

**norm****NEN-EN-ISO 8611-1**

Pallets voor goederenbehandeling -  
Deel 1: Beproevingmethoden voor  
vlakke pallets (ISO/DIS 8611-1:2000, IDT)

Publicatie uitsluitend voor commentaar

Pallets for materials handling - Part 1: Test methods for flat pallets  
(ISO/DIS 8611-1:2000, IDT)

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# Pallets for material handling — Part 1: Test methods for flat pallets

*Palettes pour la manutention et le transport —  
Partie 1: Méthodes d'essai pour palettes plates*

ICS 55.180.20

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## Foreword

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Attention is drawn to the possibility that some of the elements of this part of ISO 8611 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 8611-1 was prepared by Technical Committee ISO/TC 51, *Pallets for unit load method of materials handling*, Working group 2.

This second/third/... edition cancels and replaces the first/second/... edition (), [clause(s) / subclause(s) / table(s) / figure(s) / annex(es)] of which [has / have] been technically revised.

ISO 8611 consists of the following parts, under the general title *Pallets for material handling — Part 1 : Test methods for flat pallets*:

- Part [1]: *Test methods for flat pallets*
- Part [2] *Performance requirements and nominal load*
- Part [3]: *Maximum working load*

This document was designed to be coupled with ISO/TR 10232 : 1989 : *General purpose flat pallets for through transit of goods - Design rating and maximum working load* and ISO/TR 10233 : 1989 : *General purpose flat pallets for through transit of goods - Performance requirements*.

The changing of the title and the scope of ISO 6780 from "General purpose flat pallets for through transit of goods - Principal dimensions and tolerances", to a wider scope of "Flat pallets for materials handling - Principal dimensions", makes it necessary to amend the International Standard ISO 8611:1991 and the Technical Reports ISO/TR 10232 and ISO/TR 10233. The test methods, performance requirements and design rating and maximum working load should now include not only "general purpose pallets" but also all other pallets for materials handling. Working Group 2 was asked to produce three parts of ISO 8611 : Part 1: Test methods for flat pallets, Part 2: Performance requirements and nominal load, Part 3: Maximum working load.

## Introduction

The 1989 edition of ISO 8611 described a system of sequential testing which relied upon a pallet passing every test in a series. This meant that one pallet could be near to failure in one particular test and another pallet might be substantially over-designed. Using the (earlier) deflection criteria, both pallets were presented as equals in terms of safety factor. The notched stringer pallet was a good example of this where it was typically very stiff, but frequently near fracture point in the (old) bending test. The new standard redresses this in failing every specimen in order to establish a definite factor of safety. Stiffness is dealt with as a separate series of measurements conducted during the testing.

Conducting the tests requires experience in load testing and also some expertise in the materials under test. This standard in conjunction with (proposed) 8611-2 and 8611-3 has been expressly designed to cover all pallet materials either when used alone or used as composites. A further change over the last edition is that all pallets for materials handling are now covered and not just high quality through-transit, exchange or pool pallets.

This new document ISO/DIS 8611-1 cannot be used to evaluate a pallet to normative ISO requirements without the additional application of ISO 8611-2 "Performance requirements and nominal load" and ISO/CD 8611-3 "Maximum working load".

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## 1 Scope

This International Standard specifies test methods of existing design and prototype of flat pallets for materials handling (for all types of use).

NOTE Specific tests for determining load capacity do not replace the value of conducting field tests on specific pallet designs.

## 2 Normative references

The following normative documents contain provisions, which, through reference in this text, constitute provisions of this part of ISO 8611. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 8611 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 445, *Pallets for materials handling — Vocabulary*

ISO 509, *Pallet trucks — Principal dimensions*

ISO 2244, *Packaging — Complete, filled transport packages — Horizontal impact tests (horizontal or inclined plane test; pendulum test)*

ISO 3130, *Wood — Determination of moisture content for physical and mechanical tests*

ISO 6780, *General purpose flat pallets for through transit of goods — Principal dimensions and tolerances*

ISOWD 8611-2, *Pallets for materials handling — Performance requirements and nominal load*

ISOWD 8611-3, *Pallets for materials handling — Maximum working load*

ISO 12777-1, *Methods of test for pallet joints — Part 1: Determination of bending resistance of pallet nails, other dowel-type fasteners and staples*

## 3 Terms and definitions

For the purpose of this part of ISO 8611, the terms and definitions given in ISO 445 (some of which are repeated below for convenience) and the following apply.

### 3.1

#### **Test load**

consists of the load applicators, the load board or load box and of the applied load itself

### 3.2

#### **Ultimate load**

the 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 (according to criteria set in ISO 8611-2)

**3.3**

**Stiffness**

Relates to the relative deformation of a pallet or component under load supporting. (High stiffness means small displacement, deflection or deformation, for a given load.)

