
**Fire safety engineering —
Performance of structures in fire —**

**Part 6:
Example of an eight-storey office
concrete building**

*Ingénierie de la sécurité incendie — Performance des structures en
situation d'incendie —*

*Partie 6: Exemple d'un immeuble de bureaux de huit étages en béton
renforcé*



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ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms, definitions and symbols	1
3.1 Terms and definitions	1
3.2 Symbols	2
4 Design strategy for fire safety of structure	3
4.1 General design process for fire safety of structures	3
4.2 Guidance of practical design process for fire safety of structure	3
5 Qualification of the performance of structures in fire	3
5.1 STEP 1: Scope of the project for fire safety of structure	3
5.1.1 Built-environment characteristics	3
5.1.2 Fuel loads	6
5.1.3 Mechanical actions	7
5.2 STEP 2: Identifying objectives, functional requirements, and performance criteria for fire safety of structure	8
5.3 STEP 3: Trial plan for fire safety of structure	10
5.4 STEP 4: Design fire scenarios and design fires	10
5.4.1 General	10
5.4.2 Design fire scenarios	10
5.4.3 Design fires	11
5.5 STEP 5: Thermal response of the structure	17
5.5.1 General	17
5.5.2 Thermal analysis of the slab	18
5.5.3 Thermal analysis of the beam	19
5.5.4 Thermal analysis of the column	21
5.6 STEP 6: Mechanical response of the structure	21
5.6.1 Structural model	21
5.6.2 Assumptions of the analysis	22
5.6.3 Structural behaviour of the building	24
5.7 STEP 7: Assessment against the fire safety objectives	34
5.8 STEP 8: Documentation of the design for fire safety of structures	34
5.9 STEP 9: Factors and influences to be considered in the quantification process	35
5.9.1 Material properties	35
Annex A (informative) Heat transfer of calculation	39
Annex B (informative) Results from thermal and mechanical analyses	40
Annex C (informative) Results from OAT sensitivity analysis for the uncertainty of material properties	44
Bibliography	48

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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).

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For an explanation on 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 the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 92, *Fire safety*, Subcommittee SC 4, *Fire safety engineering*.

Introduction

The work described in this document is an example of the application of ISO 24679-1. The procedure in this document is intended to follow the principles outlined in ISO 24679-1. The sections of ISO 24679-1 which are considered relevant to this example are identified and thus, the section titles are the same and appear in the same order.

The purpose of this study is to demonstrate the application of the steps outlined in ISO 24679-1 for fire safety engineering and performance of structures in fire in compliance with the related standards of France. As such, the relevant sections to this example are applied and discussed.

Fire safety engineering — Performance of structures in fire —

Part 6:

Example of an eight-storey office concrete building

1 Scope

This document provides an example of fire safety engineering design in the application of ISO 24679-1 to an office building.

In this document, an overall structural analysis of a building is undertaken. It consists in a numerical assessment of the structural performance of an eight-storey concrete building when subjected to a fire. This analysis is performed in order to demonstrate that the fire safety objectives, for the relevant design fire scenarios, due to structural behaviour of building in the event of fire, are met with the trial plan for the safety of structure. With regards to this, a fully developed fire was studied.

The purpose of this document is to assess the performance of an office building which is fully accessible to public in case of fire, using ISO 24679-1. In this respect, a critical design fire was identified and analysed using detailed fire modelling. A more detailed analysis was then performed for critical design fire using the finite element model. The advanced model provided all the comprehensive information necessary for analysing the given built environment with respect to fire safety.

It is to be noted that this document only addresses the fire safety objectives related to the structural performance during fire. The analysis within this document is therefore only part of the overall building fire safety strategy.

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.

ISO 24679-1:—¹⁾, *Fire safety engineering — Performance of structures in fire — Part 1: General*

3 Terms, definitions and symbols

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 24679-1 apply.

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

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

1) Under preparation. Stage at the time of publication: ISO/DIS 24679-1:2017.