

**Teraskonstruktsioonide ja
alumiiniumkonstruktsioonide valmistamine. Osa 3:
Tehnilised nõuded alumiiniumkonstruktsioonidele**

Execution of steel structures and aluminium structures
- Part 3: Technical requirements for aluminium
structures

EVS

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 1090-3:2008 sisaldab Euroopa standardi EN 1090-3:2008 ingliskeelset teksti.

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English Version

Execution of steel structures and aluminium structures - Part 3: Technical requirements for aluminium structures

Exécution des structures en acier et des structures en
aluminium - Partie 3 : Exigences techniques pour
l'exécution des structures en aluminium

Ausführung von Stahltragwerken und Aluminiumtragwerken
- Teil 3: Technische Regeln für die Ausführung von
Aluminiumtragwerken

This European Standard was approved by CEN on 25 April 2008.

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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 Management Centre has the same status as the official versions.

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Foreword

This document (EN 1090-3:2008) has been prepared by Technical Committee CEN/TC 135 “Execution of steel structures and aluminium structures”, the secretariat of which is held by SN.

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of an identical text or by endorsement, at the latest by December 2008, and conflicting national standards shall be withdrawn at the latest by December 2008.

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

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

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Introduction

This European Standard specifies requirements for the execution of aluminium structures, in order to ensure adequate levels of mechanical resistance and stability, serviceability and durability.

This European Standard specifies requirements for the execution of aluminium structures in particular those that are designed according to EN 1999-1-1, EN 1999-1-2, EN 1999-1-3, EN 1999-1-4 and EN 1999-1-5.

This European Standard presupposes that the work is carried out with the necessary skill and adequate equipment and resources to perform the work in accordance with the execution specification and the requirements of this European Standard.

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1 Scope

This European Standard specifies requirements for the execution of aluminium structural components and structures made from:

- a) rolled sheet, strip and plate;
- b) extrusions;
- c) cold drawn rod, bar and tube;
- d) forgings;
- e) castings.

NOTE 1 The execution of structural components is referred to as manufacturing, in accordance with EN 1090-1.

This European Standard specifies requirements independent of the type and shape of the aluminium structure, and this European Standard is applicable to structures under predominantly static loads as well as structures subject to fatigue. It specifies requirements related to the execution classes that are linked with consequence classes.

NOTE 2 Consequence classes are defined in EN 1990.

NOTE 3 Recommendations for selection of execution class in relation to consequence class are given in EN 1999-1-1.

This European Standard covers components made of constituent products with thickness not less than 0,6 mm for welded components not less than 1,5 mm.

This European Standard applies to structures designed according to the relevant parts of EN 1999. If this European Standard is used for structures designed according to other design rules or used for other alloys and tempers not covered by EN 1999, a judgement of the reliability elements in these design rules should be made.

This European Standard specifies requirements for surface preparation prior to application of a protective treatment, and gives guidelines for application for such treatment in an informative annex.

This European Standard gives options for specifying requirements to match project specific requirements.

This European Standard is also applicable to temporary aluminium structures.

