PD ISO/TR 24679-3:2015

BSI Standards Publication

Fire safety engineering — Performance of structure in fire

Part 3: Example of an open car park

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National foreword

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

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Part 3: Example of an open car park

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Partie 3: Exemple d'un parking aérien largement ventilé

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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).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT), see the following URL: Foreword — Supplementary information.

The committee responsible for this document is ISO/TC 92, *Fire safety*, SC 4, *Fire safety engineering*.

Introduction

This Technical Report is an example of the application of ISO/TS 24679, prepared in the format of ISO/TS 24679. It includes only those sections of ISO/TS 24679 that describe steps of the methodology for assessing the performance of structures. It preserves the numbering of sections in ISO/TS 24679 and so omits numbered sections for which there is no text or information for this example.

This example is intended to illustrate the implementation of the steps of fire resistance assessment, as defined in ISO/TS 24679. Only steps that are considered as relevant in this example are well detailed in this Technical Report.

Fire safety engineering — Performance of structure in fire —

Part 3: Example of an open car park

1 Scope

This Technical Report provides a fire safety engineering application relative to fire resistance assessment of an open car park according to the methodology given in ISO/TS 24679. This report describes the adopted process which followed the same step by step procedure as that given within ISO/TS 24679. The Annexes of this Technical Report presents the detailed numerical analysis results obtained for most severe fire scenarios on the basis of this specific fire safety engineering procedure for open car parks.

The fire safety engineering applied here to open car parks, with respect to their fire resistance, considers specific design fire scenarios as well as corresponding fire development. It takes account of localized heating, global structural behaviour rather than single structural member resistance, etc.

In fact, in case of fire in open car parks, only a small part of structure will be exposed directly to fire because of the limited fire spread due to open environment as well as rapid fire brigade intervention. In consequence, the load redistribution to cold parts might become possible and can be taken into account through global structural analysis.

This kind of approach based on 3D modelling of the mechanical response of composite floor was already used in various fire safety engineering projects in France to check the stability of unprotected composite steel framed open car parks subject to most severe real fire scenarios.

Finally, it should be mentioned that these severe fire scenarios have been selected for fire resistance purposes only. They should not be used, for example, for smoke control purposes.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/TS 24679:2011, *Fire safety engineering — Performance of structures in fire*

EN 1990:2002, *Eurocode 0: Basis of structural design*

EN 1991-1-2:2002, *Eurocode 1: Actions on structures — Part 1-2: General actions — Actions on structures exposed to fire*

EN 1992-1-2:2004, *Eurocode 2: Design of concrete structures — Part 1-2: General — Structural fire design*

EN 1994-1-1:2004, *Eurocode 4: Design of composite steel and concrete structures — Part 1-1: General — Common rules and rules for buildings*

EN 1994-1-2:2005, *Eurocode 4: Design of composite steel and concrete structures — Part 1-2: General — Structural fire design*