

SLOVENSKI STANDARD

SIST EN 13100-1:2017

01-julij-2017

Nadomešča:
SIST EN 13100-1:2000

Neporušitveno preskušanje zvarjenih spojev plastomernih polizdelkov - 1. del: Vizualni pregled

Non destructive testing of welded joints of thermoplastics semi-finished products - Part 1:
Visual examination

Zerstörungsfreie Prüfung von Schweißverbindungen aus thermoplastischen Kunststoffen
- Teil 1: Sichtprüfung

Contrôle non destructif des assemblages soudés sur produits semi-finis en
thermoplastiques - Partie 1: Contrôle visuel

Ta slovenski standard je istoveten z: **EN 13100-1:2017**

ICS:

25.160.40	Varjeni spoji in vari	Welded joints and welds
83.140.01	Izdelki iz gume in polimernih materialov na splošno	Rubber and plastics products in general

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en,fr,de

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EUROPEAN STANDARD

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NORME EUROPÉENNE

EUROPÄISCHE NORM

May 2017

ICS 25.160.40

Supersedes EN 13100-1:1999

English Version

Non destructive testing of welded joints of thermoplastics semi-finished products - Part 1: Visual examination

Contrôle non destructif des assemblages soudés sur
produits semi-finis en thermoplastiques - Partie 1 :
Contrôle visuel

Zerstörungsfreie Prüfung von Schweißverbindungen
an Halbzeugen aus thermoplastischen Kunststoffen -
Teil 1: Sichtprüfung

This European Standard was approved by CEN on 10 March 2017.

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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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European foreword

This document (EN 13100-1:2017) has been prepared by Technical Committee CEN/TC 249 "Plastics", the secretariat of which is held by NBN.

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 November 2017, and conflicting national standards shall be withdrawn at the latest by November 2017.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 13100-1:1999.

EN 13100, "Non destructive testing of welded joints of thermoplastics semi-finished products", is currently composed with the following parts:

- Part 1: Visual examination;
- Part 2: X-ray radiographic testing;
- Part 3: Ultrasonic testing;
- Part 4: High voltage testing.

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According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

EN 13100-1:2017 (E)

1 Scope

This European standard covers the visual examination of welds in thermoplastic materials. It may also be applied to visual testing of the joint prior to and during the welding.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 14728, *Imperfections in thermoplastic welds - Classification*

EN 16296, *Imperfections in thermoplastics welded joints - Quality levels*

EN ISO 17637:2016, *Non-destructive testing of welds — Visual testing of fusion-welded joints (ISO 17637:2016)*

EN ISO 17659, *Welding - Multilingual terms for welded joints with illustrations (ISO 17659)*

3 Test conditions and equipment

The illuminance at the surface, shall be a minimum of 350 lx, 500 lx is recommended.

For direct visual examination of welds, access shall be sufficient to allow the eye to be placed within a distance of 600 mm from the weld, around the whole weld and the viewing angle shall not be less than 30°.

Remote visual examination of welds using mirrors, boroscopes, fibre optics or cameras shall be considered as additional requirements and shall be specified by an application standard or by agreement between the contracting parties.

If a good contrast and relief effect between imperfections and background is required, an additional light source can be used.

The equipment (e.g.: gauges, callipers) used for the dimensional check of the weld shall ensure the necessary precision level, in accordance with the applicable acceptance criteria.

Examples of examination equipment are given in EN ISO 17637:2016, Annex A.

4 Personnel

Visual examination of welds and the evaluation of results for final acceptance should be performed by personnel qualified and familiar with the relevant standards, rules, specifications and the welding procedure [1] used.

It is recommended that personnel should be qualified in accordance with EN ISO 9712 or an equivalent standard at an appropriate level in the relevant industry sector.

5 Visual examination

5.1 General

The examination is normally performed on welds in the as-welded condition; however, for example when required by an application standard or by agreement between the contracting parties, the examination may be also carried out at other stages during the welding process, such as for checking

the weld preparation and during the welding, for evaluating the effective application of the relevant welding procedure specification [1].

The extent of examination and the acceptance criteria of the imperfections shall be defined in advance by EN 16296, an application standard or by agreement between the contracting parties.

The examiner shall have access to the necessary inspection and production documentation required.

The classification of the imperfections can be found in EN 14728.

The terms to be used are available in EN ISO 17659.

5.2 Visual examination of joint preparation

When visual examination is required prior to welding, the joint preparation shall be examined to check that the shape, dimensions and the cleaning conditions of the weld preparation meet the specified requirements given in the relevant standards and/or in the applicable welding procedure specification [1].

During this examination special attention should be paid to the correct fixing of the parts to be welded (e.g.: linear and angular alignment, gap).

5.3 Visual examination during welding

When required, in the case of multipass welding processes, the weld shall be examined during the welding process to check that:

- a) each run is cleaned and/or scraped before it is covered by subsequent runs;
- b) there are no visible imperfections (such as cracks or cavities), if imperfections are observed, they shall be reported immediately so that remedial action can be taken before the execution of the next run;
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- c) the transition between the runs and between the weld and the parent material is so formed that satisfactory penetration can be accomplished when welding the next run;
- d) after any necessary repairs/remedial action, the weld conforms to the original requirements of the welding procedure specification.

5.4 Visual examination of the finished weld

Welds shall be examined in the as-welded condition and shall also be examined after any surface treatment (if any).

The finished weld shall be examined to determine whether it meets the requirements of the application or product standard or other agreed acceptance criteria, on the basis of specific quality levels as defined in EN 16296.

All the imperfections that are not permissible shall be reported.

5.5 Visual examination of repaired welds

When a weld fails to comply wholly or in part with the applicable acceptance criteria and repair is necessary, the repaired weld shall be re-examined to the same requirements as the original weld.

EN 13100-1:2017 (E)**6 Test report**

When test records are required, at least the following information shall be included in the report:

- a) name of the component manufacturer;
- b) name of the examining body, if different from the component manufacturer;
- c) reference to this standard;
- d) location of the weld(s);
- e) the applicable acceptance criteria;
- f) type of material(s);
- g) material thickness;
- h) type of joint;
- i) welding process;
- j) extent of examination;
- k) examination devices used (if any);
- l) result of examination, with the detail of the imperfections exceeding the acceptance criteria and their location;
- m) name and signature of examiner and date of examination.

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If a permanent visual record of an examined weld is required, photographs or accurate sketches or both shall be made with any imperfections clearly indicated.