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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 473	<i>Non destructive testing - Qualification and certification of NDT personnel – General principles</i>
EN 485-1	<i>Aluminium and aluminium alloys – Sheet, strip and plate – Part 1: Technical conditions for inspection and delivery</i>
EN 485-3	<i>Aluminium and aluminium alloys – Sheet, strip and plate – Part 3: Tolerances on shape and dimensions and form for hot-rolled products</i>
EN 485-4	<i>Aluminium and aluminium alloys – Sheet, strip and plate – Part 4: Tolerances on shape and dimensions for cold-rolled products</i>
EN 515	<i>Aluminium and aluminium alloys – Wrought products – Temper designations</i>
EN 571-1	<i>Non destructive testing - Penetrant testing - Part 1: General principles</i>
EN 573-1	<i>Aluminium and aluminium alloys – Chemical composition and forms of wrought products – Part 1: Numerical designation system</i>
EN 573-2	<i>Aluminium and aluminium alloys – Chemical composition and form of wrought products – Part 2: Chemical symbol based designation system.</i>
EN 573-3	<i>Aluminium and aluminium alloys – Chemical composition and form of wrought products – Part 3: Chemical composition and form of products</i>
EN 586-1	<i>Aluminium and aluminium alloys – Forgings – Part 1: Technical conditions for inspection and delivery</i>
EN 586-3	<i>Aluminium and aluminium alloys – Forgings – Part 3: Tolerances on dimensions and form</i>
EN 754-1	<i>Aluminium and aluminium alloys – Cold drawn rod/bar and tube – Part 1: Technical conditions for inspection and delivery</i>
EN 754-3	<i>Aluminium and aluminium alloys – Cold drawn rod/bar and tube – Part 3: Round bars, tolerances on dimensions and form</i>
EN 754-4	<i>Aluminium and aluminium alloys – Cold drawn rod/bar and tube – Part 4: Square bars, tolerances on dimensions and form</i>
EN 754-5	<i>Aluminium and aluminium alloys – Cold drawn rod/bar and tube – Part 5: Rectangular bars, tolerances on dimensions and form</i>
EN 754-6	<i>Aluminium and aluminium alloys – Cold drawn rod/bar and tube – Part 6: Hexagonal bars, tolerances on dimensions and form</i>
EN 754-7	<i>Aluminium and aluminium alloys – Cold drawn rod/bar and tube – Part 7: Seamless tubes, tolerances on dimensions and form</i>
EN 754-8	<i>Aluminium and aluminium alloys – Cold drawn rod/bar and tube – Part 8: Porthole tubes, tolerances on dimensions and form</i>
EN 755-1	<i>Aluminium and aluminium alloys – Extruded rod/bar, tube and profiles – Part 1: Technical conditions for inspection and delivery</i>
EN 755-3	<i>Aluminium and aluminium alloys – Extruded rod/bar, tube and profiles – Part 3: Round bars, tolerances on dimensions and form</i>
EN 755-4	<i>Aluminium and aluminium alloys – Extruded rod/bar, tube and profiles – Part 4: Square bars, tolerances on dimensions and form</i>
EN 755-5	<i>Aluminium and aluminium alloys – Extruded rod/bar, tube and profiles – Part 5: Rectangular bars, tolerances on dimensions and form</i>
EN 755-6	<i>Aluminium and aluminium alloys – Extruded rod/bar, tube and profiles – Part 6: Hexagonal bars, tolerances on dimensions and form</i>
EN 755-7	<i>Aluminium and aluminium alloys – Extruded rod/bar, tube and profiles – Part 7: Seamless tubes, tolerances on dimensions and form</i>
EN 755-8	<i>Aluminium and aluminium alloys – Extruded rod/bar, tube and profiles – Part 8: Porthole tubes, tolerances on dimensions and form</i>
EN 755-9	<i>Aluminium and aluminium alloys – Extruded rod/bar, tube and profiles – Part 9: Profiles, tolerances on dimensions and form</i>
EN 970	<i>Non-destructive examination of fusion welds – Visual examination</i>
EN 1011-1	<i>Welding – Recommendations for welding of metallic materials – Part 1: General guidance for arc welding</i>

