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General-purpose flat pallets for through transit of goods — Principal dimensions and tolerances

*Palettes d'usage général pour le transport de marchandises — Dimensions principales
et tolérances*

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Reference number
ISO 6780: 1988 (E)

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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 6780 was prepared by Technical Committee ISO/TC 51, *Pallets for unit load method of materials handling*.

Annex A of this International Standard is for information only.

Introduction

The overall dimensions specified in this International Standard are based on, and correspond to, the unit load sizes defined in ISO 3676¹⁾.

These pallet sizes are unlikely to cover all requirements because of substantial differences in size, shape and density of products, range of handling devices, regional practice, etc.

Pallets with sizes not specified in this International Standard, but lying within the dimensional deviations of the unit loads defined in ISO 3676 (i.e. -40^0 mm), should not be rejected on the basis of this International Standard (for example 1 100 mm × 1 100 mm pallets).

Annex A gives illustrations of different pallet types showing the vertical dimensions specified in this International Standard; it is included for additional guidance only.

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1) ISO 3676 : 1983, *Packaging — Unit load sizes — Dimensions*.

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General-purpose flat pallets for through transit of goods — Principal dimensions and tolerances

1 Scope

This International Standard specifies overall dimensions for single-deck and double-deck non-reversible pallets for through transit of goods, and dimensions related to their handling by pallet trucks, fork lift trucks and other appropriate handling equipment.

2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 445 : 1984, *Pallets for materials handling — Vocabulary*.

3 Definitions

For the purposes of this International Standard, the definitions given in ISO 445 apply.

4 Dimensions

4.1 Plan dimensions

4.1.1 Nominal overall dimensions

The nominal overall plan dimensions of pallets shall be as follows:

1 200 mm × 1 000 mm: Pallet size corresponding to the preferred modular unit load size of 1 200 mm × 1 000 mm

1 200 mm × 800 mm: Pallet size corresponding to the recognized unit load size of 1 200 mm × 800 mm

1 140 mm × 1 140 mm: Pallet size corresponding to the recognized square unit load size of 1 140 mm × 1 140 mm, which is derived from the internal width of ISO series 1 general-purpose freight containers¹⁾

1 219 mm × 1 016 mm: Acceptable pallet size for a period of transition while metrication goes into effect in those parts of the world where this size is used

4.1.2 Tolerances

The tolerances on the nominal overall plan dimensions given in 4.1.1 shall be $\begin{matrix} 0 \\ -6 \end{matrix}$ mm.²⁾

4.2 Vertical dimensions for lifting devices

4.2.1 The entries for the forks of fork lift trucks and the fingers of pallet trucks shall be not less than 98 mm high, except for pallets with free entries, where they shall be not less than 95 mm high.

NOTE — Certain pallets manufactured in North America have an entry 89 mm high. Such pallets may be used for international through transit of goods.

4.2.2 If notches for the forks of fork lift trucks are provided, the distance from the top of the notch to the ground shall be not less than 55 mm. The distance from the top of the notch to the base of the stringer itself shall not exceed 45 mm.

4.2.3 The distance from the underside of the lowest element of the top deck to the ground shall not exceed 127 mm for partial four-way pallets and double-deck pallets with free entries.

For full perimeter base pallets, this distance shall not exceed 156 mm.

NOTE — With hygroscopic materials, the dimensions stated in 4.2.1, 4.2.2 and 4.2.3 relate to an average moisture content of (20 ± 2) %.

1) Future developments in freight container technology and construction may permit increases in these plan dimensions up to the limits of the modular dimensions of 1 200 mm.

2) In order to meet the specified tolerances, certain materials require a positive tolerance at the time of manufacture because of shrinkage. Such pallets may have a manufacturing tolerance of ± 3 mm.

4.3 Horizontal dimensions of the entries and openings for lifting devices

4.3.1 The arrangements and horizontal dimensions of the entries for the forks of fork lift trucks and the fingers of pallet trucks shall be as shown in figure 1 and as specified in table 1 (for two-way and four-way pallets) and in figure 2 and in table 2 (for partial four-way pallets).

4.3.2 The arrangements and the dimensions of the openings in the bottom deck of pallets to allow the use of pallet trucks shall be as shown in figure 1 and as specified in table 1 (for two-way and four-way pallets) and in figure 2 and in table 2 (for partial four-way pallets).

