INTERNATIONAL STANDARD

ISO 12776

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Pallets — Slip sheets

Palettes — Feuilles intercalaires

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Contents

Page

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.

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.

ISO 12776 was prepared by Technical Committee ISO/TC 51, *Pallets for unit load method of materials handling*.

This first edition cancels and replaces ISO/TR 12776:1995 which has been technically revised.

Introduction

The system of slipsheet unit-load handling involves the use of a thin sheet of material, the slipsheet, as a base on which items are assembled as a unit load for handling, transport and storage. Slipsheets provide an alternative to the use of pallets for assembling, handling, transporting and sorting goods in unit-load form.

To use slipsheets, a conventional lift truck is equipped with a special attachment for gripping, pulling and pushing the slip-sheeted unit loads. The attachment may be permanent or removable depending on the application and circumstances. If all lift trucks in the distribution cycle are equipped with the proper attachment, a slipsheet is the only material-handling base required. Unit loads on slipsheet, may be lifted, stacked and then retrieved and handled as a single unit. The stacking height may be as high as five unit loads, depending on the strength of the packing. However, the slipsheet may also be used in conjunction with a pallet, if desired, at certain stages in the distribution cycle.

Originally developed in the United States, the slipsheet provides an inexpensive and lightweight unit-load base that occupies little shipping cube and is more easily disposed of than conventional pallets. If both the shipper and receiver have the appropriate equipment and other basic requirements are met, the full benefits of unitized load handling can be met using slipsheets.

Pallets — Slip sheets

1 Scope

This International Standard specifies slipsheets used for arranging commodities into a unit-load, and also for loading, unloading, transporting and storing unit-load commodities mainly handled by forklift trucks equipped with a push-pull device.

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 material handling — Vocabulary*

ISO 527 (all parts), *Plastics — Determination of tensile properties*

ISO 1924-2, *Paper and board — Determination of tensile properties — Part 2: Constant rate of elongation method*

ISO 3676, *Packaging — Unit load sizes — Dimensions*

ISO 6780, *Flat pallets for intercontinental materials handling — Principal dimensions and tolerances*

3 Terms and definitions

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

3.1
corner cut-out
corner notch
corner configuration on two-**tab** (3.18) adjacent, three-tab and four-tab **slipsheets** (3.17)

NOTE The configuration may be a 90° cut-out, a diagonal cut-out or a slit.

3.2
corrugated fibreboard
board consisting of one or more sheets of fluted paper glued to a flat sheet of board or between several sheets

[ISO 4046-4:2002, definition 4.49]

3.3
cross direction
CD
direction perpendicular to the **machine direction** (3.10) in corrugated fibreboard and solid fibre **slipsheets** (3.17)

3.4
depth
slipsheet (3.17) dimension parallel to the direction of handling by a device such as a push-pull forklift

3.5
expendable slipsheet
slipsheet (3.17) intended to be discarded after a single cycle of use

3.6
frontage
slipsheet (3.17) dimension at right angles to the direction of handling by a device such as a push-pull forklift

3.7
laminated tab
tab (3.18) which has been reinforced with a layer of paper, plastic, cloth or similar material to the tab and **load surface** (3.9), allowing a portion to be under the unit load

3.8
length
slipsheet (3.17) dimension corresponding to the longer **load surface** (3.9) dimension

NOTE Length and width are not defined for square load surfaces.

3.9
load surface
portion of the **slipsheet** (3.17) under the unit load of goods or products

3.10
machine direction
MD
direction parallel to the direction of manufacture in corrugated fibreboard and solid fibreboard **slipsheets** (3.17)

3.11
maximum authorized freight mass
maximum load mass which the **slipsheet** (3.17) can endure while in service

3.12
nominal dimension
actual dimension of the **slipsheet** (3.17) including **load surface** (3.9) and **tabs** (3.18)

3.13
push-pull
mechanical, hydraulic or pneumatically powered attachment on an industrial truck used to retrieve or discharge a **slipsheet** (3.17) unit load

