

Fire safety in ISO – Information about ISO/TC 92



Fire safety is a highly international issue. Large fires occur every day in the world and too often there is a major catastrophe. ISO/TC 92 *Fire safety* is producing internationally accepted standards and documents on fire testing, measurements of fire parameters, fire safety engineering and other related topics. The standards are used when selecting a fire safe product or using a method to analyse the safety in case of fire.



ISO/TC 92 is a horizontal committee, addressing all aspects of fire safety not specifically within the scopes of other technical committees. This wide scope reflects the growing importance of fire safety engineering, which is applicable to most situations where a fire may occur. In addition to its normal activities in producing standards, in May 1995 ISO/TC 92 was entrusted with a co-ordinating role by the ISO Technical Management Board and is now the forum for all standardization matters related to fire.

The stakeholders

Fire safety impinges on nearly every aspect of human endeavour. The market for ISO/TC 92's standards and guidance is extremely broad. They are used for the assessment and control of fire risk of materials, products and structures in the broadest sense. The main stakeholders are industry, in particular the construction industry, national and international regulators (e.g. IMO), consumer groups, research and testing organisations and certification bodies. ISO/TC 92 standards are expected to be of special value to developing countries. Apart from supporting fire safety design and providing for advanced measurements, there are also standards that are simple to use at low cost. These standards are suitable for use in prescriptive regulations and provide for an easy route to increased fire safety.

Global relevance

The overall size of the market for ISO/TC 92 standards is very large. All geographical regions have an interest in fire safety. In the developed world, fire typically claims the lives of 10-20 people per million of the population per year. Direct property losses amount to approximately 0.2% of GDP per year. The large majority of fatal fires in those countries occur in buildings. Together with the costs of the emergency services, fire protection in buildings, fire insurance administration and the consequential losses to commerce, the total cost approaches 1% of GDP. The gross output of the construction sector amounts to approximately 11% of GDP of the developed world. Fire protection costs are approximately 2-3 % of construction costs. Construction is one of the largest sectors in terms of employment, providing jobs for 7% of the working population.

Safety and security

The work of ISO/TC 92 concerns safety, health and environmental issues. The standards developed by TC 92 should save lives, reduce fire losses and bring substantial cost savings in design through the use of fire safety engineering.

Global organisations in co-operation with ISO/TC 92

ISO/TC 21 Equipment for fire protection and fire fighting

ISO/TC 21 is the other main ISO TC dealing with fire, which complements the work of ISO TC 92. TC 21 is product and equipment orientated. For further information see www.iso.org

IMO - International Maritime Organization

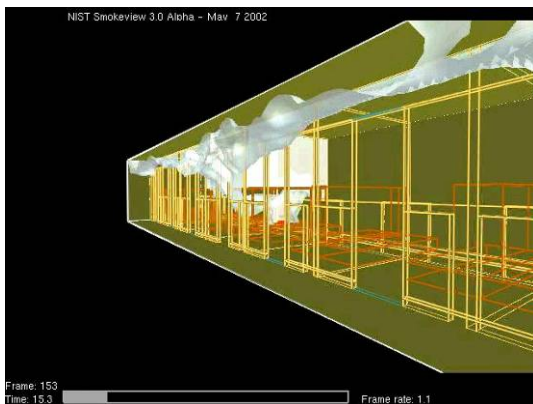
IMO is the United Nations specialized agency responsible for improving maritime safety and preventing pollution from ships. The International Convention for the Safety of Life at Sea (SOLAS) is a result of IMO's work. The *Sub-committee for fire protection* is devoted to fire safety and publishes codes in that area. IMO is also committed to technical co-operation and is in liaison with TC 92. The FTP code, Fire Test Procedures, is using directly or indirectly standards from TC 92. For further information see www.imo.org



Flashover of a living room

IEC-International Electrotechnical Commission

IEC is the leading global organization that prepares and publishes international standards for all electrical, electronic and related technologies. IEC/TC 89 *Fire hazard testing* provides guidance and test methods for assessing fire hazards of electrotechnical equipment, their parts (including components) and electrical insulating materials. IEC/TC 89 is in liaison with TC 92. For further information see www.iec.ch



Predictions of smoke propagation in support of fire safety engineering and fire investigations

CIB-International Council for Research and Innovation in Building and Construction

The purpose of CIB is to provide a global network for international exchange and co-operation in research and innovation in building and construction in support of an improved building process and of improved performance of the built environment. CIB W14 emphasis is on fire safety engineering needed for performance based fire codes or regulations. For further information see www.bfrl.nist.gov/866/CIB_W14 and www.cibworld.nl

