

A stylized, semi-transparent graphic of a flame or fire, rendered in a lighter shade of red than the background. It is positioned on the left side of the cover, behind the main title text.

# *Fire Standards*

*in the  
International  
Marketplace*

*Arthur F. Grand  
editor*



*STP 1163*

**STP 1163**

# **Fire Standards in the International Marketplace**

*Arthur F. Grand, editor*

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The quality of the papers in this publication reflects not only the obvious efforts of the authors and the technical editor(s), but also the work of these peer reviewers. The ASTM Committee on Publications acknowledges with appreciation their dedication and contribution to time and effort on behalf of ASTM.

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# Foreword

This publication, *Fire Standards in the International Marketplace*, contains papers presented at the symposium of the same name held in Phoenix, AZ on 5 December 1994. The symposium was sponsored by ASTM Committee E-5 on Fire Standards. Arthur F. Grand of Omega Point Laboratories, Inc. in Elmendorf, TX presided as symposium chair and the editor of the resulting publication.

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# Overview

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This Special Technical Publication (STP), and the symposium on which it was based, were organized to help commemorate the 90th anniversary of Committee E-5 on Fire Standards that was created in 1904. For this event, papers were solicited on the topic of the Internationalization of Fire Standards because this has been a significant recent trend in fire standards development. For example, certain ASTM Fire Test Methods are similar or identical to test standards in the International Organization for Standardization (ISO) and other standards organizations around the world. The authors of the papers in this book are also international in scope, representing the United States, England, and France.

The creation of large free-trade zones, such as the European Union, have had a significant impact on how United States companies do business, how regulations are written, and how testing laboratories and research institutions operate. Furthermore, we are changing our viewpoint on the standards that are recognized and accepted for the evaluation of commercial products. Thus, the papers contained within this volume are concerned with test methods having international implications and with standards development both in the United States and in Europe.

This STP contains seven papers, dealing with the following topics:

- (1) Test Method Development,
- (2) International Aspects of Fire Standards, and
- (3) Fire Performance in the Real World.

There are many ongoing events in the international arena that are relevant to test method development. Among these are the increasing use and acceptability of a device known as the cone calorimeter (ASTM E 1354, SO 5660). Thus it seemed appropriate to begin this volume on international fire standards with a paper by Babrauskas that provides a review of the development, standardization, and future of the cone calorimeter.

Visible smoke measurements are obtainable from the cone calorimeter and from other test methods as well. However, methods for the characterization of smoke from natural and synthetic materials are plagued with a fundamental problem: smoke evaluation and measurement are dependent on the combustion scenario and on the apparatus in which the measurements are taken. Thus, different results would be expected from flaming versus nonflaming combustion, and static versus flow-through systems. Addressing this important issue, the second paper of this volume, by Fritz and Hunsberger, is a research paper that includes a comparison of results of three different smoke test methods. The three methods represent current standard test methods in both ASTM and in ISO.

Leading off a discussion on the international aspects of fire standards, appropriately, is the third paper by Grayson and Hirschler that contains a review and comparison of the ASTM and International Fire Standards on materials, products and assemblies. Many of the cited standards, which are cataloged in an easy-to-read manner, have counterparts in one or another of the ISO's standards.

Fire safety engineering is a relatively new area for standardization, but one that has received worldwide interest. Thus, a review of the progress of one particular ISO subcommittee, in the context of work ongoing in several countries, is especially pertinent to the goals of this book. Such is the topic of the fourth paper by Cooke.

"Structural Fire Design" is an aspect of the International World of Fire Standards that is often little understood outside of the realm of the design engineers. However, as a complement to the

papers dealing with standards for real-world products and for fire safety engineering, the paper by Kruppa contains a discussion of the application of structural considerations in realistic fire scenarios.

The paper on Structural Fire Design helps to bridge the gap between design and performance in the real world, which is the subject of the final two papers. Controversies regarding fire resistance testing has caught the attention of delegates to ASTM and ISO meetings for years. These issues are summarized in a paper by Beitel that also offers recommendations for a resolution of the issues.

Finally, the history, development, and future of a specific application of fire resistance testing, the evaluation of the performance of Fire Resistive Joints, is described by Nicholas. This paper deals with the interesting problem of evaluating an assembly that is both multi-component and dynamic. This contribution completes our tour through fire standards in the international marketplace.

This book provides some of the information that an individual might need in order to be knowledgeable about the complex international arena of fire standards. Years ago, it was often satisfactory for a manufacturer to comply with a single regulation citing a specific standard for acceptability of a product in the marketplace. Now, with an increased emphasis on products to be sold in world markets and an enhanced awareness of fire safety, International Fire Standards have taken on new meaning and a new sense of importance.

*Arthur F. Grand, Ph.D.*

Omega Point Laboratories, Inc.  
Elmendorf, TX 78112  
symposium chairman and editor

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