4.4 Dimensions of bottom deck members

The thickness of the members of the bottom deck of a pallet shall not exceed 28 mm, to facilitate entry of the finger-wheels of a pallet truck. If the thickness exceeds 10 mm, the leading and trailing edges of the members of the bottom deck shall be chamfered on each side of the top face as follows:

a) the angle between the chamfered face and the horizontal shall be $40^\circ \pm 5^\circ$;

b) the height of the vertical face of the member shall not exceed:

15 mm, for wood,

10 mm, for other materials.

4.5 Dimensions specific to wing pallets

The width of the wing shall not be less than 65 mm.

4.6 Bearing surface of bottom deck — Double-deck pallets

The bearing surface of the element or elements of the bottom deck shall be equal to or greater than 35 % of the nominal overall plan dimensions.

NOTE — 35 % should be regarded as the absolute minimum and should be increased wherever practicable.

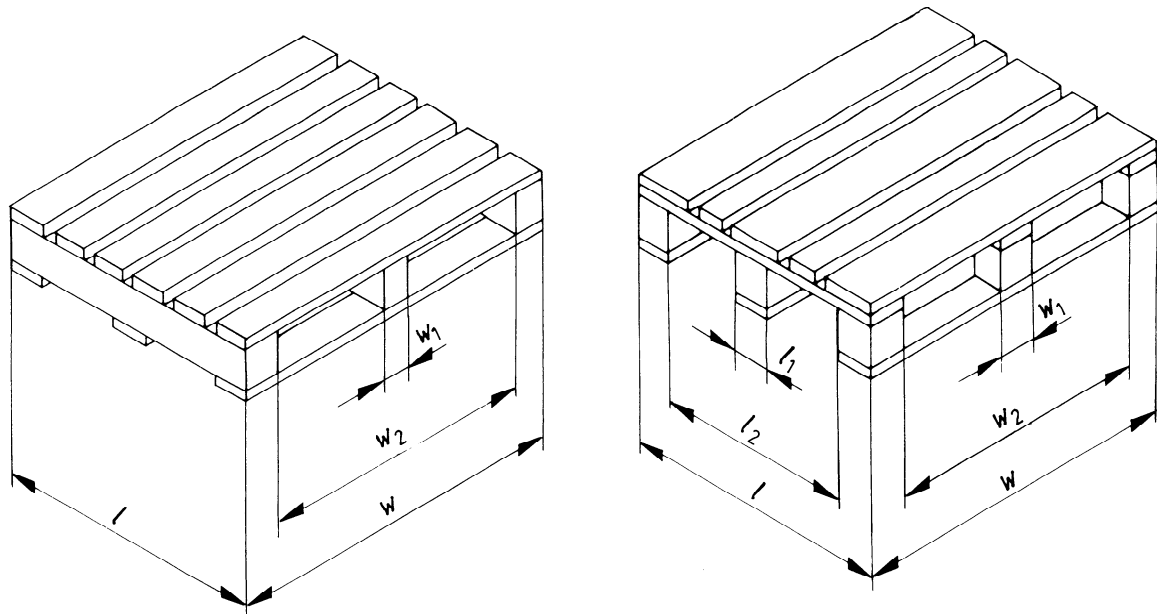
4.7 Squareness

At the time of manufacture, the difference in length of the two diagonals shall not exceed 13 mm.