EN 1011-4	<i>Welding – Recommendations for welding of metallic materials – Part 4: Arc welding of aluminium and aluminium alloys</i>
EN 1090-2	<i>Execution of steel structures and aluminium structures – Part 2: Technical requirements for steel structures</i>
EN 1301-1	<i>Aluminium and aluminium alloys – Drawn wire – Part 1: Technical conditions for inspection and delivery</i>
EN 1301-3	<i>Aluminium and aluminium alloys – Drawn wire – Part 3: Tolerances on dimensions</i>
EN 1320	<i>Destructive tests on welds in metallic materials – Fracture test</i>
EN 1321	<i>Destructive tests on welds in metallic materials – Macroscopic and microscopic examination of welds</i>
EN 1337-3	<i>Structural bearings – Part 3: Elastomeric bearings</i>
EN 1337-4	<i>Structural bearings – Part 4: Roller bearings</i>
EN 1337-5	<i>Structural bearings – Part 5: Pot bearings</i>
EN 1337-6	<i>Structural bearings – Part 6: Rocker bearings</i>
EN 1337-8	<i>Structural bearings – Part 8: Guide bearings and restraint bearings</i>
EN 1337-11	<i>Structural bearings – Part 11: Transport, storage and installation</i>
EN 1418	<i>Welding personnel – Approval testing of welding operators for fusion welding and resistance weld setters for fully mechanized and automatic welding of metallic materials</i>
EN 1435	<i>Non-destructive examination of welds – Radiographic examination of welded joints</i>
EN 1559-1	<i>Founding - Technical conditions of delivery - Part 1: General</i>
EN 1559-4	<i>Founding - Technical conditions of delivery - Part 4: Additional requirements for aluminium alloy castings</i>
EN 1706	<i>Aluminium and aluminium alloys – Castings – Chemical composition and mechanical properties</i>
EN 1714:1997	<i>Non destructive examination of welds - Ultrasonic examination of welded joints</i>
EN 1999-1-1:2007	<i>Eurocode 9: Design of aluminium structures. Part 1-1: General structural rules</i>
EN 1999-1-2	<i>Eurocode 9: Design of aluminium structures. Part 1-2: Structural fire design</i>
EN 1999-1-3:2007	<i>Eurocode 9: Design of aluminium structures. Part 1-3: Structures susceptible to fatigue</i>
EN 1999-1-4	<i>Eurocode 9: Design of aluminium structures. Part 1-4: Cold-formed structural sheeting</i>
EN 1999-1-5	<i>Eurocode 9: Design of aluminium structures. Part 1-5: Shell structures</i>
EN 10204	<i>Metallic products – Types of inspection documents</i>
EN 12020-1	<i>Aluminium and aluminium alloys – Extruded precision profiles in alloys EN AW-6060 and EN AW-6063 – Part 1: Technical conditions for inspection and delivery</i>
EN 12020-2	<i>Aluminium and aluminium alloys – Extruded precision profiles in alloys EN AW-6060 and EN AW-6063 – Part 2: Tolerances on dimensions and form</i>
EN 12206-1	<i>Paints and varnishes. Coating of aluminium and aluminium alloys for architectural purposes - Part 1: Coatings prepared from coating powder</i>
EN 14399-2	<i>High-strength structural bolting assemblies for preloading – Part 2: Suitability test for preloading</i>
EN 14399-3	<i>High-strength structural bolting assemblies for preloading – Part 3: System HR - Hexagon bolt and nut assemblies</i>
EN 14399-4	<i>High-strength structural bolting assemblies for preloading – Part 4: System HV - Hexagon bolt and nut assemblies</i>
EN 14399-5	<i>High-strength structural bolting assemblies for preloading – Part 5: Plain washers</i>
EN 14399-6	<i>High-strength structural bolting assemblies for preloading – Part 6: Plain chamfered washers</i>
EN 14399-7	<i>High-strength structural bolting for preloading - Part 7: System HR - Countersunk head bolt and nut assemblies</i>
EN 14399-8	<i>High-strength structural bolting for preloading - Part 8: System HV - Hexagon fit bolt and nut assemblies</i>
EN 15088	<i>Aluminium and aluminium alloys - Structural products for construction works - Technical conditions for inspection and delivery</i>
EN 20898-2	<i>Mechanical properties of fasteners - Part 2: Nuts with specified proof load values - Coarse thread (ISO 898-2:1992)</i>
EN 28839	<i>Mechanical properties of fasteners - Bolts, screws, studs and nuts made of non-ferrous metals (ISO 8839:1986)</i>

