

LAMICOLOR® LAMINATI PLASTICI DECORATIVI ALTA PRESSIONE	PRODUCT DATA SHEET FOR LAMCO HPL	Rev. 00
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LAMCO HPL are not classified as hazardous substances. This information describes the composition of LAMCO HPL and gives advice for their handling, processing, use and disposal.

0. Manufacturer

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1. Product

This product data sheet applies to the whole LAMICOLOR range of LAMCO HPL® in its various grades.

2. Description / Composition

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

LAMCO HPL are sheets consisting of layers of cellulose fibrous material (normally paper) impregnated with thermosetting resins and bonded together by the high pressure process. The process, defined as the simultaneous application of heat ($\geq 120^{\circ}\text{C}$) and high specific pressure ($\geq 7\text{ MPa}$) provides flowing and subsequent curing of the thermosetting resins to obtain a homogenous non-porous material ($\geq 1,35\text{ g/cm}^3$), and with the required surface finish.

Basically more than 60 % of LAMCO 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 interreacted 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.

LAMCO HPL are supplied in sheet form in a variety of sizes and surface finishes. Thickness varies from 0,6 to 30 mm.

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

3. Storage and Transportation

Storage and transportation should be carried out in accordance with the General Processing Recommendations for LAMCO HPL; no special precautions need to be taken.

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

4. Handling and machining of LAMCO 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 LAMCO HPL does not present any special problems, however a small percentage of personnel may be sensitive or even allergic to machining dust in general.

5. Environmental and health aspects in use

Decorative laminates are cured and therefore chemically inert. Gas release from surfaces and edges is so low that they are not detectable by instrumental analysis.

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

There is no migration affecting foodstuffs and, consequently, LAMCO 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 LAMCO HPL-surface and edges are easy to disinfect with hot water, steam and all types of disinfectants used in hospitals and other commercial applications.

6. Maintenance

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

7. LAMCO 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, LAMCO 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 in which laminates are involved the same fire fighting techniques should be employed as with other wood based building materials.

8. Energy recovery

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

Well controlled burning processes are achieved in modern, officially approved industrial incinerators. Ashes of this process can be brought to controlled waste disposal sites.

9. Waste disposal

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

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

10.	Technical data	
10.1	Physical-chemical characteristics	
10.1.1	Physical state	Solid sheet
10.1.2	Density	≥ 1,35 g/cm ³
10.1.3	Solubility	Insoluble in water, oil, methanol, diethyl ether, n-octanol, acetone
10.1.4	Boiling point	None
10.1.5	Evaporation rate	None
10.1.6	Melting point	Do not melt
10.1.7	Calorific value	18 - 20 MJ/kg
10.1.8	Dangerous substances	LAMCO HPL does not contain pentachlorophenol, asbestos, halogens or heavy metals (Antimony, Barium, Cadmium, Chromium ^{III} , Chromium ^{VI} , Lead, Mercury, Selenium). However, traces of these substances, due to natural impurities, may be present in its components or in the raw materials employed in the production process of the laminate.
10.2	Stability and reactivity data	
10.2.1	Stability	LAMCO HPL are stable; they are not considered to be reactive nor corrosive
10.2.2	Hazardous reactions	None
10.2.3	Material incompatibility	Strong acids or alkaline solutions will stain the surface
10.3	Fire and explosion data	
10.3.1	Ignition temperature	Approx. 400 °C
10.3.2	Flash point	None
10.3.3	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. LAMCO HPL is safe when tested according to NF F 16 101.
10.3.4	Flammability	LAMCO HPL are not considered to be flammable. They will burn only in a fire situation, in presence of open flames.
10.3.5	Extinguishing media	LAMCO 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.
10.3.6	Explosion hazard	LAMCO HPL machining, sawing, sanding routing produces class ST-1 dust. Safety precautions and adequate ventilation shall be observed to avoid airborne dust concentration.
10.3.7	Explosion limits	Dust below 60 mg/m ³
10.3.8	Protection against fire and explosion	None required as for wood based building materials.
10.4	Storage and Transport	LAMCO HPL is classified as non-hazardous for transportation purposes and there are no specific requirements.
10.5	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.
10.6	Disposal considerations	Waste material shall be handled according to local regulations. Burning is permitted in approved industrial incinerators.
10.7	Health information	LAMCO HPL are not considered to be dangerous for humans and animals. There is no evidence of LAMCO HPL toxicological effects and eco-toxicity. LAMCO HPL surfaces are physiologically safe and are approved for use in contact with foodstuffs according to pr-EN1186.
10.7.1	Working areas	General dust regulation to apply.
10.7.2	Formaldehyde emission	Typical value for a unbonded 0,9 mm LAMCO HPL: <0.4 mg/h m ² when tested according to EN 717-2 <0.05 ppm when tested according to the WKI chamber method
10.8	Additional remarks	LAMCO HPL as received are solid sheets and there would not be any health hazards associated with them.

All the above 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.