

საქართველოს სტანდარტი

სსკ: 91.010.30; 91.080.17

ევროკოდი 9 - ალუმინის კონსტრუქციების დაპროექტება - ნაწილი 1-3:
დაღლილობისგან დაუცველი კონსტრუქციები

სსტ ენ 1999-1-3:2023/2023

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Eurocode 9 - Design of aluminium structures - Part 1-3: Structures susceptible to fatigue

Eurocode 9 - Calcul des structures en aluminium -
Partie 1-3 : Structures sensibles à la fatigue

Eurocode 9 - Bemessung und Konstruktion von
Aluminiumtragwerken - Teil 1-3:
Ermüdungsbeanspruchte Tragwerke

This European Standard was approved by CEN on 2 January 2023.

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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and United Kingdom.



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Contents

European foreword.....	7
Introduction	8
1 Scope	11
1.1 Scope of EN 1999-1-3	11
1.2 Assumptions.....	11
2 Normative references.....	11
3 Terms, definitions and symbols.....	12
3.1 Terms and definitions	12
3.2 Symbols.....	16
4 Basis of design	18
4.1 Basic rules.....	18
4.2 Methods of fatigue design	19
4.2.1 Safe life design (SLD)	19
4.2.2 Damage tolerant design (DTD)	19
4.2.3 Design assisted by testing.....	19
4.3 Fatigue loading.....	19
4.3.1 Sources of fatigue loading	19
4.3.2 Derivation of fatigue loading	20
4.3.3 Equivalent fatigue loading.....	20
4.4 Partial factors for fatigue loads.....	21
4.5 Execution requirements	21
4.5.1 General.....	21
4.5.2 Execution classes.....	21
4.5.3 Execution specification	21
4.5.4 Operation manual	22
4.5.5 Inspection and maintenance manual.....	22
5 Materials, constituent products and connecting devices	22
6 Durability	23
7 Structural analysis.....	24
7.1 Global analysis	24
7.1.1 General.....	24
7.1.2 Use of beam elements.....	25
7.1.3 Use of membrane, shell and solid elements	25
7.2 Types of stresses	26
7.2.1 General.....	26
7.2.2 Nominal stresses	26
7.2.3 Modified nominal stresses.....	26
7.2.4 Hot spot stresses.....	27
7.3 Derivation of stresses.....	29
7.3.1 Derivation of nominal stresses	29
7.3.2 Derivation of modified nominal stresses	29
7.3.3 Derivation of hot spot stresses.....	30
7.3.4 Stress orientation.....	30
7.4 Stress ranges for specific initiation sites.....	30
7.4.1 Parent material, welds, and mechanically fastened joints.....	30
7.4.2 Fillet and partial penetration butt welds	30

საინფორმაციო ნაწილი. სრული ტექსტის სახანავედ შეიძლება სტანდარტი.

7.5	Adhesive bonds	31
7.6	Castings	31
7.7	Stress spectra	31
7.8	Calculation of equivalent stress range for standardized fatigue load models	31
7.8.1	General	31
7.8.2	Design value of stress range	32
8	Fatigue resistance and detail categories.....	32
8.1	Detail categories	32
8.1.1	General	32
8.1.2	Factors affecting detail category	32
8.1.3	Constructional details.....	33
8.2	Fatigue strength data	33
8.2.1	Classified constructional details	33
8.2.2	Unclassified details	36
8.2.3	Adhesively bonded joints.....	36
8.2.4	Determination of the reference hot spot strength values.....	36
8.3	Effect of mean stress.....	36
8.3.1	General	36
8.3.2	Parent material and mechanically fastened joints.....	36
8.3.3	Welded joints	36
8.3.4	Adhesive joints	37
8.3.5	Low endurance range.....	37
8.3.6	Cycle counting for <i>R</i> -ratio calculations	37
8.4	Effect of exposure conditions	37
8.5	Improvement techniques.....	38
	Annex A (normative) Basis for calculation of fatigue resistance.....	39
A.1	Use of this annex	39
A.2	Scope and field of application	39
A.3	General	39
A.3.1	Influence of fatigue on design	39
A.3.2	Mechanism of failure	39
A.3.3	Potential sites for fatigue cracking.....	40
A.3.4	Conditions for fatigue susceptibility.....	40
A.4	Safe life design	41
A.4.1	General	41
A.4.2	Prerequisites for safe life design	42
A.4.3	Design approach	42
A.4.4	Cycle counting.....	44
A.4.5	Derivation of stress spectrum.....	45
A.5	Damage tolerant design	46
A.5.1	Prerequisites for damage tolerant design.....	46
A.5.2	Structural layout and detailing.....	47
A.5.3	Determination of inspection strategy for damage tolerant design	47
	Annex B (informative) Guidance on assessment of crack growth by fracture mechanics	50

