SLOVENSKI STANDARD
oSIST prEN 12814-2:2019

01-september-2019

Preskušanje zvarjenih spojev plastomernih polizdelkov - 2. del: Trgalni preskus

Testing of welded joints of thermoplastics semi-finished products - Part 2: Tensile test

Prüfen von Schweißverbindungen aus thermoplastischen Kunststoffen - Teil 2: Zugversuch

Essais des assemblages soudés sur produits semi-finis en thermoplastiques - Partie 2 : Essai de traction

Ta slovenski standard je istoveten z: prEN 12814-2

ICS:

25.160.40	Varjeni spoji in vari	Welded joints and welds
83.080.01	Polimerni materiali na splošno	Plastics in general

oSIST prEN 12814-2:2019 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
prEN 12814-2

July 2019

ICS 25.160.40

Will supersede EN 12814-2:2000

English Version

Testing of welded joints of thermoplastics semi-finished products - Part 2: Tensile test

Essais des assemblages soudés sur produits semi-finis en thermoplastiques - Partie 2 : Essai de traction

Prüfen von Schweißverbindungen aus thermoplastischen Kunststoffen - Teil 2: Zugversuch

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 249.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (prEN 12814-2:2019) has been prepared by Technical Committee CEN/TC 249 “Plastics”, the secretariat of which is held by NBN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 12814-2:2000.

In comparison with the previous edition, the following technical modifications have been made:

— the references standards ISO 5893 and ISO 13953 have been changed to undated;

— a new annex (Annex A), describing the tensile test specimen geometry for overlap joints, has been added.

1 Scope

This document specifies the dimensions, the method of sampling, the preparation of the test specimens and the conditions for performing the tensile test in order to determine the short-term tensile welding factor.

A tensile test may be used in conjunction with other tests (e.g. bend, tensile creep, macro) to assess the performance of welded assemblies, made from thermoplastics materials.

The test is applicable to welded assemblies made from thermoplastics materials filled or unfilled, but not reinforced, irrespective of the welding process used.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

EN ISO 527-1, *Plastics — Determination of tensile properties — Part 1: General principles (ISO 527-1)*

ISO 5893, *Rubber and plastics test equipment — Tensile, flexural and compression types (constant rate of traverse) — Description*

EN 13100-1, *Non destructive testing of welded joints of thermoplastics semi-finished products — Part 1: Visual examination*

3 Symbols and designations

For the purposes of this document, the symbols and designations given in Table 1 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

Table 1 — Symbols and designations

Symbols and abbreviations	Designations	Units
a	Minimum measured thickness of the test specimen within calibrated and parallel length	millimetre
a_n	Nominal thickness of the test piece	millimetre
b	Width of calibrated and parallel length of the test specimen	millimetre
b_1	Width of shoulder of the test specimen	millimetre
D_n	Nominal outside diameter of the tube	millimetre
F_r	The value of force of the unwelded test specimens taken from the same test piece, used in the calculation of f_s	Newton
f_s	The short-term tensile welding factor	

Symbols and abbreviations	Designations	Units
F_w	The value of force of the welded test specimen used in the calculation of f_s	Newton
L	Total length of the test specimen	millimetre
L_j	Minimum distance between the clamping jaws	millimetre
L_o	Calibrated and parallel length of the test specimen	millimetre
L_w	Maximum width of the weld bead of the test specimen	millimetre
r	Radius of shoulder of the test specimen	millimetre
a_r	The value of stress of the unwelded test specimens taken from the same test piece, used in the calculation of f_s	N/mm²
a_w	The value of stress of the welded test specimens used in the calculation of f_s	N/mm²

4 Principle of the test

The test specimen is extended along its major longitudinal axis at constant speed until the test specimen fractures or yields. During this procedure the load sustained by the test specimen is measured.

5 Sampling procedures

The test specimens (welded and unwelded) shall be cut perpendicular to the welded joint at least eight hours after welding.

Each test specimen shall be marked in order to identify its original position within the test piece.

No heat treatment or mechanical straightening operations shall be carried out on the test specimen.