3.14
recyclable slipsheet
slipsheet (3.17) material which can be reprocessed

3.15
reusable slipsheet
slipsheet (3.17) intended for multiple cycles of use

3.16
score line
impression or crease in the **slipsheet** (3.17) material that is provided to locate and facilitate folding to create a **tab** (3.18)

3.17
slipsheet
rectangular, flat sheet of material with a **tab** (3.18) on one or more edges, used as a base for assembling, handling, storing or transporting goods and products in unit load form

3.18
tab
part or parts of a **slipsheet** (3.17) which extend beyond the unit load dimensions to facilitate handling by a **push-pull** (3.13) device equipped with a gripper jaw

3.19
thickness
caliper
vertical dimension through the **slipsheet** (3.17) material

3.20
width
slipsheet (3.17) dimension corresponding to the direction opposite to the **length** (3.8)

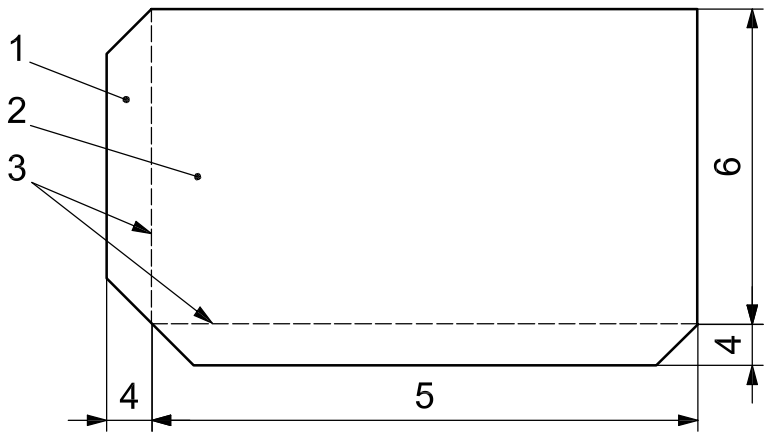
NOTE Length and width are not defined for square load surfaces.

3.21
width of a tab
depth of a **tab** (3.18) adjoining the longer or the shorter side of the **load surface** (3.9)

3.22
ultimate tensile strength
maximum resistance of the **slipsheet** (3.17) against a tensile load

4 Identification of parts

The names of parts of the slipsheet are shown in Figure 1.



Key
1 tab (3.18)
2 load surface (3.9)
3 score line (3.16)
4 width of a tab (3.21)
5 length (3.8)
6 width (3.20)

Figure 1 — Parts of a slipsheet (form shown is an example)

5 Type, classification and maximum authorized freight mass

5.1 Types

5.1.1 General

The types of slipsheets are described and shown in 5.1.2. to 5.1.5.

5.1.2 Type 1 — One-tab slipsheet

A one-tab slipsheet has a single tab at one side of the slipsheet. This type is used for loading and unloading a unit-load from the side. See Figure 2.

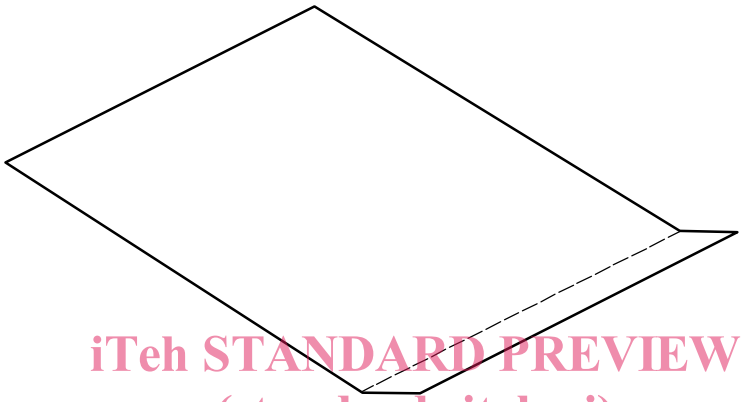


Figure 2 — One-tab slipsheet

5.1.3 Type 2 — Two-tab slipsheet

5.1.3.1 Type 2A — Two-tab slipsheet — Adjacent

A two-tab slipsheet — adjacent has two tabs located at adjacent sides of the slipsheet. This type is used for loading and unloading a unit-load from the adjacent sides. This type becomes useful when changing the orientation of rectangular unit loads during handling, storage and distribution. One of the tabs can be used as a spare if the other tab becomes disabled. See Figure 3.