EN ISO 898-1	<i>Mechanical properties of fasteners made of carbon steel and alloy steel – Part 1: Bolts, screws and studs (ISO 898-1:1999)</i>
EN ISO 1479	<i>Hexagon head tapping screws (ISO 1479:1983)</i>
EN ISO 1481	<i>Slotted pan head tapping screws (ISO 1481:1983)</i>
EN ISO 2009	<i>Slotted countersunk flat head screws (common head style) - Product grade A (ISO 2009:1994)</i>
EN ISO 3506-1	<i>Mechanical properties of corrosion-resistant stainless-steel fasteners – Part 1: Bolts, screws and studs (ISO 3506-1:1997)</i>
EN ISO 3506-2	<i>Mechanical properties of corrosion-resistant stainless-steel fasteners – Part 2: Nuts (ISO 3506-2:1997)</i>
EN ISO 3834-2	<i>Quality requirements for fusion welding of metallic materials - Part 2: Comprehensive quality requirements (ISO 3834-2:2005)</i>
EN ISO 3834-3	<i>Quality requirements for fusion welding of metallic materials - Part 3: Standard quality requirements (ISO 3834-3: 2005)</i>
EN ISO 3834-4	<i>Quality requirements for fusion welding of metallic materials - Part 4: Elementary quality requirements (ISO 3834-4:2005)</i>
EN ISO 4014	<i>Hexagon head bolts – Product grades A and B (ISO 4014:1999)</i>
EN ISO 4016	<i>Hexagon head bolts - Product grade C (ISO 4016:1999)</i>
EN ISO 4017	<i>Hexagon head screws – Product grades A and B (ISO 4017:1999)</i>
EN ISO 4018	<i>Hexagon head screws – Product grade C (ISO 4018:1999)</i>
EN ISO 4032	<i>Hexagon nuts, style 1 – Product grades A and B (ISO 4032:1999)</i>
EN ISO 4034	<i>Hexagon nuts – Product grade C (ISO 4034:1999)</i>
EN ISO 4063	<i>Welding and allied processes – Nomenclature of processes and reference numbers (ISO 4063:1998)</i>
EN ISO 4288	<i>Geometrical product specifications (GPS) – Surface texture: Profile method – Rules and procedures for the assessment of surface texture (ISO 4288:1996)</i>
EN ISO 4762	<i>Hexagon socket head cap screws (ISO 4762:2004)</i>
EN ISO 6520-1	<i>Welding and allied processes - Classification of geometric imperfections in metallic materials – Part 1: Fusion welding (ISO 6520-1:2007)</i>
EN ISO 6789	<i>Assembly tools for screws and nuts - Hand torque tools - Requirements and test methods for design conformance testing, quality conformance testing and recalibration procedure (ISO 6789:2003)</i>
EN ISO 7046-2	<i>Cross recessed countersunk flat head screws (common head style) - Grade A - Part 2: Steel of property class 8.8, stainless and non-ferrous metals (ISO 7046-2:1990)</i>
EN ISO 7049	<i>Cross recessed pan head tapping screws (ISO 7049:1983)</i>
EN ISO 7089	<i>Plain washers – Normal series – Product grade A (ISO 7089:2000)</i>
EN ISO 7090	<i>Plain washers, chamfered – Normal series – Product grade A (ISO 7090:2000)</i>
EN ISO 7091	<i>Plain washers – Normal series – Product grade C (ISO 7091:2000)</i>
EN ISO 7093-1	<i>Plain washers - Large series - Part 1: Product grade A (ISO 7093-1:2000)</i>
EN ISO 7093-2	<i>Plain washers - Large series - Part 2: Product grade C (ISO 7093-2:2000)</i>
EN ISO 7094	<i>Plain washers – Extra large series – Product grade C (ISO 7094:2000)</i>
EN ISO 9000	<i>Quality management systems - Fundamentals and vocabulary (ISO 9000:2005)</i>
EN ISO 9013:2002	<i>Thermal cutting – Classification of thermal cuts – Geometrical product specification and quality tolerances (ISO 9013:2002)</i>
EN ISO 9018	<i>Destructive tests on welds in metallic materials – Tensile test on cruciform and lapped joints (ISO 9018:2003)</i>
EN ISO 9606-2	<i>Qualification test of welders – Fusion welding – Part 2: Aluminium and aluminium alloys (ISO 9606-2:2004)</i>
EN ISO 10042:2005	<i>Welding – Arc-welded joints in aluminium and its alloys – Quality levels for imperfections (ISO 10042:2005)</i>
EN ISO 10642	<i>Hexagon socket countersunk head screws (ISO 10642:2004)</i>
EN ISO 13918	<i>Welding – Studs and ceramic ferrules for arc stud welding (ISO 13918:1998)</i>
EN ISO 13920	<i>Welding - General tolerances for welded constructions - Dimensions for lengths and angles - Shape and position (ISO 13920:1996)</i>
EN ISO 14731	<i>Welding coordination - Tasks and responsibilities (ISO 14731:2006)</i>
EN ISO 15480	<i>Hexagon washer head drilling screws with tapping screw thread (ISO 15480:1999)</i>