CEN- European Committee for Standardization

CEN has 29 National Members who vote for and implement European Standards, and 8 Associate Members. An agreement on technical co-operation between ISO and CEN (the Vienna Agreement) recognizes the primacy of international standards, but also the particular needs of the Single European Market. The Agreement helps to avoid duplication of work and allows for expertise to be focused in an efficient way. For more information see www.cen.eu



Fire resistance test of a glazing in a fire test furnace



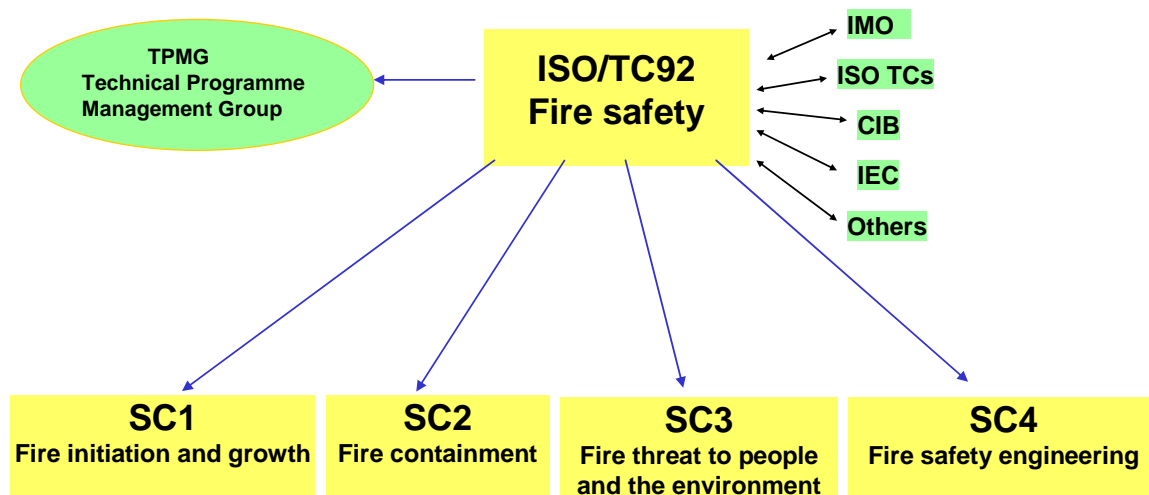
Smoke and toxic gases travel long distances and can be a real danger to peoples lives

The main objectives of ISO/TC 92

To develop standards and other documents to satisfy market needs, be timely, cost effective and cover:

- 1 Fire safety engineering, design and evaluation methods used to verify that appropriate fire safety objectives are achieved. An example of a fire safety objective is specified risk reduction to people, property and the environment.
- 2 The performance under fire conditions of materials, products, elements of structure, structures and systems and their contents, where appropriate in end-use conditions.
- 3 The application of fire safety management.
- 4 Characterisation of occupant performance and behaviour when subjected to fire conditions and fire-like emergency situations.

TC 92 is organised in 4 subcommittees that closely co-operate to achieve the objectives.



Organisational structure of ISO/TC 92

The technical committee and the different sub-committees have the following objectives and activities:

ISO/TC 92 *Fire safety*
Secretariat: BSI , Magdalena Di Carlo
magda.dicarlo@bsi-global.com

Chairman
Björn Sundström
SP-Fire Technology
Sweden
bjorn.sundstrom@sp.se



ISO/TC 92 Fire safety is producing internationally accepted standards and documents on fire testing, measurements of fire parameters, fire safety engineering and other related topics. The standards are used when selecting a fire safe product or using a method to analyse the safety in case of fire.

ISO/TC 92/SC1 *Fire initiation and growth*
Secretariat: BSI, Magdalena Di Carlo
magda.dicarlo@bsi-global.com

Chairman

Koichi Yoshida
National Maritime
Research Institute
Japan
koichiy@nmri.go.jp



The goal of SC1 is to provide ISO standards for evaluation of performance of materials and products at a fire initiation and growth stage.

Test protocols, measuring techniques and fire scenarios in support of fire safety engineering

- Test protocols, measuring techniques and procedures for securing data of fundamental fire properties
- Test protocols, measuring techniques and procedures for input data to FSE models
- Standards relating to fire scenarios and characteristic fire growth of products

Performance codes

- Test protocols for reference scenarios
- Test protocols, measuring techniques and procedures for fire calorimetry

Prescriptive codes

- Updating tests already in use

Test validation

- Protocols to determine the precision of fire test procedures
- Test protocols for validation of fire growth predictions

Instrumentation

- Protocols for measurement technologies used in fire test procedures

ISO/TC92/SC 2 *Fire containment*
Secretariat: ANSI, Jim Shaw
jim.shaw@weyerhaeuser.com

Chairman

Deg Priest
Intertek Testing
Services NA, Inc.
USA
deg.priest@intertek.com



The goal of SC2 is to maintain and improve the existing ISO fire containment standards, develop new fire resistance standards where the need is identified, and integrate fire resistance tests and calculations with fire safety engineering, including:

