

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

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**0. Producer Company name**

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**1. Description and Composition**

Arpa Industriale material referred to are high pressure decorative laminates (HPL) according to European Standard EN 438 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 a simultaneous application of heat ( $\geq 120^{\circ}\text{C}$ ) and high specific pressure ( $\geq 7$  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 the HPL consist of paper and the remaining 30 to 40 % consist of cured phenol-formaldehyde resin for core layers and melamine-formaldehyde resin for the surface layer.

Both resins belong to the group of thermosetting resins. They irreversibly react forming cross linked chemical bonds during the curing process. The result is a non-reactive and stable material with characteristics which are totally different from the original components.

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**

HPL are classified as a non hazardous product and therefore they do not require any special labelling or identification neither during storage nor during transportation.

It is recommended storage on planar surface (e.g. pallet) in dry and ventilated areas.

Also if HPL laminates are not flammable materials, their storage is a fire load and it requires prevention and fire protection measures provided for wood-based materials.

**3. Handling and machining of HPL**

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

During laminate processing must be taken security measures provided by law in force. In particular, reference is made by regulations applicable to wood-based materials processing (cutting, sanding, etc.). The HPL powder is inert; during processing, security measures to monitor workers' exposure to this kind of dust are applied.

Because of the possibility of sharp edges, protective gloves should always be worn when handling laminates.

**4. Environmental and health aspects in use**

Decorative laminates are cured and therefore chemically inert.

HPL volatile organic compounds emissions from the surfaces and the core are close to the analytical devices detectable limit.

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.

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; they 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.

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## **5. Maintenance**

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

## **6. HPL in fire situations**

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

In case of incomplete burning, as with any organic material, hazardous substances are to be found in the smoke.

Other specific information can be found on the product data sheets.

## **7. Energy recovery**

On account of their high calorific value (18 to 20 MJ/kg)\*. HPL are ideal for thermal recycling, to be made only in special authorized plant.

When burnt completely at 700 °C, HPL produce water, carbon dioxide and oxides of nitrogen.

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

## **8. Waste disposal**

The HPL refuses are non-hazardous waste and must be disposed according to the current national and/or regional regulations.

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## 9. Technical data

### 9.1 Physical/chemical characteristics

9.1.1	Physical state	Solid sheets
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	HPLs do not melt
9.1.7	Calorific value	18 – 20 MJ / Kg

### 9.2 Stability and reactivity data

9.2.1	Stability	HPLs are stable; they are not considered reactive or 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 on the burning conditions (temperature, amount of oxygen, etc.) toxic gases may be emitted, e. g. carbon monoxide, carbon dioxide, ammonia.
9.3.4	Flammability	HPL are not considered to be flammable. They will burn only in a fire situation, in presence of open flames.
9.3.5	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. Persons in fire situations should wear self breathing apparatus and fire protective clothing.
9.3.6	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.
9.3.7	Explosion limits	Dust levels should be kept below $60 \text{ mg/m}^3$ .
9.3.8	Protection against explosion and fire	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  $10^9 - 10^{12}$  ohms and a chargeability of  $V < 2 \text{ kV}$  according to CEI IEC 1340-4- 1 so that HPL are antistatic material.



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9.5	Storage and transport	HPL are 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 injuries. No special working equipment is necessary, except protections to minimize dust exposure in case of sheet machining.
9.7	Disposal considerations	Waste material should be handled according to local regulations. Burning is permitted in authorized 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 approved for use in contact with foodstuffs according to EN 1186. and CEE 310 14.12.1993.
9.8.1	Working areas	General dust regulations are applicable.
9.8.2	Formaldehyde emission	< 0.4 mg/h m <sup>2</sup> (tested according to EN 717-2) < 0.05 ppm (tested according to the WKI chamber method)
9.8.3	Pentachlorophenol	HPL do not contain PCP (Pentachlorophenol).
9.8.4	Asbestos	HPL do not contain asbestos
9.8.5	Halogens	HPL do not contain halogens
9.8.6	Heavy Metals	HPLs do not contain compounds of antimony, barium, cadmium, chromium III, chromium VI, lead, mercury, selenium.
9.9	Additional remarks	HPLs as received are solid sheets and there would not be any health hazards associated with them.

*All informations here reported are based on the current state of technical knowledge, are purely descriptive and do not constitute any form of guarantee. It is the personal responsibility of the user of the products described in this information leaflet to comply with the appropriate laws and regulations.*

This technical sheet was issued on the basis of the analogous document by International Committee of Decorative Laminates Industries (ICDLI) located in Frankfurt am Main, web site: [www.icdli.com](http://www.icdli.com).  
ARPA Industriale is ICDLI member.