NATIONAL BUREAU OF STANDARDS REPORT

NBS PROJECT
421-5102

November 17, 1967

NBS REPORT
9644

FIFTH PLENARY SESSION

ISO/TC 92 Fire Test Methods

THE HAGUE, Netherlands

Dale McDaniel, U. S. Coast Guard

and

A. F. Robertson, National Bureau of Standards

for

United States of America Standards Institute

and

ASTM Committee E-5 Sub XII

U.S. DEPARTMENT OF COMMERCE

NATIONAL BUREAU OF STANDARDS

FIFTH PLENARY SESSION
ISO/TC-92 Fire Test Methods
THE HAGUE, Netherlands

Dale McDaniel, U. S. Coast Guard
and
A. F. Robertson, National Bureau of Standards

ABSTRACT

A. F. Robertson and Dale McDaniel, as representatives of the USASI, attended meetings of ISO/TC-92 on Fire Tests at the Hague, Netherlands, from 6 to 10 November 1967. During this meeting, two test methods were accepted for recommendation to the Secretariat for submission to ballot as Recommendations. These were the heated tube or furnace test for non-combustibility and the calorimetric bomb test. Although it appeared that we were too late to influence technical aspects of the test methods, we were able to achieve significant revision of the wording which should help clarify the intent and application of the test. We were able, with the help of others, to insist that the working group which developed these recommendations remain active to consider new methods for characterizing non-combustible materials. We were also able to secure agreement that a new working group be formed to consider need for revision of Recommendation 1060 on fire endurance tests. We were well received and urged to participate in the working groups of ISO/TC-92.

Introduction

The American Society for Testing and Materials (ASTM) Committee E-5, Sub XII, was recognized by the United States of American Standards Institute (USASI) as the USA National Committee in connection with activities of ISO/TC-92 on Fire Test Methods. Since ISO/TC-92 has been working actively for about ten years and the assumption of Participating (P) Status by USASI on this committee only occurred about 18 months ago, there has been little opportunity for USASI to influence the work leading to the development of ISO Recommendations in this field. Mr. J. V. Ryan did attend a plenary session meeting of ISO/TC 92 at Brussels in an Observer (O) status for USASI in 1965, (Ref. 1). His experience at this meeting made clear the limited opportunity of (O) members to secure recognition to speak and thereby influence the actions taken by the Committee.

The meeting described in this report was, therefore, the first at which USASI was able to participate as a P member of ISO/TC-92. The meetings were held in rooms provided by the Het Koninklijk Instituut van Ingenieurs, Prinsessegracht 23, The Hague, Netherlands, during the week of 5 November 1967.

The list of delegates and other participants in the meeting is included as Attachment A. Professor Bletzacker of Ohio State University, who had planned to attend with the U. S. delegation was unable to find support to cover traveling expenses.

Monday, 6 November 1967

The meeting was opened by Mr. Madsen, the Director of NNI, the Netherlands Standards Institute. He welcomed the delegates and introduced Mr. Raby, representing the Central Secretariat of ISO. He briefly described the decision, recently made by ISO during a meeting in Russia, to enlarge the staff and thereby, the assistance and cooperation with the various technical committees. He mentioned that he was following the work of 30 physical committees and obviously could not claim to be an expert in all their work. Mr. Raby remained at the meeting for three days.

Mr. Madsen, speaking for the Netherlands' Delegation, then proposed that D. I. Lawson of the Joint Fire Research Organization, England, continue, as in former sessions, to serve as Chairman. This suggestion was accepted by all the delegates.

The Chairman called for acceptance of the agenda with the suggestion that the order of the items be changed to interpose Items 9 and 10 between Items 4 and 5. This was agreed as satisfactory. The revised agenda is enclosed as Attachment B.

It was suggested and agreed that a Resolution and Drafting Committee be formed with appointment of Mr. Minne, Belgium, Mr. Wilson Dixon, UK and Mr. Laurin, France.

