

# Formica® Laminate

THE ORIGINAL HIGH PRESSURE LAMINATE *by* FORMICA GROUP

## Product Data Sheet

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## **Preface**

This information describes the composition of Formica® Laminates and gives advice for their handling, processing, use and disposal. It covers all Formica Laminate grades as described in EN 438. Formica Laminates 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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## 1. Description

The materials referred to are high pressure decorative laminates (Formica® Laminate) according to the European Standard EN 438 and to ISO 4586.

Formica Laminates 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 ( $\geq 5\text{ MPa}$ ), provides flowing and subsequent curing of the thermosetting resins to obtain a homogeneous non-porous material ( $\geq 1,35\text{ g/cm}^3$ ) with the required surface finish.

Basically more than 60% of Formica Laminate consists of paper and the remaining 30 to 40% consists of cured phenol-formaldehyde resin for 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.

Formica Laminates are supplied in sheet form in a variety of sizes, thicknesses 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 published Formica Technical and Fabrication Information; no special precautions need to be taken.

For transportation, Formica Laminates are classified as a non-hazardous product; no labelling is required.

## 3. Handling and Machining of Formica Laminate

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.

Contact with dust from Formica Laminates 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

Formica decorative laminates are cured and therefore chemically inert. Formica Laminate formaldehyde emission level is far below the limit for wood based materials. Due to their very low permeability Formica Laminates bonded to wood based substrates act as a barrier against possible formaldehyde emissions coming from the substrates.

There is no migration affecting food and, consequently, Formica Laminates are approved for contact with foodstuffs.

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.

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

Formica Laminate is an article and not a chemical substance and therefore REACH does not apply.

Nevertheless it is important to ensure an information exchange with the raw material suppliers on REACH relevant substance properties.

## 5. Maintenance

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

## 6. Formica Laminate in Fire Situations

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

Due to incomplete burning, as with many organic materials, hazardous substances are to be found in the smoke. However, Formica Laminates 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 firefighting 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)\*<sup>1</sup> Formica Laminates are ideal for thermal recycling. When burnt completely at 700°C, Formica Laminates produce water, carbon dioxide and oxides of nitrogen. Therefore Formica Laminates 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 incinerators. Ashes of this process can be brought to controlled waste disposal sites.

## 8. Waste Disposal

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

## 9. Technical Data

### 9.1. Physical/chemical characteristics

9.1.1. Physical state	Solid sheets
9.1.2. Density	≥1,35 g/cm <sup>3</sup>

<sup>1</sup>For comparison: Calorific value of fuel oil: 39 - 42 MJ/kg, of hard coal: 28 - 31 MJ/kg

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	Formica® Laminates do not melt
9.1.7. Calorific value	18 - 20 MJ/kg
9.1.8. Heavy Metals	Formica Laminates do not contain toxic compounds of antimony, Heavy metals, barium cadmium, chromium <sup>III</sup> , chromium <sup>VI</sup> , lead, mercury, selenium.
<b>9.2. Stability and reactivity data</b>	
9.2.1. Stability	Formica Laminates are stable; they are not considered to be reactive or corrosive.
9.2.2. Hazardous reactions	None
9.2.3. Material incompatibility	Strong acids or alkaline solutions will stain the surface
<b>9.3. Fire and explosion data</b>	
9.3.1. Ignition temperature	Approx. 400°C
9.3.2. Flash point	None
9.3.3. Thermal decomposition	<p>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.</p> <p>Formica Laminates are classified safe when tested according to NF F 16 101</p>
9.3.4. Smoke and Toxicity	Formica Laminates are classified F2 when tested according to NF F 16 101.
9.3.5. Flammability	Formica Laminates are not considered to be flammable. They will burn only in a fire situation, in presence of open flames.
9.3.6. Extinguishing media	Formica Laminates 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.
9.3.7. Explosion hazards	The machining, sawing, sanding and routing of Formica Laminates produce class ST-1 dust. Safety precautions and adequate ventilation must be observed to avoid airborne dust concentration.
9.3.8. Explosion limits	Dust levels should be kept below 60 mg/m <sup>3</sup>

9.3.9. Protection against explosion and fire

In the case of fire Formica® Laminates 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  $V \leq 2$  kV according to CEI IEC 61340-4-1 so that Formica Laminates are considered as antistatic material.

**9.5. Storage and transport**

Formica Laminates 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 approved industrial incinerators.

**9.8. Health information**

Formica Laminates are not considered to be dangerous for humans and animals. There is no evidence of Formica Laminates toxicological effects and ecotoxicity. Formica Laminate surfaces are physiologically safe and approved for use in contact with foodstuffs according to EN 1186.

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 EN 717-1  
(WKI chamber method)

9.8.3. Pentachlorophenol

Formica Laminates do not contain PCP (Pentachlorophenol).

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This data sheet is designed to give you important information about Formica® Laminates and the fact that Formica Laminates comply with EN438:2005. The statement as to industry standard compliance is accurate and whilst we make reasonable efforts to ensure that the other statements in this data sheet are accurate, this cannot be guaranteed and no condition or warranty to this effect shall be implied.

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