- Generate data which allows prediction of fire performance
- Specify exposure conditions to correspond to those to which the assembly might be exposed in practice
- Provide numerical output in such a way that there can be electronic storage and access of results in a uniform manner
- Define, in measurable units, any external force, restraint, stress or pressure applied to the sample
- Account for special testing conditions (for example, edge effects), or justify the corresponding lack thereof, to enable the data to be applied to actual installation conditions
- Describe in the appendix or scope of each standard that fire safety engineering is a potential use of the standard

ISO/TC92/SC3 *Fire threat to people and the environment*

Secretariat: ANSI, Gordon E. Hartzell
gehartzell@aol.com

Chairman

Richard G. Gann
National Institute of
Standards and
Technology
USA
rggann@nist.gov



The goal of SC3 is to develop a set of standards that capture the state-of-the-art in the generation, transport and impact on people and the environment of fire effluent. The standards provide the basis for including the harmful effects of fire effluent in fire hazard and risk assessment.

Activities of the sub-committee include standards for:

- The role of toxic hazard in fire safety
- Analysis of fire effluent for estimation of toxic potency
- Appraisal and standardization of apparatus for accurate generation of fire effluent
- Measurement of the toxic potency of fire effluent
- Effect of fire intervention strategies on toxic potency, hazard and risk
- Characterization of airborne fire effluent that can affect the environment
- Environment implications of fireground activity

ISO/TC92/SC4 *Fire safety engineering*

Secretariat : AFNOR, Benoît Smerecki
benoit.smerecki@afnor.org

Chairman

Joël Kruppa
CTICM
France
jkruppa@cticm.com



The goal of SC4 is to provide FSE documents for supporting performance-based design and assessment to:

- Develop and maintain ISO documents on the use of fire safety engineering
- Develop engineering design and evaluation methods for verifying appropriate objectives are achieved
- Standardize necessary calculation or other assessment methods
- Develop standards for validation procedures
- Elaborate guidance documents for best engineering practice

Current activities of SC 4 regarding the development of standards are:

- Fire safety engineering process regarding behaviour and safety of people and development of general principles
- Use of risk assessment models regarding selection of design fire scenarios and quantitative evaluation of hazards
- Use of accepted engineering methods for validation and verification of calculation tools
- FSE approach for the global behaviour of structures in fire
- Necessary input data to FSE methods
- Calculation methods in fire dynamic

The joint effort in TC 92 has resulted in about 80 standards. The users of TC 92 standards are found in regions, for example the European Union, in international organisations, for example IMO (International Maritime Organisation), in individual countries' building

codes, for example Australia, in other standardisation organisations, for example ASTM, and by individuals doing Fire Safety Engineering. A complete list of all the TC 92 standards can be found on www.iso.org

The membership of TC 92 is large. There are 68 countries participating actively or as observers of the activities and 7 organisations are in liaison.

PARTICIPATING COUNTRIES	OBSERVING COUNTRIES	Liaisons with other organisations
Australia	Argentina	Association of European Gypsum Industries (EUROGYPSUM)
Belarus	Austria	
Belgium	Azerbaijan	Association of Fire Testing Laboratories of European Industries (IL)
Brazil	Barbados	
Canada	Botswana	European Confederation of Woodworking Industries (CEI-Bois)
China	Bulgaria	
Czech Republic	Colombia	European Commission (EC)
Denmark	Croatia	
France	Cuba	European Insulation Manufacturers Association (EURIMA)
Germany	Ecuador	
Hungary	Egypt	International Council for Building Research, Studies and Documentation (CIB)
Italy	Estonia	
Japan	Fiji	International Maritime Organization (IMO)
Kenya	Finland	
Korea, Republic of	Greece	
Netherlands	Hong Kong, China	
New Zealand	India	
Norway	Indonesia	
Russian Federation	Iran	
Serbia	Ireland	
South Africa	Israel	
Spain	Jamaica	
Sweden	Malaysia	
United Kingdom	Moldova, Republic of	
USA	Mongolia	
	Pakistan	
	Philippines	
	Poland	
	Portugal	
	Romania	
	Saudi Arabia	
	Singapore	
	Slovakia	
	Slovenia	
	Sri Lanka	
	Switzerland	
	Tanzania	
	Thailand	
	Trinidad and Tobago	
	Tunisia	
	Turkey	
	Ukraine	
	Venezuela	

The membership of the sub-committees may be slightly different.

TC 92 wants more members. Interested? Contact your national standardisation body. For more information from the TC 92 secretariat please contact magda.dicarlo@bsi-global.com

Read more about fire safety in ISO/TC 92 and how to obtain copies of standards at www.iso.org