INTERNATIONAL STANDARD

ISO 4586-1

Seventh edition
2018-07

High-pressure decorative laminates (HPL, HPDL) — Sheets based on thermosetting resins (usually called laminates) —

Part 1: Introduction and general information

Stratifiés décoratifs haute pression (HPL, HPDL) — Plaques à base de résines thermodurcissables (communément appelées stratifiés) —

Partie 1: Introduction et informations générales

Reference number
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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 11, *Products*.

This seventh edition cancels and replaces the sixth edition (ISO 4586-1:2015), which has been technically revised.

The main changes compared to the previous edition are as follows:

— correction of errors due to typographical, formatting, and omission issues.

A list of all parts in the ISO 4586 series can be found on the ISO website.

Introduction

This document has been harmonized with EN 438-1 whenever possible.

High-pressure decorative laminates (HPL, HPDL) — Sheets based on thermosetting resins (usually called laminates) —

Part 1: Introduction and general information

1 Scope

This document is applicable to high-pressure decorative laminates (HPL, HPDL) as defined in Clause 3.

This document gives an overview of the ISO 4586 series, and provides guidance in the selection and application of test methods and specifications contained in ISO 4586-2 to ISO 4586-8.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 4586-2, *High-pressure decorative laminates (HPL, HPDL) — Sheets based on thermosetting resins (usually called laminates) — Part 2: Determination of properties*

ISO 4586-3, *High-pressure decorative laminates (HPL, HPDL) — Sheets based on thermosetting resins (usually called laminates) — Part 3: Classification and specifications for laminates less than 2 mm thick and intended for bonding to supporting substrates*

ISO 4586-4, *High-pressure decorative laminates (HPL, HPDL) — Sheets based on thermosetting resins (usually called laminates) — Part 4: Classification and specifications for compact laminates of thickness 2 mm and greater*

ISO 4586-5, *High-pressure decorative laminates (HPL, HPDL) — Sheets based on thermosetting resins (usually called laminates) — Part 5: Classification and specifications for flooring grade laminates less than 2 mm thick intended for bonding to supporting substrates*

ISO 4586-6, *High-pressure decorative laminates (HPL, HPDL) — Sheets based on thermosetting resins (usually called laminates) — Part 6: Classification and specifications for exterior-grade compact laminates of thickness 2 mm and greater*

ISO 4586-7, *High-pressure decorative laminates (HPL, HPDL) — Sheets based on thermosetting resins (usually called laminates) — Part 7: Classification and specifications for design laminates*

ISO 4586-8, *High-pressure decorative laminates (HPL, HPDL) — Sheets based on thermosetting resins (usually called laminates) — Part 8: Classification and specifications for alternative core laminates*

EN 13329, *Laminate floor coverings — Specifications, requirements and test methods*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at https://www.electropedia.org/

— ISO Online browsing platform: available at https://www.iso.org/obp

3.1
high-pressure decorative laminate
HPL
HPDL
sheet consisting of layers of cellulosic fibrous material (normally paper) impregnated with thermosetting resins and bonded together by the *high-pressure process* (3.2)

Note 1 to entry: This is a general definition of high-pressure decorative laminate(s). More specific product definitions can be found in ISO 4586-3 to ISO 4586-8.

3.2
high-pressure process
simultaneous application of heat (temperature ≥120 °C) and high specific pressure (≥5 MPa), to provide flowing and subsequent curing of the thermosetting resins to obtain a homogeneous non-porous material with increased density (≥1,35 g/cm^3), and with the required surface finish

3.3
surface layer
upper decorative layer consisting in one or more sheets of fibrous material (usually paper) impregnated with aminoplastic thermosetting resins (usually melamine based resins) or other curable resins or other decorative design surfaces such as metal foils, wood-veneers, and textiles, etc. which are not necessarily treated with thermosetting resin

3.4
core layer
fibrous material (usually paper) impregnated with thermosetting resins (usually phenolic based resins) or other curable resins, possibly reinforced by metal layer(s) or metal mesh(es) and others which are not necessarily treated with thermosetting resin

4 Guidance in the use of the ISO 4586 series

4.1 Description of parts

ISO 4586-2 describes the methods of test that shall be used to determine the performance of HPL products in their various internal and external application fields, e.g. construction, transport, furniture, flooring, etc. The test methods have been specifically developed for testing HPL.

It should be noted that not all test methods apply to all types of HPL. For example Test 12, resistance to abrasion, applies only to flooring grade laminates; while Test 11, resistance to surface wear, applies to all types of HPL except flooring grade laminates. It is therefore important to read the scope of the test method to determine whether it is applicable to a particular HPL product.

ISO 4586-3 to ISO 4586-8 specify the performance requirements for different types of high-pressure decorative laminates. Each of these parts is independent of the others, and only requires reference to ISO 4586-2 for details of the appropriate test methods.

ISO 4586-3 applies to laminates less than 2 mm thick intended for bonding to supporting substrates to produce HPL composite panels. Classification systems and performance requirements are specified for heavy duty, horizontal and vertical grades of laminate, in standard, postforming and flame-retardant qualities.

ISO 4586-4 applies to compact laminates of thickness 2 mm and greater, in standard and flame-retardant qualities, intended for interior applications.

ISO 4586-5 applies to flooring grade laminates less than 2 mm thick intended for bonding to supporting substrates, to produce HPL flooring elements. As 'laminate floor coverings' they should meet the requirements of EN 13329.

ISO 4586-6 applies to exterior-grade compact laminates of thickness 2 mm and greater, and specifies requirements for standard and flame-retardant laminates for use in moderate and severe outdoor conditions.

ISO 4586-7 applies to design laminates (pearlescent, wood veneer, and metal surfaces). Classification system and performance requirements are specified for thin and compact laminates.

ISO 4586-8 applies to alternative core laminates (coloured and metal reinforced cores). Classification system and performance requirements are specified for thin and compact laminates.

4.2 Applications

Table 1 shows how the different parts of the series relate to various fields of application.

More information relating to hygienic, health and safety information for laminates intended for interior is given in Annex A.

Table 1 — Applicable fields

Application	ISO 4586-3	ISO 4586-4	ISO 4586-5	ISO 4586-6	ISO 4586-7	ISO 4586-8
Construction (internal)	•	•			•	•
Construction (external)				•		
Transport	•	•			•	•
Furniture	•	•			•	•
Flooring			•			

5 Product classification systems

ISO 4586-3 to ISO 4586-8 include product classification systems. While each of these systems is different, they contain some common elements as follows:

Main classifications:

H denotes **Horizontal grade**

V denotes **Vertical grade**

C denotes **Compact laminate**

E denotes **Exterior grade**

AC denotes **Abrasion Class** for flooring grade

A denotes **Pearlescent** laminate

M denotes **Metal** laminate

W denotes **Wood veneer** laminate

B denotes **Coloured core** laminates

R denotes **Metal reinforced core** laminates

T denotes **Thin** laminate, < 2 mm