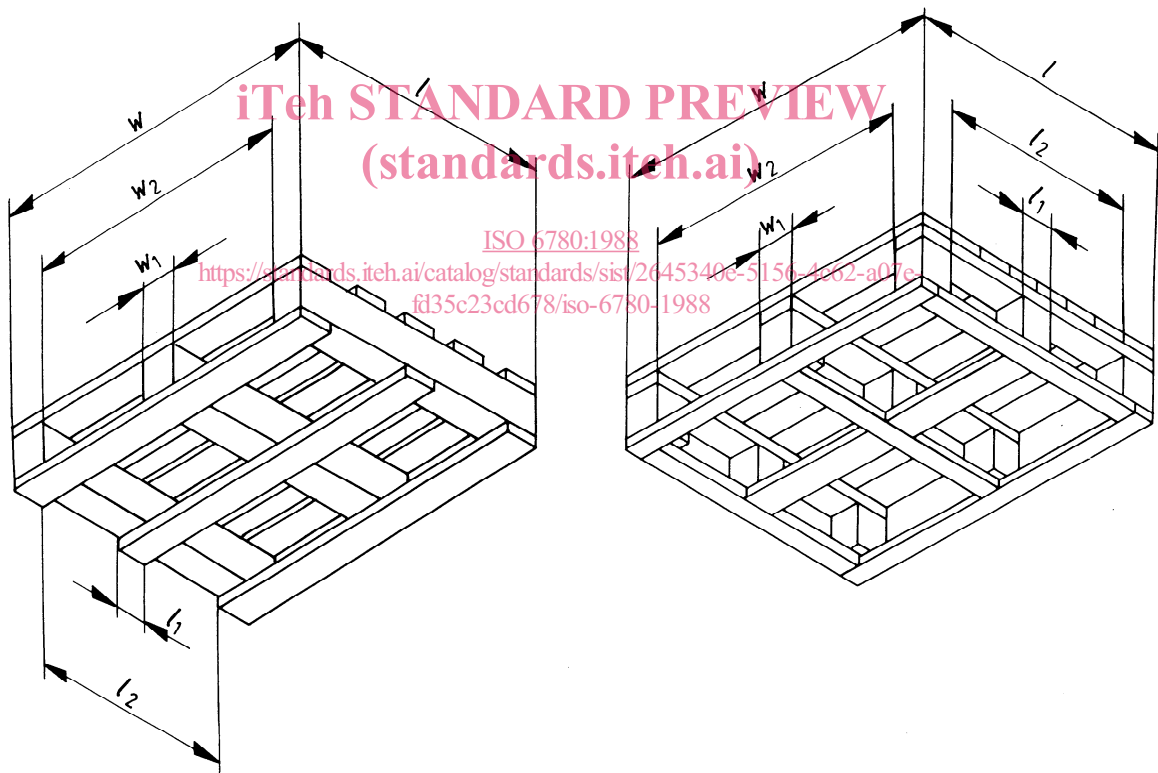
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a) Entries



b) Openings

Figure 1 – Horizontal dimensions of entries and openings for two-way and four-way pallets (see table 1)

Table 1 – Horizontal dimensions of entries and openings for two-way and four-way pallets (see figure 1)

Dimensions in millimetres

Nominal dimension of pallet (l or w)	Entries and openings	
	l_1 and w_1 max.	l_2 and w_2 min.
800	150	590
1 000	150	720
1 140	150	760
1 200	150	770

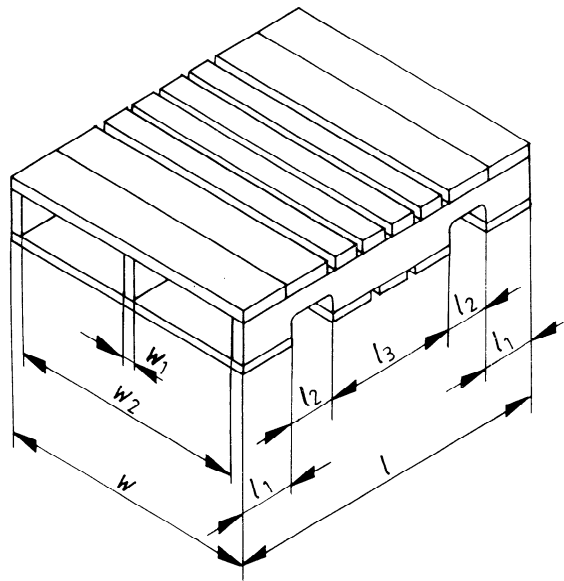


Figure 2 – Horizontal dimensions of entries and openings for partial four-way pallets (see table 2)

Table 2 – Horizontal dimensions of entries and openings for partial four-way pallets (see figure 2)

Dimensions in millimetres

Nominal dimensions of pallet ($l \times w$)	Entries and openings									
	$l_1^{*)}$		$l_2^{*)}$		l_3		w_1		w_2	
	min.	max.	min.**)	max.	min.	max.	min.	max.	min.	max.
1 000 × 1 200	90	155	200	255	180	420	38	150	900	1 124
1 200 × 1 000	90	155	200	255	100	220	38	150	700	924
800 × 1 200***)	90	140	200	210	100	220	38	150	900	1 124
1 200 × 800	90	155	200	255	380	620	38	150	700	724
1 219 × 1 016	90	155	200	255	399	639	38	150	716	940
1 016 × 1 219	90	155	200	255	196	436	38	150	919	1 143
1 140 × 1 140	90	155	200	255	320	560	38	150	840	1 064

