

**ARPA INDUSTRIALE S.p.A.**

LAMINATI PLASTICI AD ALTA PRESSIONE

Via G. Piumati, 91 - 12042 Bra (CN) Italy - Tel +39 0172 436 111 - Fax +39 0172 431151

R.E.A. Cuneo 123700 Codice Fiscale 03764630012 Part. IVA 02087770042

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**International Committee of
Decorative Laminates Industry
(ICDLI)****Product Data Sheet
for H.P.L.
Hygiene and Security****3 June 2002**

This information describes the composition of H.P.L. and gives advice for their handling, processing, use and disposal. It covers all H.P.L. grades as described in EN 438. H.P.L. 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 (H.P.L.) according to the European Norm EN 438 and to ISO 4586.

H.P.L. 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 (120°C) and high specific pressure (7 MPa) provides flowing and subsequent curing of the thermosetting resins to obtain a homogeneous non-porous material (1,35 g/cm³) and with the required surface finish.

Basically more than 60% of the H.P.L. 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 H.P.L. 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 H.P.L.; no special precautions need to be taken.

For transportation, H.P.L. is classified as a non hazardous product; no labelling is required.

3. Handling and machining of H.P.L.

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

Because of the possibility of sharp edges protective gloves should always be worn when handling laminates. The contact with dust from H.P.L. does not present any special problem, 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. Gas release from surfaces and edges is so low that they are not detectable by instrumental analysis.

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

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

5. Maintenance

As H.P.L. do not suffer from corrosion and oxidation, it does not need any further surface protection (like lacquers or paints).

6. H.P.L. 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 H.P.L. 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.

7. Energy recovery

On account of their high calorific value (18 – 20 MJ/Kg)* H.P.L. are ideal for thermal recycling. When burned completely at 700°C, H.P.L. produce water, carbon dioxide and oxides of nitrogen.

Therefore H.P.L. 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.

8. Waste disposal

H.P.L. 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

9. Technical data

9.1	Physical – Chemical characteristics	
9.1.1	Physical state	Solid sheet
9.1.2	Density	1,35 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	H.P.L. does not contain toxic compounds of antimony, barium, cadmium, chromium ^{III} , chromium ^{VI} , lead, mercury and selenium.
9.2	Stability and reactivity data	
9.2.1	Stability	H.P.L. 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.
9.3.4	Safety	H.P.L. is safe when tested according to NF F 16 101.
9.3.5	Flammability	H.P.L. are not considered to be flammable. They will burn only in a fire situation, in presence of open flames.
9.3.6	Extinguishing media	H.P.L. 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	H.P.L. 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 mg/m ₃

9.3.9	Protection against fire and explosion	None required as for wood-based building materials
9.4	Storage and transport	H.P.L. is classified as non-hazardous for transportation purposes and there are no specific requirements.
9.5	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.
9.6	Disposal considerations	Waste material shall be handled according to local regulations. Burning is permitted in approved industrial incinerators.
9.7	Health information	H.P.L. are not considered to be dangerous for humans and animals. There is no evidence of H.P.L. toxicological effects and eco-toxicity. H.P.L. surfaces are physiologically safe and approved for use in contact with foodstuffs according to pr-EN 1186.
9.7.1	Working areas	General dust regulations to apply.
9.7.2	Formaldehyde emission	Typical value for a unbonded 1 mm H.P.L. < 0,4 mg/h m ₂ when tested according to EN 717 – 2 < 0,05 ppm when tested according to the WKI chamber method
9.8	Additional remarks	H.P.L 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.

ARPA INDUSTRIALE SPA
Technical Direction