B.1	Use of this informative annex	50
B.2	Scope and field of application	50
B.3	Principles	50
B.3.1	Flaw dimensions	50
B.3.2	Crack growth relationship	51
B.4	Crack growth data A and m	52
B.5	Geometry function y	53
B.6	Integration of crack growth	53
B.7	Assessment of maximum crack size a_2	54
Annex C (informative) Testing for fatigue design		61
C.1	Use of this informative annex	61
C.2	Scope and field of application	61
C.3	Derivation of action loading data	61
C.3.1	Fixed structures subject to mechanical action	61
C.3.2	Fixed structures subject to actions due to exposure conditions	62
C.3.3	Moving structures	62
C.4	Derivation of stress data	62
C.4.1	Component test data	62
C.4.2	Structure test data	63
C.4.3	Verification of stress history	63
C.5	Derivation of endurance data	63
C.5.1	Component testing	63
C.5.2	Full scale testing	64
C.5.3	Acceptance	64
C.6	Crack growth data	67
C.7	Reporting	67
Annex D (informative) Stress analysis		69
D.1	Use of this informative annex	69
D.2	Scope and field of application	69
D.3	Use of finite elements for fatigue analysis	69
D.3.1	Element types	69
D.3.2	Further guidance on use of finite elements	70
D.4	Stress concentration factors	70
D.5	Limitation of fatigue induced by repeated local buckling	72
Annex E (informative) Adhesively bonded joints		73
E.1	Use of this informative annex	73

საინფორმაციო ნაწილი. სრული ტექსტის სანახავად შეიძინეთ სტანდარტი.

E.2	Scope and field of application	73
Annex F (informative) Low cycle fatigue range		76
F.1	Use of this informative annex.....	76
F.2	Scope and field of application	76
F.3	Modification to fatigue strength curves.....	76
F.4	Test data.....	77
Annex G (informative) Influence of applied stress ratio R		78
G.1	Use of this informative annex.....	78
G.2	Scope and field of application	78
G.3	Enhancement of fatigue strength.....	78
G.4	Enhancement cases.....	78
G.4.1	Case 1	78
G.4.2	Case 2	79
G.4.3	Case 3	80
Annex H (informative) Fatigue strength improvement of welds.....		81
H.1	Use of this informative annex.....	81
H.2	Scope and field of application	81
H.3	Machining or grinding.....	82
H.4	Dressing by TIG or plasma.....	83
H.5	Peening.....	83
Annex I (informative) Castings		84
I.1	Use of this informative annex.....	84
I.2	Scope and field of application	84
I.3	Fatigue strength data	84
I.3.1	Cast material.....	84
I.3.2	Welded material.....	84
I.3.3	Mechanically joined castings.....	85
I.3.4	Adhesively bonded castings.....	85
I.4	Quality requirements.....	85
Annex J (informative) Detail category tables.....		87
J.1	Use of this informative annex.....	87
J.2	Scope and field of application	87
Annex K (informative) Hot spot reference detail method		116
K.1	Use of this informative annex.....	116
K.2	Scope and field of application	116
K.3	Hot spot reference detail method.....	116

Annex L (informative) Guidance on use of design methods, selection of partial factors, limits for damage values, inspection intervals and execution parameters if Annex J is adopted 117

L.1 Use of this informative annex 117

L.2 Scope and field of application 117

L.3 Safe life design approach 117

L.3.1 General 117

L.3.2 SLD-I 117

L.3.3 SLD-II 118

L.4 Damage tolerant design approach 118

L.4.1 General 118

L.4.2 DTD-I 118

L.4.3 DTD-II 119

L.5 Start of inspection and inspection intervals 119

L.6 Partial factors γ_{Mf} and the values of D_{Lim} 120

L.7 Parameters for execution 122

L.7.1 Service category 122

L.7.2 Calculation of utilization grade 123

Bibliography 125

საინფორმაციო ნაწილი. სრული ტექსტის სანახავად შეიძინეთ სტანდარტი.

European foreword

This document (EN 1999-1-3:2023) has been prepared by Technical Committee CEN/TC250 “Structural Eurocodes”, the secretariat of which is held by BSI. CEN/TC 250 is responsible for all Structural Eurocodes and has been assigned responsibility for structural and geotechnical design matters by CEN.

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 September 2027, and conflicting national standards shall be withdrawn at the latest by March 2028.

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

This document supersedes EN 1999-1-3:2007.

The first generation of EN Eurocodes was published between 2002 and 2007. This document forms part of the second generation of the Eurocodes, which have been prepared under Mandate M/515 issued to CEN by the European Commission and the European Free Trade Association.

The Eurocodes have been drafted to be used in conjunction with relevant execution, material, product and test standards, and to identify requirements for execution, materials, products and testing that are relied upon by the Eurocodes.

The Eurocodes recognize the responsibility of each Member State and have safeguarded their right to determine values related to regulatory safety matters at national level through the use of National Annexes.