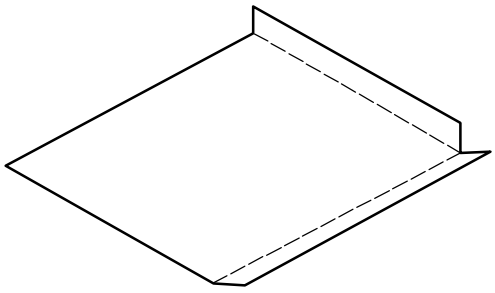


Figure 3 — Two-tab slipsheet — Adjacent

5.1.3.2 Type 2B — Two-tab slipsheet — Opposite

A two-tab slipsheet — opposite has two tabs located on opposite sides of the slipsheet. This type is used for loading and unloading a unit-load from the opposite sides. One of the tabs can be used as a spare if the other tab becomes disabled. See Figure 4.

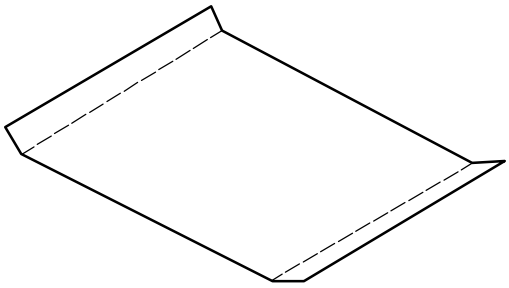


Figure 4 — Two-tab slipsheet — Opposite

5.1.4 Type 3 — Three-tab slipsheet

A three-tab slipsheet has three tabs located on three sides of the slipsheet. This type has the features of slipsheet types 2A and 2B combined. See Figure 5.

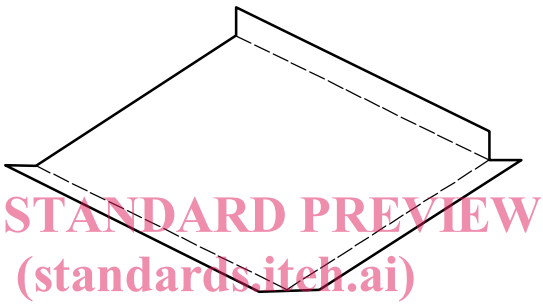


Figure 5 — Three-tab slipsheet

5.1.5 Type 4 — Four-tab slipsheet

A four-tab slipsheet has four tabs located on four sides of the slipsheets. This type has the features of slipsheet types 2A, 2B and 3 combined. It is also used to enclose and stabilize a loaded unit by folding all the tabs. See Figure 6.

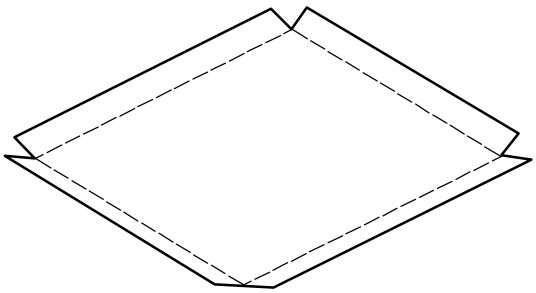


Figure 6 — Four-tab slipsheet

5.2 Corner profile of tab

5.2.1 General

Corner profiles of tabs are described in 5.2.2 to 5.2.5 and shown in Figure 7. The broken lines shown indicate score lines. Figure 2 shows examples of slipsheets with two adjacent tabs.