



BSI Standards Publication

Eurocode 1 — Actions on structures

Part 3: Actions induced by cranes and machines

This is a preview of BS EN 1991-3:2026. [Click here to purchase the full version from the ANSI store.](#)

National foreword

This British Standard is the UK implementation of EN 1991-3:2026. It supersedes BS EN 1991-3:2006, which will be withdrawn on 30 March 2028.

The UK participation in its preparation was entrusted to Technical Committee B/525/1, Actions (loadings) and basis of design.

A list of organizations represented on this committee can be obtained on request to its committee manager.

National choice is allowed in this standard where explicitly stated within notes. The National Annex to this standard contains the national choices to be used for buildings and civil engineering works constructed in the UK.

The first generation of EN Eurocodes was published between 2002 and 2007, with conflicting British Standards withdrawn in 2010. This document forms part of the second generation of EN Eurocodes.

The second generation of EN Eurocodes is expected to be published between 2023 and 2026. These documents are being published as soon as they are available. This is being done to enable users to prepare for the transition from the first generation to second generation of EN Eurocodes.

UK adoptions of the first generation of EN Eurocodes will be withdrawn by BSI on 30 March 2028. Until that date, the first generation documents should be considered as the applicable standards for buildings and civil engineering works constructed in the UK unless otherwise specified by the relevant authority or in the specification for a particular project.

This standard is intended to be used with its National Annex and other referenced documents, including other second generation Eurocodes, as an interdependent suite of documents.

While the use of provisions in this standard in conjunction with first generation Eurocodes is not precluded, it should be undertaken with care and should only be done when users are satisfied that it will not result in a lower level of reliability than the minimum level set in the first generation Eurocodes and associated UK National Annexes.

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Compliance with a British Standard cannot confer immunity from legal obligations.

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Amendments/corrigenda issued since publication

Date

Text affected

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EUROPÄISCHE NORM

March 2026

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Supersedes EN 1991-3:2006

English Version

Eurocode 1 - Actions on structures - Part 3: Actions induced by cranes and machines

Eurocode 1 - Actions sur les structures - Partie 3:
Actions induites par les appareils de levage et les
machines

Eurocode 1 - Einwirkungen auf Tragwerke - Teil 3:
Einwirkungen infolge von Kranen und Maschinen

This European Standard was approved by CEN on 28 December 2025.

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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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (EN 1991-3:2026) has been prepared by Technical Committee CEN/TC 250 “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 1991-3:2006.

EN 1991-3:2026 includes the following significant technical changes with respect to EN 1991-3:2006:

- a) clarification of scope and terminology with respect to design of cranes;
- b) removal of basis of design content to EN 1990-1; and
- c) new annexes introduced with simplified actions for certain bridge cranes and travelling wall cranes.

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.

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.

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0 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 structure
- 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
- EN 19100 Eurocode 10 — Design of glass structures
- New Eurocodes under development, e.g. Eurocode for design of fibre-polymer composite structures and design of tensioned membrane structures

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 1991 (all parts)

EN 1991 (all parts) specifies actions for the structural design of buildings, bridges and other civil engineering works, or parts thereof, including temporary structures, in conjunction with EN 1990 (all parts) and the other Eurocodes.

EN 1991 (all parts) does not cover the specific requirements of actions for seismic design. Provisions related to such requirements are given in EN 1998 (all parts), which complement and are consistent with EN 1991.

EN 1991 (all parts) is also applicable to existing structures for:

- structural assessment,
- strengthening or repair,
- change of use.

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NOTE 1 In these cases additional or amended provisions can be necessary.

EN 1991 (all parts) is also applicable for the design of structures where materials or actions outside the scope of the other Eurocodes are involved.

NOTE 2 In this case additional or amended provisions can be necessary.

EN 1991 is subdivided in various parts:

EN 1991-1-1, *Eurocode 1 — Actions on structures — Part 1-1: Specific weight of materials, self-weight of construction works and imposed loads for buildings*

EN 1991-1-2, *Eurocode 1 — Actions on structures — Part 1-2: Actions on structures exposed to fire*

EN 1991-1-3, *Eurocode 1 — Actions on structures — Part 1-3: Snow Loads*

EN 1991-1-4, *Eurocode 1 — Actions on structures — Part 1-4: Wind Actions*

EN 1991-1-5, *Eurocode 1 — Actions on structures — Part 1-5: Thermal Actions*

EN 1991-1-6, *Eurocode 1 — Actions on structures — Part 1-6: Actions during execution*

EN 1991-1-7, *Eurocode 1 — Actions on structures — Part 1-7: Accidental actions*

EN 1991-1-8, *Eurocode 1 — Actions on structures — Part 1-8: Actions from waves and currents on coastal structures*

EN 1991-1-9, *Eurocode 1 — Actions on structures — Part 1-9: Atmospheric icing*

EN 1991-2, *Eurocode 1 — Actions on structures — Part 2: Traffic loads on bridges and other civil engineering works*

EN 1991-3, *Eurocode 1 — Actions on structures — Part 3: Actions induced by cranes and machines*

EN 1991-4, *Eurocode 1 — Actions on structures — Part 4: Silos and tanks*

0.3 Introduction to EN 1991-3

EN 1991-3 gives design guidance and actions for the structural and geotechnical design of buildings and civil engineering works that are subject to:

- actions from bridge cranes, gantry cranes and wall cranes on fixed runways;
- actions from machines that cause a harmonic dynamic loading on fixed supporting structures.

EN 1991-3 is intended to be used with EN 1990 (all parts), the other parts of EN 1991 and the other Structural Eurocodes.

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 1991-3

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

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The national standard implementing EN 1991-3 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 1991-3 through notes to the following clauses:

6.2.2(2)

6.10(1)

National choice is allowed in EN 1991-3 on the application of the following informative annexes:

Annex A

Annex B

Annex C

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

1 Scope

1.1 Scope of EN 1991-3

(1) EN 1991-3 defines actions imposed by cranes and other machines including dynamic effects, if relevant, for the structural design of crane or machine supporting structures.

(2) EN 1991-3 provides guidance on crane classification in terms of dynamic factors and fatigue actions.

(3) EN 1991-3 applies to supporting structures of

- bridge cranes, gantry cranes and wall cranes travelling on fixed runways;
- fixed machines that cause a harmonic dynamic loading on fixed supporting structures.

(4) The principles provided in EN 1991-3 can be applied also to determine actions on supporting structures of cranes other than those referred to in (3).

(5) EN 1991-3 does not provide partial factors for actions.

NOTE For partial factors for actions, see EN 1990-1:2023+A1:2026, Clause A.5.

(6) EN 1991-3 does not provide actions or provisions for the design of cranes and machines.

1.2 Assumptions

(1) The general assumptions of EN 1990-1 apply.

(2) The design of structures supporting cranes or machines is undertaken using information on actions provided by the manufacturer of the crane or machine.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

NOTE See the Bibliography for a list of other documents cited that are not normative references, including those referenced as recommendations (i.e. in “should” clauses), permissions (“may” clauses), possibilities (“can” clauses), and in notes.

EN 1990-1:2023+A1:2026, *Eurocode — Basis of structural and geotechnical design — Part 1: New structures*

3 Terms, definitions and symbols

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1990-1 and the following apply.

3.1.1 General terms and definitions

3.1.1.1 machine

assembly, fitted with or intended to be fitted with a drive system consisting of linked parts or components, at least one of which moves, and which are joined together for a specific application