SLOVENSKI STANDARD
SIST EN 10228-2:2000

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Neporušitveno preskušanje jeklenih izkovkov - 2. del: Preskušanje s penetranti

Non-destructive testing of steel forgings - Part 2: Penetrant testing

Zerstörungsfreie Prüfung von Schmiedestücken aus Stahl - Teil 2: Eindringprüfung

Essais non destructifs des pieces forgées en acier - Partie 2: Contrôle par ressuage

Ta slovenski standard je istoveten z: **EN 10228-2:1998**

ICS:

77.040.20	Neporušitveno preskušanje kovin	Non-destructive testing of metals
77.140.85	Železni in jekleni kovani izdelki	Iron and steel forgings

SIST EN 10228-2:2000 **en**

EUROPEAN STANDARD
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ICS 77.040.20; 77.140.85

Descriptors: forgings, steels, non-destructive tests, liquid penetrant tests, surface condition, defects, inspection, setting-up conditions, acceptability, quality classes

English version

Non-destructive testing of steel forgings - Part 2: Penetrant testing

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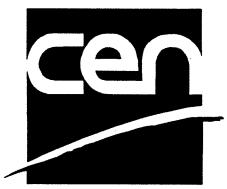
This European Standard was approved by CEN on 21 December 1997.

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

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Contents

Foreword

This European Standard has been prepared by Technical Committee ECISS/TC 028 "Steel forgings", the secretariat of which is held by BSI.

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 1998 and conflicting national standards shall be withdrawn at the latest by November 1998.

The titles of the other Parts of this European Standard are:

Part 1: Magnetic particle inspection

Part 3: Ultrasonic testing of ferritic or martensitic steel forgings

Part 4: Ultrasonic testing of austenitic and austenitic-ferritic stainless steel forgings

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 Part of EN 10228 describes the method and acceptance criteria to be used for the penetrant testing of steel forgings. The method described is used for the detection of surface discontinuities.

2 Normative references

This Part of EN 10228 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 Part of EN 10228 only when incorporated in by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 473	Qualification and certification of NDT personnel - General principles
EN 571	Non-destructive testing - Penetrant testing Part 1: General principles for the examination
prEN 1330	Non-destructive testing - Terminology Part 6: Terms used in penetrant systems
prEN ISO 3452	Non-destructive testing - Penetrant testing Part 2: Testing of penetrant materials Part 4: Equipment

3 Definitions

For the purposes of this Part of EN 10228 the definitions given in prEN 1330-6 shall apply.

4 Items for agreement

The following aspects concerning penetrant testing shall be agreed between the purchaser and the supplier at the time of enquiry and order:

a) the manufacturing stage(s) at which penetrant testing is to be performed. (see clause 8);

b) the surface areas to be examined. (see clause 9);

c) whether testing is to be performed with colour contrast or fluorescent penetrants (see 7.1);

d) the quality class required, or the quality classes and surfaces areas to which they apply. (see clause 14);

e) the applicable recording and acceptance criteria if different from those detailed in table 1;

f) whether the test is to be conducted in the presence of the purchaser or his representative;

g) whether the written procedure must be submitted for approval by the purchaser. (see clause 5);

5 Written procedure

5.1 General

Penetrant testing shall be performed in accordance with a written procedure. Where specified in the enquiry or order, the written procedure shall be submitted to the purchaser for approval prior to the examination.

5.2 Form

The written procedure shall be one of the following:

a) a product specification;

b) a procedure written specifically for the application;

c) this Part of EN 10228 may be used if it is accompanied by examination details specific to the application.

5.3 Content

The written procedure shall contain the following details as a minimum requirement:

a) description of the forgings to be examined;

b) reference documents;

c) qualification and certification of testing personnel;

d) stage of manufacture at which the testing is carried out;

e) surface area(s) specified in terms of the applicable quality classes;

f) type of penetrant testing products used : penetrant, remover, emulsifier, developer;

g) surface conditions required;

h) viewing conditions;

i) description of pre-testing cleaning and drying, including cleaning materials used and minimum time allowed for drying;

j) description of penetrant application, including application temperature and penetration time;

k) description of excess penetrant removal and of drying before developer application;

l) description of developer application, including development time;

m) method of marking or recording indications;

n) acceptance criteria;

o) whether post-cleaning is required; if so, a description of the process;

p) examination report.

6 Personnel qualification

Personnel shall be qualified and certificated in accordance with EN 473.

7 Testing system

7.1 Testing products

Penetrant testing products (penetrant, emulsifier, remover and developer) shall conform to EN 571: Part 1. The combination of penetrant testing products to be used shall meet the following requirements:

a) they shall conform to EN 571: Part 1;

b) they shall be compatible with the material to be inspected (see EN 571: Part 1 for guidance);

c) they shall enable the applicable recording level (see table 1) to be achieved (see EN 571: Part 1) for the determination of sensitivity levels.

7.2 Equipment

The equipment used shall conform to prEN ISO 3452: Part 4.

NOTE: The following equipment may be used:

a) Spray gun or aerosol spray.

b) Immersion tank.

c) Electrostatic spray gun.

7.3 Function test

The sensitivity of the penetrant shall be determined in accordance with prEN ISO 3452: Part 2.

NOTE. The temperature of the forging should be checked to ensure that it is within the detection media manufacturer's specified temperature limits.

8 Stage of manufacture

Where practicable, final acceptance testing shall be performed on the forging in its delivery conditions. (see clause 4.)

9 Surface condition

Surfaces to be tested shall be clean and free from scale, oil, grease, machining marks, paint and any other foreign matter which could adversely affect test sensitivity or the ability to interpret indications.

The surface finish of the surfaces to be examined shall be ≤ 6,3 μm R_a for quality classes 2, 3 and 4 and ≤ 12,5 μm R_a for quality class 1.

10 Coverage

Where practicable, the test shall be performed in such a way that 100 % coverage of the surface to be examined is achieved.