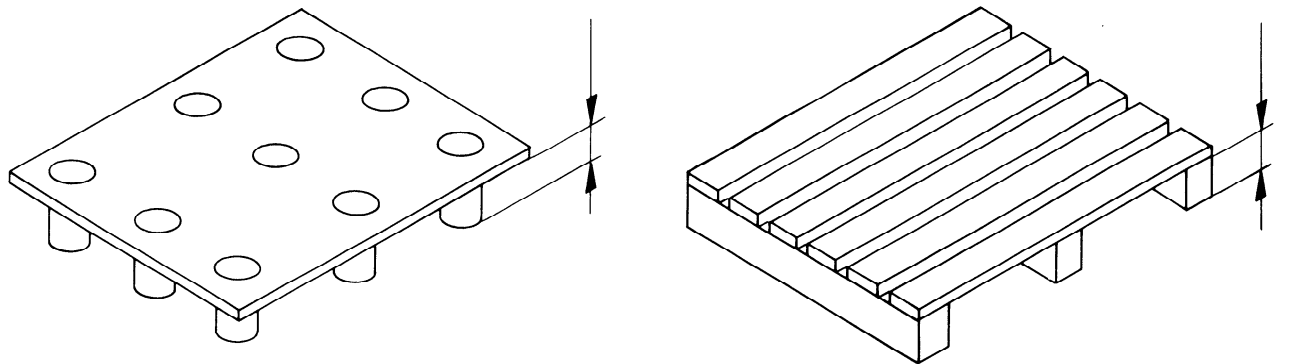
*) Pallet strength and versatility are optimized if l_1 and l_2 are constructed to the maximum dimensions.

**) These values do not allow pallets to be handled with pallet trucks with tandem trail wheels. Dimension l_2 should therefore be kept at a maximum whenever possible to enable such pallet trucks to be used.

***) Partial four-way pallets with a length of 800 mm cannot be handled with pallet trucks with tandem trail wheels, even with l_2 at a maximum.

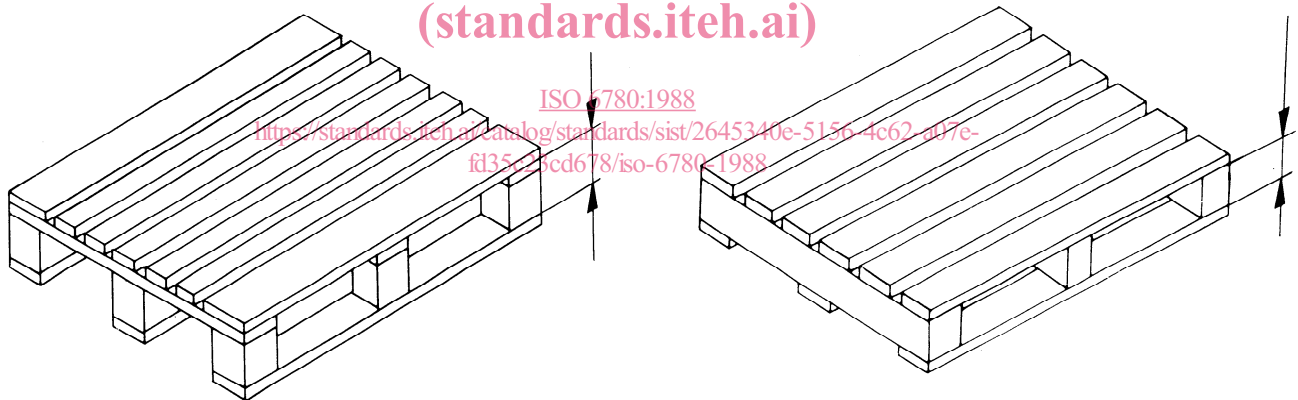
Annex A
(informative)

Vertical dimensions of entries for lifting devices – Measurement of specified dimensions with typical pallet designs



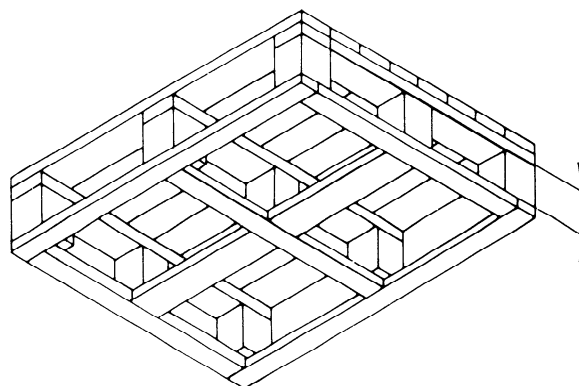
a) Free entry not less than 95 mm

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b) Entry not less than 98 mm

Figure A.1 – Typical two-way and four-way pallet designs illustrating the vertical dimensions specified in 4.2.1