

## **SAFETY AND TECHNICAL DATA SHEET For High Pressure Laminate (HPL)**

This information describes the composition of HPL and gives advice for their handling, processing, use and disposal. It covers all HPL grades as described in EN 438. HPL are not classified as hazardous substances and therefore do not require a special marking nor a description by a safety data sheet.

### **1. Description / Composition**

The materials referred to are high pressure decorative laminates (HPL) according to the European norm EN438 and to ISO 4586.

HPL are sheets consisting of layers of cellulose fibrous material (normally paper) impregnated with thermosetting resins and bonded together in a high pressure process. The process, defined as the simultaneous application of heat ( $\geq 120^{\circ}\text{C}$ ) and high specific pressure ( $\geq 5\text{ MPa}$ ) provides flowing and subsequent curing of the thermosetting resins to obtain a homogenous non-porous material ( $\geq 1,35\text{ g/cm}^3$ ), with the required surface finish.

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

Both resins belonging to the group of thermosetting resins are irreversibly inter-reacted through cross linked chemical bonds formed during the curing process producing a non-reactive, stable material with characteristics which are totally different from those of its component parts.

The HPL are supplied in sheet form in a variety of sizes, thickness and surface finishes.

Where improved fire retardance is required, the laminate core may be treated with an additive which does not contain halogens.

### **2. Storage and Transportation**

Storage and transportation should be carried out in accordance with the General Processing

Recommendations for HPL; no special precautions need to be taken.

For transportation, HPL is classified as a non hazardous product; no labelling is required.

### **3. Handling and machining of HPL**

The usual safety requirements of fabrication and machining should be observed with regard to- dust extraction, dust collection, fire precautions.

Because of the possibility of sharp edges protective gloves should always be worn when handling laminates. The contact with dust from HPL 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**

Decorative laminates are cured and therefore chemically inert.

Due to their very low permeability HPL bonded to wood based substrates act as a barrier against possible formaldehyde emissions coming from the substrates.

There is no migration affecting foodstuffs and, consequently, HPL are approved for contact with foodstuffs.



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

The non porous HPL-surface and edges are easy to disinfect with hot water, steam and all types of disinfectants used in hospitals and other commercial facilities.

## 5. Maintenance

As HPL do not suffer from corrosion and oxidation, they do not need any further surface protection (like lacquers or paints).

## 6. HPL in fire situations

Laminates are difficult to ignite and have properties that retard "spread of flame", thus prolonging evacuating time.

Due to incomplete burning, as with any organic material, hazardous substances are to be found in the smoke. However, HPL are capable of meeting 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 fire fighting techniques should be employed as with other wood based building materials.

## 7. Energy recovery

On account of their high calorific value (18 - 20 MJ/kg)\*. HPL are ideal for thermal recycling. When burnt completely at 700 °C, HPL produce water, carbon dioxide and oxides of nitrogen. Therefore HPL comply e.g. with paragraph 6 of the economic law of circular flow (Kreislaufwirtschaftsgesetz).

Well controlled burning processes are achieved in modern, officially approved industrial

## 8. Waste disposal

HPL can be brought to controlled waste disposal sites according to current national and/or regional regulations.

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\* For comparison: Calorific value of oil = 37 - 41 MJ/kg, or of hard coal = 28 - 31 MJ/kg.

## 9. Technical data

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

### 9.1 Physical-chemical characteristics

9.1.1 Physical state	Solid sheet
9.1.2 Density	$\geq 1,35 \text{ g/cm}^3$
9.1.3 Solubility	Insoluble in water, oil, methanol, diethyl ether, n-octanol, acetone
9.1.4 Boiling point	None
9.1.5 Evaporation rate	None
9.1.6 Melting point	Do not melt
9.1.7 Calorific value	18 - 20 MJ/kg
9.1.8 Heavy metals	HPL do not contain toxic compounds of antimony, barium, cadmium, chromium <sup>III</sup> , chromium <sup>VI</sup> , lead, mercury, selenium.

### 9.2 Stability and reactivity data

9.2.1 Stability	HPL are stable; they are not considered to be reactive nor corrosive
9.2.2 Hazardous reactions	None
9.2.3 Material incompatibility	Strong acids or alkaline solutions will stain the surface

### 9.3 Fire and explosion data

9.3.1 Ignition temperature	Approx. 400 °C
9.3.2 Flash point	None
9.3.3 Thermal decomposition	Possible above 250 °C. Depending upon the burning conditions (temperature, amount of oxygen etc.) toxic gases may be emitted, e.g. carbon monoxide, carbon dioxide, ammonia. HPL is safe when tested according to NF F 16 101.
9.3.4 Smoke and Toxicity	HPL are classified F2 when tested according to NF F 16 101
9.3.5 Flammability	HPL are not considered to be flammable. They will burn only in a fire situation, in presence of open flames.
9.3.6 Extinguishing media	HPL are considered as class A material. Carbon dioxide, water spray, dry chemical foam can be used to extinguish flames. Water dampens and prevents rekindling. Wear self breathing apparatus and fire protective clothing.
9.3.7 Explosion hazard	HPL machining, sawing, sanding routing produces class ST-1 dust. Safety precautions and adequate ventilation shall be observed to avoid airborne dust concentration.
9.3.8 Explosion limits	Dust below $60 \text{ mg/m}^3$
9.3.9 Protection against fire and explosion	In the case of fire, HPL shall be treated as wood based materials.

### 9.4 Electrostatic behaviour

It minimizes the generation of charge by contact separation or rubbing with another material it does not need to be earthed. Surface resistivity is between  $10^9$  and  $10^{12}$  Ohm and a chargeability of  $V \leq 2 \text{ kV}$  according to CEI IEC 1340-4-1 so that HPL is an antistatic material

### 9.5 Storage and Transport

HPL is classified as non-hazardous for transportation purposes and there are no specific requirements.

### 9.6 Machining

Use gloves to protect from sharp edges and safety-glasses to prevent eye injury. No special working equipment is necessary, except protections to minimize dust exposure in case of sheet machining.

### 9.7 Disposal considerations

Waste material shall be handled according to local regulations. Burning is permitted in approved industrial incinerators.

### 9.8 Health information

HPL are not considered to be dangerous for humans and animals. There is no evidence of HPL toxicological effects and eco-toxicity. HPL surfaces are physiologically safe and are approved for use in contact with foodstuffs according to EN1186.

#### 9.8.1 Working areas

General dust regulation are applicable.

#### 9.8.2 Formaldehyde emission

$< 0.4 \text{ mg/h m}^2$  (tested according to EN 717-2)

$< 0.05 \text{ ppm}$  (tested according to the WKI chamber method)

#### 9.8.3 Pentachlorophenol

HPL do not contain PCP (Pentachlorophenol)

### 9.9 Additional remarks

HPL as received are solid sheets and there would not be any health hazards associated with them.