EN ISO 15481	<i>Cross recessed pan head drilling screws with tapping screw thread (ISO 15481:1999)</i>
EN ISO 15609-1	<i>Specification and qualification of welding procedures for metallic materials – Welding procedure specification – Part 1: Arc welding (ISO 15609-1:2004)</i>
EN ISO 15612	<i>Specification and qualification of welding procedures for metallic materials - Qualification by adoption of a standard welding procedure (ISO 15612:2004)</i>
EN ISO 15613	<i>Specification and qualification of welding procedures for metallic materials - Qualification based on pre-production welding test (ISO 15613:2004)</i>
EN ISO 15614-2	<i>Specification and qualification of welding procedures for metallic materials - Welding procedure test - Part 2: Arc welding of aluminium and its alloys (ISO 15614-2:2005)</i>
EN ISO 17659	<i>Welding - Multilingual terms for welded joints with illustrations (ISO 17659:2002)</i>
EN ISO 18273	<i>Welding consumables - Wire electrodes, wires and rods for welding of aluminium and aluminium alloys – Classification (ISO 18273:2004)</i>
ISO 4463-1	<i>Measurement methods for building – Setting-out and measurement – Part 1: Planning and organization, measuring procedures, acceptance criteria</i>
ISO 7976-1	<i>Tolerances for building - Methods of measurement of buildings and building products – Part 1: Methods and instruments</i>
ISO 7976-2	<i>Tolerances for building – Methods of measurement of buildings and building products – Part 2: Position of measuring points</i>
ISO 8062	<i>Castings – System of dimensional tolerances and machining allowances</i>
ISO 10509	<i>Hexagon flange head tapping screws</i>
ISO 17123-1	<i>Optics and optical instruments – Field procedures for testing geodetic and surveying instruments – Part 1: Theory</i>
ISO 17123-3	<i>Optics and optical instruments – Field procedures for testing geodetic and surveying instruments – Part 3: Theodolites</i>
ISO 17123-4	<i>Optics and optical instruments – Field procedures for testing geodetic and surveying instruments – Part 4: Electro-optical distance meters (EDM instruments)</i>
ISO 17123-7	<i>Optics and optical instruments – Field procedures for testing geodetic and surveying instruments – Part 7: Optical plumbing instruments</i>

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

component

part of the works, which may itself be an assembly of several smaller components

NOTE A component might in itself be a structure.

3.2

constituent products

materials and products with properties which enter into structural calculations or otherwise relate to the mechanical resistance and stability of works and parts thereof and/or their fire resistance including aspects of durability and serviceability

3.3

construction works

everything that is constructed or results from construction operations. This term covers both buildings and civil engineering works. It refers to the complete construction comprising both structural and non-structural components

3.4

constructor

person or organization executing the works (the supplier in EN ISO 9000)

3.5

design basis method of erection

outline of a method of erection upon which the design of the structure is based