resistance

HPL is resistant to most chemicals. However, some chemicals can affect the surface. Special attention should be paid to this:

- the concentration of the chemical
- the pH value (acid / base ratio)
- the exposure time
- the temperature

Detailed information can be found in the leaflet "Chemical resistance of HPL".

8.3 Electrostatic behaviour

It minimises the generation of electrostatic charge by contact-separation or friction with other materials. It does not need to be earthed. The surface resistivity of HPL is $10^9 - 10^{12}$ Ohm and a chargeability of $V \leq 2$ kV according to CEI IEC 61340-4-1 so that HPL are considered as antistatic material. HPL with improved properties are available on request. Detailed information can be found in the leaflet "Electrical properties of HPL".