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# Bases for design of structures — Accidental actions

*Bases du calcul des constructions — Actions accidentelles*



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# Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 98, *Bases for design of structures*, Subcommittee SC 3, *Loads, forces and other actions*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

# Introduction

This document provides requirements and guidelines for the design and assessment of structures in relation to the possible occurrence of accidental actions induced by human activities. Fire and man-made earthquake, however, are not included.

This document is fully aligned with ISO 2394 and gives information for risk informed decision making and semi-probabilistic design and assessment. Like in most modern codes nowadays, attention is given to explicit modelling of hazard scenarios as well as to more implicit safety measurements following from robustness requirements.

This document aims at promoting harmonization of design practice internationally and unification between the respective codes and standards such as for actions and resistance for the respective structural materials.

The principles and appropriate instruments to ensure adequate levels of reliability provide for special classes of structures or projects where the common experience base need to be extended in a rational manner.

The informative annexes included in this document provide support for the interpretation and the use of the principles contained in the normative clauses.

# Bases for design of structures — Accidental actions

## 1 Scope

Accidental actions can be subdivided into accidental actions with a natural cause and accidental actions due to human activities. This document applies to reliability based and risk informed decision making for the design and assessment of structures subject to accidental actions due to human activities. However, fires and human-made earthquakes are not included.

The information presented in this document is intended for buildings and civil engineering works, regardless of the nature of their application and the use or combination of materials. The application of this document can require additional elements or elaboration in special cases.

This document is intended to serve as a basis for those committees that are responsible for the task of preparing International Standards, national standards or codes of practice in accordance with given objectives and context in a particular country. Where relevant, it can also be applied directly to specific cases.

This document describes how the principles of risk and reliability can be utilized to support decisions related to the design and assessment of structures subject to accidental actions and systems involving structures during all the phases of their service life. For the general principles of risk informed design and assessment, it is intended that ISO 2394 be considered.

The application of this document necessitates knowledge beyond that which it contains. It is the responsibility of the user to ensure that this knowledge is available and applied.

## 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 editions cited here apply. For undated references, the latest editions of the referenced documents (including any amendments) apply.

ISO 2394:2015, *General principles on reliability for structures*

ISO 8930, *General principles on reliability for structures — Vocabulary*

## 3 Terms and definitions

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

For the purposes of this document, the terms and definitions given in ISO 2394 and ISO 8930 and the following apply.

**3.1**
**barriers and shock absorbers**
objects or structural devices intended to absorb part of the impact energy in order to protect the structure

**3.2**
**burning velocity**
rate of flame propagation relative to the velocity of the unburned dust, gas or vapour that is ahead of it



 