SLOVENSKI STANDARD
SIST EN 1289:1999

01-december-1999

Neporušitveno preskušanje zvarnih spojev - Preskušanje zvarnih spojev s penetranti - Stopnje sprejemljivosti

Non-destructive examination of welds - Penetrant testing of welds - Acceptance levels

Zerstörungsfreie Prüfung von Schweißverbindungen - Eindringprüfung von Schweißverbindungen - Zulässigkeitsgrenzen

Contrôle non destructif des assemblages soudés - Contrôle par ressuage des soudures - Niveaux d'acceptation

Ta slovenski standard je istoveten z: **EN 1289:1998**

ICS:

25.160.40	Varjeni spoji in vari	Welded joints

SIST EN 1289:1999 **sl,de**

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 1289

February 1998

ICS 25.160.40

Descriptors: welded joints, metals, quality control, non-destructive tests, liquid penetrant tests, surface condition, weld defects, defects tolerances, acceptability, levels : quantity

English version

Non-destructive examination of welds - Penetrant testing of welds - Acceptance levels

Contrôle non destructif des assemblages soudés - Contrôle par ressuage des soudures - Niveaux d'acceptation

Zerstörungsfreie Prüfung von Schweißverbindungen - Eindringprüfung von Schweißverbindungen - Zulässigkeitsgrenzen

This European Standard was approved by CEN on 26 January 1998.

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 Definitions 5

4 Testing parameters 5

5 Acceptance levels 6

Annex A (informative) Recommended testing parameters 8

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 121 "Welding", the secretariat of which is held by DS.

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 August 1998, and conflicting national standards shall be withdrawn at the latest by August 1998.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

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 European Standard specifies acceptance levels for indications from surface breaking imperfections in metallic welds detected by penetrant testing.

The acceptance levels are primarily intended for use during manufacture examination, but where appropriate they can be used for in service inspection.

The acceptance levels in this standard are based on detection capabilities that can be expected when using techniques specified in EN 571-1 and parameters recommended in Annex A. The acceptance levels can be related to welding standards, application standards, specifications or codes. Such a relationship is shown in EN 12062 for EN 25817 and EN 30042.

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 European Standard only when incorporated in it by amendment of revision. For undated references the latest edition of the publication referred to applies.

EN 571-1	Non-destructive testing - Penetrant testing - Part 1: General principles
prEN 1330-1	Non-destructive testing - Terminology - Part 1: General terms
prEN 1330-2	Non-destructive testing - Terminology - Part 2: Terms common to the non-destructive testing methods
prEN 1330-6	Non-destructive testing - Terminology - Part 6: Terms used in penetrant system
prEN ISO 3452-2	Non-destructive testing - Penetrant testing - Part 2: Testing of penetrant materials (ISO/DIS 3452-2:1996)
EN 12062	Non-destructive examination of welds - General rules for metallic materials
EN 25817	Arc-welded joints in steel - Guidance on quality levels for imperfections (ISO 5817:1992)
EN 30042	Arc-welded joints in aluminium and its weldable alloys - Guidance on quality levels for imperfections (ISO 10042:1992)

3 Definitions

For the purposes of this standard, in addition to those given in prEN 1330-1, prEN 1330-2 and prEN 1330-6 the following definitions apply:

3.1 linear indication

Indication having a length greater than three times its width.

3.2 non-linear indication

Indication having a length less than, or equal to three times its width.

4 Testing parameters

4.1 General

Many parameters, either individually or in combination, will affect the shape and size of a penetrant indication produced by a weld imperfection.

The following items are significant factors that will affect the shape and size of indications :

4.2 Sensitivity

Penetrant materials are classified in accordance with prEN ISO 3452-2, including a sensitivity level which relates to the ability to detect small imperfections. Generally higher sensitivity materials should be used for the detection of small imperfections.

4.3 Surface condition

Surface condition is directly related to the minimum detectable imperfection size. Best results are normally achieved when inspecting smooth surfaces. Surface roughness or irregularities (e. g. undercut, spatter) can cause high background and non-relevant indications resulting in a low probability of detection for small imperfections.

4.4 Process and technique

Penetrant systems and techniques should be selected according to the test surface condition. In some cases the choice will have a direct effect on the limits of reliable detection, for example the removal of excess penetrant by swab cleaning on rough surfaces is not recommended when seeking small imperfections.

Guidance on these matters is given in annex A and in EN 571-1.

5 Acceptance levels

5.1 General

The width of the test surface shall include the weld metal and the adjacent parent metal up to a distance of 10 mm on each side.

Indications produced by penetrant testing do not usually display the same size and shape characteristics as the imperfection causing that indication. For the purposes of this standard, it is the size of the indication which should be assessed against the values shown in table 1.

Acceptance levels prescribed for linear indications are those corresponding to the evaluation level. Indications lower than this shall not be taken into account. Normally, acceptable indications shall not be recorded.

Local grinding may be used to improve the classification of all or part of a test surface when it is required to work to a higher detection limit than that recommended by the existing weld surface condition in table A.1.

Acceptance levels for welds in metallic materials are given in table 1.

Table 1: Acceptance levels for indications

Dimensions in millimetres

Type of indication	Acceptance level [1)]		
	1	2	3
Linear indication l = length of indication	$l \leq 2$	$l \leq 4$	$l \leq 8$
Non-linear indication d = major axis dimension	$d \leq 4$	$d \leq 6$	$d \leq 8$
1) Acceptance levels 2 and 3 may be specified with a suffix "X" which denotes that all linear indications detected shall be evaluated to level 1. However the probability of detection of indications smaller than those denoted by the original acceptance level can be low.			

5.2 Evaluation of indications

Initial evaluation shall be carried out as described in EN 571-1 and final evaluation of indication size shall be carried out after a designated minimum development time has elapsed, and before the indication has degenerated such that it no longer represents the causing imperfection.

5.3 Grouped indications

Any adjacent indications separated by less than the major dimension of the smaller shall be assessed as a single, continuous indication.

Grouped indications shall be evaluated in accordance with an application standard.

5.4 Removal of imperfections

Where the product specification permits local grinding may be used to reduce or remove imperfections which are the cause of unacceptable indications. All such area shall be re-tested and evaluated with the same penetrant system and technique.