

**Steel products with improved
deformation properties perpendicular to
the surface of the product - Technical
delivery conditions**

Steel products with improved deformation properties
perpendicular to the surface of the product -
Technical delivery conditions

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 10164:2005 sisaldab Euroopa standardi EN 10164:2004 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 25.01.2005 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 10164:2005 consists of the English text of the European standard EN 10164:2004.</p> <p>This document is endorsed on 25.01.2005 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 European Standard specifies through thickness properties and associated test methods for flat products and sections of steel.</p>	<p>Scope: This European Standard specifies through thickness properties and associated test methods for flat products and sections of steel.</p>
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ICS 77.140.50

Võtmesõnad:

Hinnagrupp G

English version

**Steel products with improved deformation properties
perpendicular to the surface of the product - Technical delivery
conditions**

Aciers de construction à caractéristiques de déformation
améliorées dans le sens perpendiculaire à la surface du
produit - Conditions techniques de livraison

Stahlerzeugnisse mit verbesserten
Verformungseigenschaften senkrecht zur
Erzeugnisoberfläche - Technische Lieferbedingungen

This European Standard was approved by CEN on 4 November 2004.

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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



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Contents

	Page
Foreword.....	3
Introduction	4
1 Scope	5
2 Normative references	5
3 Designation	5
4 Information to be supplied by the purchaser	6
4.1 Mandatory information	6
4.2 Options	6
5 Requirements	6
5.1 Reduction of area.....	6
5.2 Ultrasonic testing.....	7
6 Inspection	7
6.1 Test units	7
6.1.1 General.....	7
6.1.2 Flat products	7
6.1.3 Sections	8
7 Preparation of samples and test pieces	8
7.1 Location and orientation of samples and test pieces.....	8
7.1.1 Preparation of samples	8
7.1.2 Preparation of test pieces	9
7.2 Identification of samples and test pieces	12
8 Test method.....	12
8.1 Tensile test	12
8.2 Retest	13
8.3 Invalidation of tests	13
9 Marking, labelling and packaging	13
10 Complaints	13
11 Options (see 4.2)	13
Bibliography	14

Foreword

This document (EN 10164:2004) has been prepared by Technical Committee ECISS/TC 10 “Structural steels – Grades and qualities”, the secretariat of which is held by NEN.

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 June 2005, and conflicting national standards shall be withdrawn at the latest by June 2005.

This document supersedes EN 10164:1993, *Steel products with improved deformation properties perpendicular to the surface of the product - Technical delivery conditions*.

During the 5 year review of EN 10164:1993 the members of ECISS/TC 10 agreed to revise EN 10164:1993. It was asked to actualise the normative references and to bring the text in line with “Iron and steel standardization – Model for a product standard”. In the scope the product thickness is increased to 400 mm to be in line with EN 10025-2. The upper yield strength is increased to 960 MPa to be in line with EN 10025-6.

This document includes a Bibliography.

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

Introduction

Flat products and sections of steel as normally manufactured have deformation properties perpendicular to the surface (through thickness) which are different from those obtained in the surface direction. This anisotropy of the properties may lead to difficulties in welded structures, for instance lamellar tearing.

It is, however, possible to improve the through thickness properties by using additional steel making procedures.

Through thickness properties are characterized in this document by specified values for reduction of area in a through thickness tensile test.

There is no direct relationship between these values and the integrity of structures, because the risk of lamellar tearing is also basically influenced by the type of structure, weld design and welding procedure. The minimum values for reduction of area in this document cannot therefore by themselves be regarded as ensuring safety against occurrence of lamellar tearing.

However the reduction of area is a good general guide to lamellar tear resistance i.e. the risk of lamellar tearing decreases with increased reduction of area in the through thickness tensile test.

1 Scope

This document specifies through thickness properties and associated test methods for flat products and sections of steel.

This document may be applied as a supplement to all product standards for flat products and sections of fully killed steels, except stainless steels. It covers products having a thickness between 15 mm and 400 mm inclusive of steels with a specified minimum upper yield strength R_{eH} or proof strength $R_{p0,2} \leq 960 \text{ MPa}$ ¹⁾ for which improved through thickness properties are required.

The application of this document to other product thicknesses and other steel types shall be the subject of agreement at the time of the order.

See option 1.

2 Normative references

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

EN 10002-1, *Metallic materials - Tensile testing - Part 1: Method of test at ambient temperature*

EN 10021, *General technical delivery requirements for steel and iron products*

EN 10160, *Ultrasonic testing of steel flat product of thickness equal to or greater than 6 mm (reflection method)*

EN 10306:2001, *Iron and steel - Ultrasonic testing of H beams with parallel flanges and IPE beams*

3 Designation

Products with requirements for improved deformation properties perpendicular to the surface of the product shall be designated as follows:

- the designation of the steel (according to the relevant product standard);
- the number of this document (EN 10164);
- the designation of the quality class (according to Table 1).

EXAMPLE Steel according to EN 10025-3 of the grade S355N (1.0545) with requirements for improved deformation properties perpendicular to the surface of the product according to EN 10164 of class Z25,

Steel EN 10025-3 - S355N + EN 10164 - Z25

or

Steel EN 10025-3 – 1.0545 + EN 10164 - Z25

¹⁾ 1 MPa = 1 N/mm².