
**Fire safety engineering — Requirements
governing algebraic equations — Ceiling
jet flows**

*Ingénierie de la sécurité incendie — Exigences régissant les équations
algébriques — Écoulements en jet sous plafond*



PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

This document is a preview generated by EVS

© ISO 2006

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

Foreword.....	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions.....	1
4 Requirements governing description of physical phenomena.....	2
5 Requirements governing documentation.....	2
6 Requirements governing limitations	2
7 Requirements governing input parameters	2
8 Requirements governing domain of applicability	3
Annex A (informative) Equations for quasi-steady state, axisymmetric ceiling jet flows	4
Bibliography	16

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 16736 was prepared by Technical Committee ISO/TC 92, *Fire safety*, Subcommittee SC 4, *Fire safety engineering*.

Introduction

This International Standard is intended to be used by fire safety practitioners who employ fire safety engineering calculation methods. Examples include fire safety engineers; authorities having jurisdiction, such as territorial authority officials; fire-service personnel; code enforcers; and code developers. It is expected that users of this International Standard are appropriately qualified and competent in the field of fire safety engineering. It is particularly important that users understand the parameters within which particular methodologies can be used.

Algebraic equations conforming to the requirements of this International Standard are used with other engineering calculation methods during fire safety design. Such design is preceded by the establishment of a context, including the fire safety goals and objectives to be met, as well as performance criteria when a tentative fire safety design is subject to specified design fire scenarios. Engineering calculation methods are used to determine if these performance criteria are met by a particular design and if not, how the design can be modified.

The subjects of engineering calculations include the fire-safe design of entirely new built environments, such as buildings, ships or vehicles as well as the assessment of the fire safety of existing built environments.

The algebraic equations discussed in this International Standard are very useful for quantifying the consequences of design fire scenarios. Such equations are particularly valuable for allowing the practitioner to determine very quickly how a tentative fire safety design should be modified to meet performance criteria agreed-upon, without having to spend time on detailed numerical calculations until the stage of final design documentation. In this respect, the equations for ceiling jet flows can be used for estimating the response time of fire detectors and the first activated sprinklers, as well as the time for damage to some structural elements (e.g., plastic roof- or sky-lights).

The algebraic equations discussed in this International Standard are essential for checking the results of comprehensive numerical models that calculate fire growth and its consequences.

This document is a preview generated by EVS

Fire safety engineering — Requirements governing algebraic equations — Ceiling jet flows

1 Scope

1.1 The requirements in this International Standard govern the application of explicit algebraic equation sets to the calculation of specific characteristics of ceiling jet flows.

1.2 This International Standard is an implementation of the general requirements provided in ISO/TR 13387-3 for the case of fire dynamics calculations involving sets of explicit algebraic equations.

1.3 This International Standard is arranged in the form of a template, where specific information relevant to algebraic ceiling jet flows equations is provided to satisfy the following types of general requirements:

- a) description of physical phenomena addressed by the calculation method;
- b) documentation of the calculation procedure and its scientific basis;
- c) limitations of the calculation method;
- d) input parameters for the calculation method;
- e) domain of applicability of the calculation method.

1.4 Examples of sets of algebraic equations meeting all the requirements of this International Standard are provided in separate annexes to this International Standard for each different type of ceiling jet flow. Currently, there is one informative annex containing algebraic equations for quasi-steady state, axisymmetric ceiling jet flows.

2 Normative references

The following referenced documents are indispensable for the application 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/TR 13387-3, *Fire safety engineering — Part 3: Assessment and verification of mathematical fire models*

ISO 13943, *Fire safety — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 13943 apply.

NOTE See Annex A for the terms and definitions specific to that annex.