

**Methods of test for pallet joints - Part 2:
Determination of withdrawal and head pull-
through resistance of pallet nails and
staples**

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Determination of withdrawal and head pull-through
resistance of pallet nails and staples

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN ISO 12777-2:2000 sisaldab Euroopa standardi EN ISO 12777-2:2000 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 12.09.2000 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN ISO 12777-2:2000 consists of the English text of the European standard EN ISO 12777-2:2000.</p> <p>This document is endorsed on 12.09.2000 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p>Käsitlusala:</p> <p>This standard gives methods of determining the resistance of pallet nails and staples to axial load by specifying test methods for determining a) characteristics and maximum load for axially loaded nailed or stapled joints (wood to wood); b) characteristics and maximum load for axially loaded nailed or stapled joints (for non-wood-based materials, such as plastics).</p>	<p>Scope:</p> <p>This standard gives methods of determining the resistance of pallet nails and staples to axial load by specifying test methods for determining a) characteristics and maximum load for axially loaded nailed or stapled joints (wood to wood); b) characteristics and maximum load for axially loaded nailed or stapled joints (for non-wood-based materials, such as plastics).</p>
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Võtmesõnad: fasteners, joining, nails (fasteners), pallets, pull-out tests, punching tests, staples, tests

English version

Methods of test for pallet joints

Part 2: Determination of withdrawal and head pull-through
resistance of pallet nails and staples
(ISO 12777-2 : 2000)

Méthodes d'essai des assemblages
de palettes – Partie 2: Détermination
de l'arrachage et de la résistance de
la tête des clous et clous cavaliers de
palettes (ISO 12777-2 : 2000)

Prüfungen von Verbindungen an
Paletten – Teil 2: Bestimmung des
Auszugs- und Kopfdurchzugs-
widerstandes von Nägeln und Klam-
mern (ISO 12777-2 : 2000)

This European Standard was approved by CEN on 2000-04-15.

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

The European Standards exist in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

Foreword

International Standard

ISO 12777-2 : 2000 Methods of test for pallet joints – Part 2: Determination of withdrawal and head pull-through resistance of pallet nails and staples,

which was prepared by ISO/TC 51 'Pallets for unit load method of materials handling' of the International Organization for Standardization, has been adopted by Technical Committee CEN/TC 261 'Packaging', the Secretariat of which is held by AFNOR, as a European Standard.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, and conflicting national standards withdrawn, by October 2000 at the latest.

In accordance with the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard:

Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Endorsement notice

The text of the International Standard ISO 12777-2 : 2000 was approved by CEN as a European Standard without any modification.

NOTE: Normative references to international publications are listed in Annex ZA (normative).

Introduction

In 1988 ISO/TC 51 considered developing standard test methods for pallet joints. It became evident that the lack of International Standards on nail testing meant that fasteners (essential elements of pallet joints) could not be characterized sufficiently to enable worthwhile progress on full joint testing. Although there were existing, or partially developed, nail testing principles, it was considered that, in a practical situation where, for quality control purposes or comparisons of nail quality, reasonably accurate and rapid nail strength data were required, one or both, of the two existing commercial nail testers were better suited to the needs of pallet makers, pallet test laboratories and nail manufacturers. This is now ISO 12777-1.

Preliminary work led the manufacturers of both machines to make design modifications to improve accuracy. An evaluation, carried out with the cooperation of the manufacturers/agents of each nail test machine, demonstrated that the technical requirements for nail test machines/principles were met by both machines. The principles of these test methods are given in ISO 12777-1. They are primarily concerned with pallet joints in shear configuration.

This part of ISO 12777 extends the possibility of characterizing nails with relation to their axial configuration and the methods involve standard laboratory testing equipment. However, these tests are more complex than those in part 1 and are not suitable for routine quality control of pallets or pallet joints. Additionally, the highly significant influence of delayed testing must be considered in all parts of ISO 12777. Values of strength frequently increase even a few days after wood joint assembly and delayed testing may be more relevant to long-term pallet usage.

1 Scope

This part of ISO 12777 specifies methods of determining the resistance of pallet nails and staples to axial load by specifying test methods for determining:

- a) characteristics and maximum load for axially loaded nailed or stapled joints (wood to wood);
- b) characteristics and maximum load for axially loaded nailed or stapled joints (for wood to wood-based materials and wood to non-wood-based materials, such as plastics).

These test methods apply to joints with all types of nails up to 7 mm in diameter (including plain round shank, square, fluted, twisted, helical and annular threaded) and may also be suitable for other fasteners such as wood staples.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 12777. 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 12777 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 445:1996, *Pallets for material handling — Vocabulary.*

ISO 1133, *Plastics — Determination of the melt mass-flow rate (MFR) and the melt volume-flow rate (MVR) of thermoplastics.*

ISO 1183:1987, *Plastics — Methods for determining the density and relative density of non-cellular plastics.*

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

ISO 3131, *Wood — Determination of density for physical and mechanical tests.*

ISO 6891:1983, *Timber structures — Joints made with mechanical fasteners — General principles for the determination of strength and deformation characteristics.*

ISO 8970, *Timber structures — Testing of joints made with mechanical fasteners — Requirements for wood density.*

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