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**Keevitajate vastuvõtukatsetus.
Sulakeevitus. Osa 4: Nikkel ja
niklisulamid**

Approval testing of welders - Fusion welding - Part 4:
Nickel and nickel alloys

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN ISO 9606-4:1999 sisaldab Euroopa standardi EN ISO 9606-4:1999 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 23.11.1999 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN ISO 9606-4:1999 consists of the English text of the European standard EN ISO 9606-4:1999.</p> <p>This document is endorsed on 23.11.1999 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p>Käsitlusala: This standard specifies essential requirements, ranges of approval, test conditions, acceptance requirements and certification for the approval testing of welder performance for the welding of nickel.</p>	<p>Scope: This standard specifies essential requirements, ranges of approval, test conditions, acceptance requirements and certification for the approval testing of welder performance for the welding of nickel.</p>
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English version

Approval testing of welders – Fusion welding

Part 4: Nickel and nickel alloys
(ISO 9606-4 : 1999)

Epreuve de qualification des
soudeurs – Soudage par fusion –
Partie 4: Nickel et ses alliages
(ISO 9606-4 : 1999)

Prüfung von Schweißern – Schmelz-
schweißen – Teil 4: Nickel und
Nickellegierungen
(ISO 9606-4 : 1999)

This European Standard was approved by CEN on 1998-11-20.

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.

The European Standards exist 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, the Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

CEN

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
Introduction	4
1 Scope	4
2 Normative references	4
3 Definitions	5
4 Symbols and abbreviations	5
4.1 General	5
4.2 Test piece	5
4.3 Consumables	5
4.4 Miscellaneous	5
5 Essential variables for approval testing	5
5.1 General	5
5.2 Welding processes	6
5.3 Joint types (butt and fillet welds)	6
5.4 Material groups	6
5.5 Consumables	6
5.6 Dimensions	6
5.7 Number of test pieces	7
5.8 Welding positions	7
6. Range of approval for the welder	7
6.1 General	7
6.2 Welding process	7
6.3 Joint types	7
6.4 Material groups	8
6.5 Consumables	8
6.6 Dimensions	9
6.7 Welding positions	9
7 Examination and testing	11
7.1 Supervision	11
7.2 Shapes and dimensions of test pieces	11
7.3 Welding conditions	12
7.4 Test methods	13
7.5 Test piece and specimens	13
8 Acceptance requirements for test pieces	17
9 Re-tests	17
10 Period of validity	17
10.1 Initial approval	17
10.2 Prolongation	18
11 Certificate	18
12 Designation	18
Annex A (informative) Job knowledge	20
Annex ZA (informative) Bibliography	22
Annex ZB (informative) Clauses of this European Standard addressing essential requirements or other provisions of EU Directives	23

Foreword

The text of EN ISO 9606-4:1999 has been prepared by Technical Committee CEN/TC 121 "Welding", the secretariat of which is held by DS, in collaboration with Technical Committee ISO/TC 44 "Welding and allied processes".

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 October 1999, and conflicting national standards shall be withdrawn at the latest by October 1999.

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).

For relationship with EU Directive(s), see informative Annex ZB, which is an integral part of this standard.

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.

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Introduction

This standard covers the principles to be observed in the approval testing of welder performance for the fusion welding of nickel and nickel alloys.

The term "nickel" stands for nickel and weldable nickel alloys.

The ability of the welder to follow verbal or written instructions and testing of his skill are therefore important factors in ensuring the quality of the welded product.

Testing of skill to this standard depends on welding methods in which uniform rules and test conditions are complied with, and standard test pieces are used.

The test weld can be used to approve a welding procedure and a welder provided that all the relevant requirements, e.g. test piece dimensions, are satisfied (see relevant part of EN 288-2).

1 Scope

This standard specifies essential requirements, ranges of approval, test conditions, acceptance requirements and certification for the approval testing of welder performance for the welding of nickel.

This standard applies to the approval testing of welders for the fusion welding of nickel.

This standard is intended to provide the basis for the mutual recognition by examining bodies for approval relating to welders' competence in the various fields of application. Tests will be carried out in accordance with this standard unless more severe tests are specified by the relevant application standard when these are applied.

During the approval test the welder should be required to show adequate practical experience and job knowledge (test non mandatory) of the welding processes, materials and safety requirements for which he is to be approved; information on these aspects is given in Annex A.

This standard is applicable when the welder's approval testing is required by the purchaser, by inspection authorities or by other organizations.

The welding processes referred to in this standard include those fusion welding processes which are designated as manual or partly mechanized welding. It does not cover fully mechanized and automatic processes (see 5.2).

This standard covers approval testing of welders for work on semi-finished and finished products made from wrought, forged or cast material types listed in 5.4.

The certificate of approval testing is issued under the sole responsibility of the examiner or examining body.

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 or revision. For undated references the latest edition of the publication referred to applies.

EN 287-1 : 1992

Approval testing of welders – Fusion welding – Part 1: Steels

EN 288-2 : 1992

Specification and approval of welding procedures for metallic materials – Part 2: Welding procedure specification for arc welding

EN 571-1

Non destructive testing - Penetrant testing – Part 1: General principles

EN 910

Destructive test on welds in metallic materials – Bend tests

EN 970

Non-destructive examination of fusion welds – Visual examination

EN 1289

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

EN 1320

Destructive tests on welds in metallic materials – Fracture test

EN 1321

Destructive tests on welds in metallic materials – Macroscopic and microscopic examination of welds

EN 1435

Non-destructive examination of welds – Radiographic examination of welded joints

EN 24063 : 1992

Welding, brazing, soldering and braze welding of metals – Nomenclature of processes and reference numbers for symbolic representation on drawings (ISO 4063 : 1990)

EN 25817 : 1992

Arc-welded joints in steel – Guidance on quality levels for imperfections (ISO 5817 : 1992)

EN 26520 : 1991

Classification of imperfections in metallic fusion welds, with explanations (ISO 6520 : 1982)

EN ISO 6947 : 1997

Welds – Working positions – Definitions of angles of slope and rotation (ISO 6947 : 1993)

CR 12187

Welding – Guidelines for a grouping system of materials for welding purposes

ISO 857 : 1990

Welding, brazing and soldering processes – Vocabulary

3 Definitions

For the purposes of this standard the definitions given in EN 287-1 apply.

4 Symbols and abbreviations

4.1 General

Where the full wording is not used, the following symbols and abbreviations shall be used when completing the test certificate (see Annex B of EN 287-1 : 1992)

4.2 Test piece

a	nominal throat thickness ;
BW	butt weld ;
D	outside diameter of pipe ;
FW	fillet weld ;
P	plate ;
t	plate or pipe wall thickness ;
T	pipe ;
z	leg length of fillet weld.

4.3 Consumables

nm	no filler metal ;
wm	with filler metal.

4.4 Miscellaneous

bs	welding from both sides ;
gg	back gouging or back grinding of welds ;
mb	welding with backing material ;
nb	welding without backing ;
ng	no back gouging or no back grinding ;
ss	single-side welding.

5 Essential variables for approval testing

5.1 General

The criteria specified in this clause shall be examined in order to identify the ability of the welder in these areas. Each criterion is considered to be a significant factor in the approval testing.

The welder's approval test shall be carried out on test pieces and is independent of the type of construction.