The main changes compared to the previous edition are listed below:

- Some reorganization of the text and its coherence with EN 1999-1-1 and the other Eurocodes;
- Improvement of figures;
- Improvement of detail categories for fillet-welded joints between members (Table J.9);
- Improvement of detail categories for bolted joints (Table J.15);
- Inclusion of Friction Stir Welding (FSW) in the scope;
- Inclusion of detail categories for members with Friction Stir Welding (New Table J.17)

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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

Introduction

0.1 Introduction to the Eurocodes

The Structural Eurocodes comprise the following standards generally consisting of a number of Parts:

- EN 1990 Eurocode: Basis of structural and geotechnical design
- EN 1991 Eurocode 1: Actions on structures
- EN 1992 Eurocode 2: Design of concrete structures
- EN 1993 Eurocode 3: Design of steel structures
- EN 1994 Eurocode 4: Design of composite steel and concrete structures
- EN 1995 Eurocode 5: Design of timber structures
- EN 1996 Eurocode 6: Design of masonry structures
- EN 1997 Eurocode 7: Geotechnical design
- EN 1998 Eurocode 8: Design of structures for earthquake resistance
- EN 1999 Eurocode 9: Design of aluminium structures
- New parts are under development, e.g. Eurocode for design of structural glass

The Eurocodes are intended for use by designers, clients, manufacturers, constructors, relevant authorities (in exercising their duties in accordance with national or international regulations), educators, software developers, and committees drafting standards for related product, testing and execution standards.

NOTE Some aspects of design are most appropriately specified by relevant authorities or, where not specified, can be agreed on a project-specific basis between relevant parties such as designers and clients. The Eurocodes identify such aspects making explicit reference to relevant authorities and relevant parties.

0.2 Introduction to EN 1999 (all parts)

EN 1999 (all parts) applies to the design of buildings and civil engineering and structural works made of aluminium. It complies with the principles and requirements for the safety and serviceability of structures, the basis of their design and verification that are given in EN 1990 – Basis of structural design.

EN 1999 (all parts) is only concerned with requirements for resistance, serviceability, durability and fire resistance of aluminium structures. Other requirements, e.g. concerning thermal or sound insulation, are not considered.

EN 1999 (all parts) does not cover the special requirements of seismic design. Provisions related to such requirements are given in EN 1998, which complements, and is consistent with EN 1999.

Eurocode 9 is subdivided in various parts:

- EN 1999-1-1 Design of Aluminium Structures — Part 1-1: General rules.
- EN 1999-1-2 Design of Aluminium Structures — Part 1-2: Structural fire design.
- EN 1999-1-3 Design of Aluminium Structures — Part 1-3: Structures susceptible to fatigue.

- EN 1999-1-4 Design of Aluminium Structures — Part 1-4: Cold-formed structural sheeting.
- EN 1999-1-5 Design of Aluminium Structures — Part 1-5: Shell structures.

0.3 Introduction to EN 1999-1-3

This document gives the basis for the design of aluminium alloy structures subject to fatigue in the ultimate limit state.

0.4 Verbal forms used in the Eurocodes

The verb “shall” expresses a requirement strictly to be followed and from which no deviation is permitted in order to comply with the Eurocodes.

The verb “should” expresses a highly recommended choice or course of action. Subject to national regulation and/or any relevant contractual provisions, alternative approaches could be used/adopted where technically justified.

The verb “may” expresses a course of action permissible within the limits of the Eurocodes.

The verb “can” expresses possibility and capability; it is used for statements of fact and clarification of concepts.

0.5 National annex for EN 1999-1-3

National choice is allowed in this document where explicitly stated within notes. National choice includes the selection of values for Nationally Determined Parameters (NDPs).

The national standard implementing EN 1999-1-3 can have a National Annex containing all national choices to be used for the design of buildings and civil engineering works to be constructed in the relevant country.

When no national choice is given, the default choice given in this document is to be used.

When no national choice is made and no default is given in this document, the choice can be specified by a relevant authority or, where not specified, agreed for a specific project by appropriate parties.

National choice is allowed in EN 1999-1-3 through the following clauses:

4.1(2)	4.3.1(2)	4.3.2(5)	4.4(1) – 2 choices
5(1)	6(2)	7.8.1(1)	7.8.2(1)
8.1.3(1) – 2 choices	8.2.1(2)	8.2.1(7)	8.2.1(10)
A.4.1(4)	A.4.1(5)	E.2(6)	E.2(8)
I.3.2(1)	I.3.3.2(1)	I.3.4(1)	L.4.2(5)
L.5(2)	L.6(3) – 2 choices	L.6(4)	L.6(5)
L.7.1(1)			

EN 1999-1-3:2023 (E)

National choice is allowed in EN 1999-1-3 on the application of the following informative annexes:

Annex B	Annex C	Annex D	Annex E
Annex F	Annex G	Annex H	Annex I
Annex J	Annex K	Annex L	

The National Annex can contain, directly or by reference, non-contradictory complementary information for ease of implementation, provided it does not alter any provisions of the Eurocodes.