6 Dimensions of test specimens

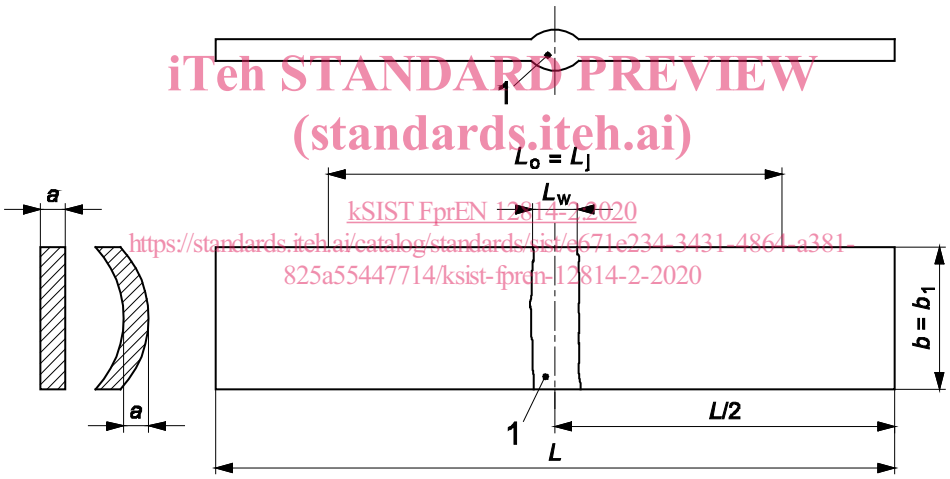
For tubes of nominal outside diameter D_n less than 20 mm the whole tube shall be tested and the minimum distance between the clamps shall be 200 mm.

The dimensions of test specimens are given in Table 2 and Table 3.

Table 2 — Dimension of type 1 test specimens

Dimension in millimetres

D_n or a_n	***b***	L_o	***L***
$20 \le D_n < 50$	$a_n + \frac{D_n}{10}$	80	≥ 120
$50 \le D_n < 100$	$a_n + \frac{D_n}{10}$	120	≥ 170
$D_n \ge 100$ or flat assemblies: $a_n \le 10$ $10 < a_n \le 20$ $a_n > 20$	 15 30 1,5 a_n	 120 120 200	 ≥ 170 ≥ 300 ≥ 400



Key

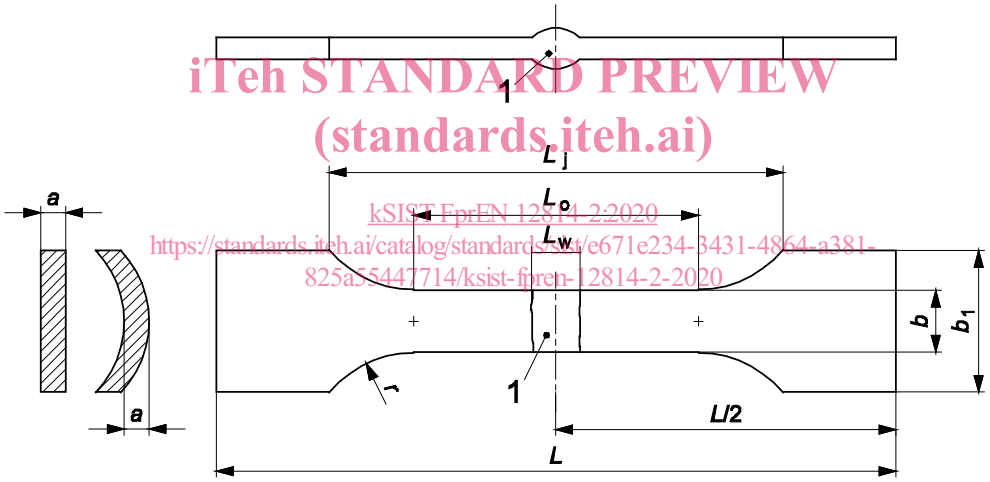
1 weld

Figure 1 — Type 1 test specimen for flat and tubular assemblies

Table 3 — Dimension of type 2 test specimens

Dimensions in millimetres

D_n or a_n	***b***	min. b_1	L_o	***L***	***r***
$20 \le D_n < 50$	$a_n + \frac{D_n}{10}$	$b + 10$	80	≥ 120	60
$50 \le D_n < 100$	$a_n + \frac{D_n}{10}$	$b + 10$	120	≥ 170	60
$D_n \ge 100$ or flat assemblies:					
$a_n \le 10$	15	20	120	≥ 170	60
$10 < a_n \le 20$	30	40	120	≥ 300	60
$a_n > 20$	1,5 a_n	80	200	≥ 400	60



Key

1 weld

Figure 2 — Type 2 test specimen for flat and tubular assemblies

Where the beads are left intact in service, they shall be left intact for the test. Where the beads are removed in service, they shall be removed prior to testing.

The tolerance for b shall be ± 1 mm and the minimum value shall be 6 mm. The tolerance for L_0 shall be ± 2 mm.

The variation of b over the length L_0 shall not exceed ± 2 % of the average value of b.

The forms of the test specimens are given in Figure 1 and Figure 2.

For overlap joints, the dimensions and form of the test specimens are given in Annex A.