SLOVENSKI STANDARD
SIST EN 12814-2:2000

01-december-2000

Preskus 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: EN 12814-2:2000

ICS:

25.160.40 Varjeni spoji in vari Welded joints

SIST EN 12814-2:2000 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 12814-2

January 2000

ICS 25.160.40

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 European Standard was approved by CEN on 27 November 1999.

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. 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.

This European Standard exists 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.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

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

Contents

Page

Foreword 3

1 Scope 4

2 Normative references 4

3 Symbols and designations 5

4 Principle of the test 5

5 Sampling procedures 6

6 Dimensions of test specimens 6

7 Cutting of test specimens 8

8 Mechanical testing 8

9 Test equipment 9

10 Determination of the short term tensile welding factor 9

11 Test report 9

Annex A (informative) Test speed for some thermoplastics materials 11

Annex B (informative) Notched tensile test specimen 12

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 249 "Plastics", the secretariat of which is held by IBN.

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of an identical text or by endorsement, at the latest by July 2000, and conflicting national standards shall be withdrawn at the latest by July 2000.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This standard 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 co-axial or co-planar welded assemblies made from thermoplastics materials filled or unfilled, but not reinforced, irrespective of the welding process used.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to, or revisions of, any of these publications apply to this standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

ISO 527-1, *Plastics - Determination of tensile properties - Part 1 : General principles*

ISO 5893:1993, *Rubber and plastics test equipment - Tensile, flexural and compression types (constant rate of traverse) - Description*

ISO/DIS 13953:1996, *Polyethylene (PE) pipes and fittings - Determination of the tensile strength of test specimens from a butt-fused joint*

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

3 Symbols and designations

Symbols and designations are given in table 1.

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	
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
σ_r	The value of stress of the unwelded test specimens taken from the same test piece, used in the calculation of f_s	N/mm^2
σ_w	The value of stress of the welded test specimens used in the calculation of f_s	N/mm^2

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

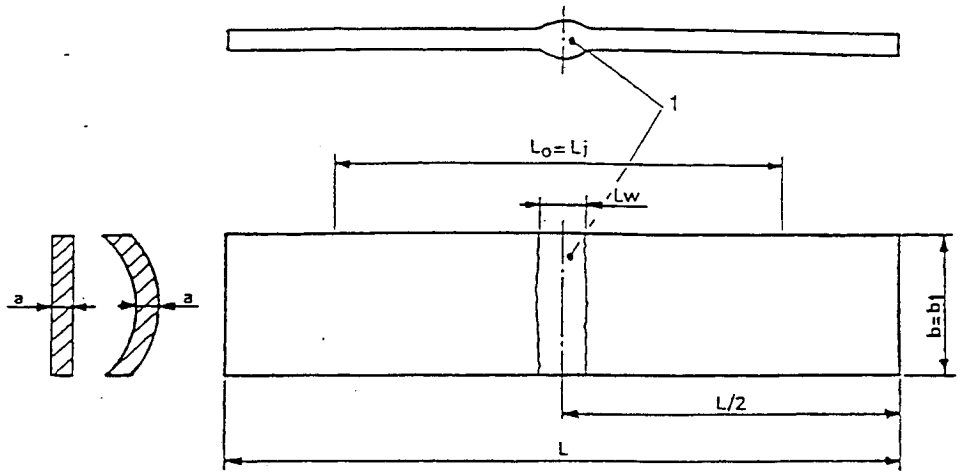
For tubes of nominal outside diameter D_n less than 20 mm the whole tube shall be tested and the minimum distance between the clamps shall be 200 mm.

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

Table 2 - Dimension of type 1 test specimens

(Dimensions in millimetres)

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