**3.4**

**Racking**

Storage of loaded pallets in drive-in or beam racks in a warehouse.

**3.5**

**Stacking**

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

**4 Measurements**

**4.1** Pallets selected for testing shall be checked to ensure that materials, construction and dimensions conform with any associated written specification.

**4.2** The weight and the material of each pallet shall also be determined and recorded at the time of testing.

**4.3** The moisture content of wooden pallets shall be measured and recorded at the time of testing.

NOTE Clause 11 (Test report) gives further details on what should be recorded during testing and in the written report.

**5 Accuracy of tests and apparatus**

**5.1** Test apparatus shall satisfy the following requirements:

- a) in the design of the test equipment, the tolerances on all dimensions shall be +/- 2 %;
- b) the accuracy of measuring equipment for tests shall be +/- 0,5 mm;
- c) the accuracy of positioning of every component, excluding the test load, shall be +/- 2 mm, measurement gauges shall be positioned to +/- 4 mm;
- d) the accuracy of positioning of the centre of application of test load (where used) shall be +/- 10 mm;
- e) the total mass of the test loads applied shall be within +/- 3 % of the prescribed value.

**5.2** No part of any test rig shall distort an amount greater than 3 mm when under maximum test load. Distortion of the test rig shall be taken into account in measuring deflections of the pallet.

**5.3** The inclined plane apparatus shall be constructed as specified in ISO 2244 and shall permit inclined travel distance to change by 250 mm increments from 250 mm to 1250 mm, each increment to within +/- 5 mm.

**6 Test load**

A general value for the test load is not fixed. The test load for each test is defined in ISO 8611-2.

The test load shall be applied with hydraulic or air pressure or with dead load and shall increase continuously or in steps to the failure (for determination of ultimate load) or up to the fixed value (for qualification tests).



## 7 List of tests

The matrix of tests applicable to this standard are as shown in table 1.

Table 1 — List of tests

Test No	Test/Measurement	Characteristic	Handling activity or purpose of the test	Clause No
<b>Static tests</b>				<b>8</b>
<b>1</b>	<b>Bending test</b>	Pallet length, width	Racking	<b>8.1.</b>
1a	Bending strength			8.1.3.1
1b	Bending stiffness			8.1.3.2
<b>2</b>	<b>Wing pallet bending test</b>	Pallet length, width	Lifting with slings	<b>8.2</b>
2a	Bending strength			8.2.3.1
2b	Bending stiffness			8.2.3.2
<b>3</b>	<b>Air bag bending test</b>	Pallet length, width	Racking	<b>8.3.</b>
3a	Bending strength			8.3.4.1
3b	Bending stiffness			8.3.4.2
<b>4</b>	<b>Fork lifting test</b>	Top deck	Lifting with forklift and pallet trucks	<b>8.4.</b>
4a	Bending strength			8.4.3.1
4b	Bending stiffness			8.4.3.2
<b>5</b>	<b>Corner compression test</b>	Height of blocks, stringers	Any activity that compress blocks or stringers	<b>8.5.</b>
5a	Blocks or stringers strength			8.5.3.1
5b	Blocks or stringers stiffness			8.5.3.2
<b>6</b>	<b>Stacking test</b>	Top and bottom deck	Stacking	<b>8.6.</b>
<b>7</b>	<b>Dead weight bending test</b>	Pallet length, width	Racking	<b>8.7.</b>
<b>8</b>	<b>Bottom deck bending test</b>	Bottom deck	Racking/stacking	<b>8.8.</b>
8a	Bending strength			8.8.3.1
8b	Bending stiffness			8.8.3.2
<b>9</b>	<b>Static shear test</b>	Decks, blocks, stringer	Collapse resistance	<b>8.9.</b>
<b>Dynamic strength tests</b>				<b>9</b>
<b>10</b>	<b>Corner drop test</b>	Diagonal rigidity	Resistance to impacts	<b>9.1.</b>
<b>11</b>	<b>Shear impact test</b>	Decks, blocks, stringer	Collapse resistance	9.2.1.
<b>12</b>	<b>Top deck edge impact test</b>	Top leading deckboard	Resistance to fork arms	9.2.2
<b>13</b>	<b>Block impact test</b>	Corner block, stringer	Resistance to fork tip	9.2.3
<b>Friction tests</b>				<b>10</b>
<b>14</b>	<b>Static coefficient of friction test</b>	Under deck / fork arms	Slip resistance on fork arms	<b>10.1.</b>
<b>15</b>	<b>Slip angle test</b>	Top deck / payload	Slip resistance of loads	<b>10.2.</b>
For tests numbered 1, 2, 3, 4, 5 and 8, two measurement (a and b) are necessary, which can be carried out in one test (first b and then a) or in two separate tests. For tests numbered 1, 2, 3, 4, 5, and 8, testing shall always be conducted with new untested pallets.				

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