
**Pallets for materials handling —
Flat pallets —**

**Part 2:
Performance requirements and selection
of tests**

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

In other circumstances, particularly when there is an urgent market requirement for such documents, a technical committee may decide to publish other types of normative document:

- an ISO Publicly Available Specification (ISO/PAS) represents an agreement between technical experts in an ISO working group and is accepted for publication if it is approved by more than 50 % of the members of the parent committee casting a vote;
- an ISO Technical Specification (ISO/TS) represents an agreement between the members of a technical committee and is accepted for publication if it is approved by 2/3 of the members of the committee casting a vote.

An ISO/PAS or ISO/TS is reviewed after three years in order to decide whether it will be confirmed for a further three years, revised to become an International Standard, or withdrawn. If the ISO/PAS or ISO/TS is confirmed, it is reviewed again after a further three years, at which time it must either be transformed into an International Standard or be withdrawn.

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.

This document is issued in the Technical Specification series of publications (according to the ISO/IEC Directives, Part 1, 3.1.1.1) as a “prospective standard for provisional application” in the field of pallets for materials handling because there is an urgent need for guidance on how standards in this field should be used to meet an identified need. This document is not to be regarded as an “International Standard”. It is proposed for provisional application so that information and experience of its use in practice may be gathered. An international project to gather test data was launched in 2001 and the results of this project will be used in the development of an International Standard based on this Technical Specification. Comments on the content of this document should be sent to the ISO Central Secretariat for the attention of ISO/TC 51.

ISO/TS 8611-2 was prepared by Technical Committee ISO/TC 51, *Pallets for unit load method of materials handling*.

ISO 8611 consists of the following parts, under the general title *Pallets for materials handling — Flat pallets*:

- *Part 1: Test methods*
- *Part 2: Performance requirements and selection of tests* [Technical Specification]
- *Part 3: Maximum working load* [Technical Specification]

Introduction

The necessary performance requirements for pallets depend on their end use. This part of ISO 8611 specifies which test methods are applied for the different situations of end use.

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Pallets for materials handling — Flat pallets —

Part 2: Performance requirements and selection of tests

1 Scope

This part of ISO 8611 specifies the performance requirements and the selection of tests for flat pallets of all materials being subjected to the tests defined in ISO 8611-1. It is not intended to apply to pallets with a fixed superstructure or a rigid, self-supporting container that may be mechanically attached to the pallet and which contributes to the strength of the pallet.

2 Normative references

The following referenced documents are indispensable for the application 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 445, *Pallets for materials handling — Vocabulary*

ISO 8611-1:2004, *Pallets for materials handling — Flat pallets — Part 1: Test methods*

ISO/TS 8611-3, *Pallets for materials handling — Flat pallets — Part 3: Maximum working load*¹⁾

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 445 and the following apply.

3.1

test load

P

applied load itself and, where used, load applicators, load board or load box

3.2

breaking of one component

fracture of a structural element which significantly affects the strength, stiffness or functionality of a pallet

3.3

ultimate load

U

load at which compression, displacement or deflection is no longer contained, resulting in the destruction of the specimen or breaking of one component, or when displacement, deformation or deflection becomes excessive

NOTE See Table 1 and Annex A.

1) To be published.

**3.4
nominal load**

R
lowest load value for the specified support conditions, independent of the type of load (excluding concentrated loads)

NOTE 1 Specified support conditions refers to the range of conditions of use in Clause 7.1.

NOTE 2 Nominal load is used for the purposes of comparison.

**3.5
payload**

Q
load carried by the pallet in use

NOTE 1 Adapted from ISO 445.

NOTE 2 This may be above, identical with or below the nominal load.

**3.6
racking**

storage of loaded pallets in beam racks

**3.7
stacking**

placing of pallets with unit loads one upon the other without recourse to intermediate shelves or racking

NOTE Adapted from ISO 445.

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4 Conditioning

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4.1 General

When moisture or temperature conditioning is relevant, such conditions shall be maintained during the test. When several materials are used, the most sensitive condition shall be used.

4.2 Wooden pallets

The reference moisture content is (20 ± 2) %. If the pallets are used at a higher moisture content, they shall be tested at this higher moisture content and the moisture content shall be recorded in the test results.

NOTE Electrical measurements permit subsequent allowance to be made for the effect of moisture content on performance (see bibliography item [2]).

4.3 Metal pallets

For metal pallets no conditioning is necessary.

4.4 Plastic pallets

Plastic pallets shall be conditioned for each test as follows.

- Tests 1a, 1b, 2a, 2b, 4a, 4b, 5a, 5b, 8a, 8b, 9, 11, 12 and 13: $(23 \pm 2)^\circ\text{C}$.
- Tests 6 and 7: $(40 \pm 2)^\circ\text{C}$.
- Test 10: $(23 \pm 2)^\circ\text{C}$ and $(-10 \pm 2)^\circ\text{C}$.

For maximum working loads and test 10, when plastic pallets are used in controlled or more extreme conditions the corresponding conditioning for the tests shall be arranged between supplier and purchaser.

4.5 Paper pallets

Paper pallets shall be conditioned for each test as follows.

- Tests 1a, 1b, 2a, 2b, 4a, 4b, 5a, 5b, 8a, 8b, 9, 10, 11, 12 and 13: (23 ± 2)°C and (50 ± 5) % R.H.
- Tests 6 and 7: (23 ± 2)°C and (90 ± 5) % R.H.

For maximum working loads and test 10, when paper pallets are used in controlled or more extreme conditions the corresponding conditioning for the tests shall be arranged between supplier and purchaser.

4.6 Wood-based composite pallets

Wood-based composite pallets shall be conditioned for each test as follows.

- Tests 1a, 2a, 4a, 5a, 8a, 9 and 10: (23 ± 2)°C and (50 ± 5) % R.H.
- Tests 1b, 2b, 4b, 5b, 6, 7, and 8b: (23 ± 2)°C and (90 ± 5) % R.H.

If the pallet will be exposed to water in the distribution environment, the conditioning shall be to a water temperature of (20 ± 5)°C for 24 h immersed in water and held just below the surface. Blocks of wood-particle board which can be shown to have been tested according to nationally recognized standards (see bibliography item [1]) are exempted from conditioning.

For maximum working loads and test 10, when wood-based composite pallets are used in controlled or more extreme conditions the corresponding conditioning for the tests shall be arranged between supplier and purchaser.

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5 Number of replicates

For each test at least 3 new and untested pallets shall be used.

6 Performance requirements

Performance requirements for tests 1, 2, 4, 5, 6, 7, 8 and 10 in ISO 8611-1:2004, modified as appropriate, are given in Table 1. The mean observation from the tests shall be compared to the performance requirements in Table 1.

Performance requirements for tests 3, 9, 11, 12, 13, 14, and 15 in ISO 8611-1:2004 are not included in Table 1 pending more experience with these tests. However, these tests are useful for comparing the performance between pallets and for improving pallet designs.