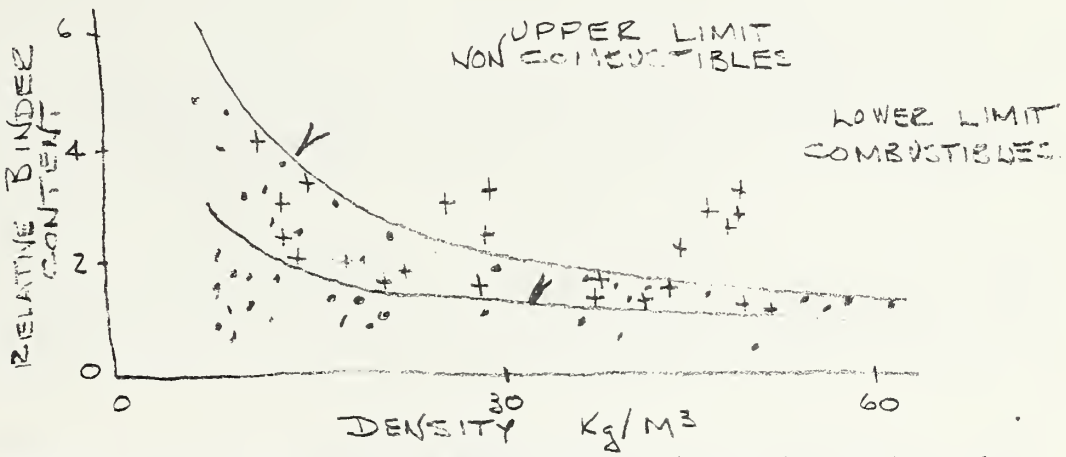
Professor Herpol was then asked to present a report (Ref. 2) of the activities of W.G. 2, Tests for Non-Combustibility. He reported that many comments on the two draft recommendations (Refs. 3 and 4) had been received too late to distribute for consideration at the meeting, although a number of papers dealing with these test methods were now available, (Refs. 5, 6, 7, 8). It was evident that the comments developed by Sub V of E-5 were among those not to be considered as a document at the meeting. Discussion with the secretary, later, made evident that, although the comments were received and forwarded to Professor Herpol by 15 August, in the form of letters from members of Sub V, future submissions of this type would receive better attention if prepared in the form of a document, and submitted to the Secretariat with a request that it be distributed to all ISO members.

In introducing the papers available, it became clear that there were several countries which questioned the usefulness of the furnace and calorimetric test methods covered by References 3 and 4. The Chairman emphasized the need to make progress, the importance to the various participating countries that a test for non-combustibility be developed, and requested that, unless there were substantial evidence that the recommendations proposed were in any way likely to lead to unsafe practices, any revisions to the documents be limited to those of an editorial nature which would improve clarity. He continued by requesting that recent documents be briefly discussed.

Colonel Cabret, in summarizing Reference 5, pointed out that, as a result of extensive studies both at CSTB and in industry, they were not satisfied with the furnace test method for lightweight insulating materials. He reported that they had difficulty in characterizing in a reproducible way the flaming of specimens. He criticized the subjective nature of the classifications with its use.

Reference 5 contains an impressive amount of data which shows the increasing variability of experimental results with glass fiber insulation materials of low density, Fig. 1.

Fig. 1



Delegates from Norway, Italy and Sweden also raised questions about the adequacy of the furnace test method. They seemed to agree that better-defined technical properties would probably be more useful in defining materials of interest, however, they were inclined to agree that there was a current urgent need in many countries for this purpose.

There was a lengthy discussion pro and con with regard to the furnace test method (Ref. 6) from Germany,(Ref 7) from Sweden, and (Ref.8) from France were reviewed in succession. There were criticisms because of its lack of reproducibility with lightweight fiberglass insulation, difficulties with non-homogeneous and laminated materials, etc. The U. S. delegation drew attention to the limitations imposed in the scope statement of the ASTM Standard E-136 which, in many ways, is quite similar.

The Chairman then called for a vote in confidence of the recommendation developed by W. G. 2. The resolution was to the effect that there should be a furnace test method for selection of non-combustible materials. In voting, it was recognized that some limitation might be placed on its applicability.

The vote resulted in 10 yes, 4 no (France, Norway, Finland and Poland) 1 abstained (USA).

Tuesday, 7 November 1967

The Chairman opened the meeting with a request that we procede to a detailed review of Reference 3, the draft recommendation for the furnace test. He asked that the comments be of a constructive nature.

Discussion rapidly developed on the limitations of the test method. There was rather general agreement that it was difficult to use for materials with density below 50 kg/m^3 (3 lb/ft^3). McDaniel (USA) suggested possible acceptance of method, but leave applicability for further study. The Chairman called for a vote to the effect that the method be restricted from use for materials of lower density than 50 kg/m^3. The vote was favorable to such limitation. There were numerous other rather minor revisions of an editorial type to the Recommendation. The USA was successful in drawing attention to the need for clarification of the way in which furnace uniformity of temperature was to be measured, the description of the thermocouple used, and some other points. However, they did not succeed in gaining acceptance of the need for a thermocouple fastened to the surface of the specimen. The revisions agreed to are listed in Reference 9.

Wednesday, 8 November 1967

Discussion of revisions continued during the early part of the day. Italy proposed a resolution that the technical comments presented in the meeting be referred back to the working group for further study. There was obvious concern that the document not be "frozen" in its present form. The Chairman proposed a resolution, No. 52, (Attachment C), to send the "Non-Combustibility Test," in its revised form, to members of ISO for letter ballot. Favorable action by letter ballot would mean that the Non-Combustibility Test would become an ISO recommendation.

Robertson (USA) stated that, since the U. S. was new to ISO proceedings, we would not act on the resolution. He expressed considerable concern over the amount of time given during the meeting to consideration of technical comments on the documents, particularly comments made by countries not members of Working Group 2. He questioned what action was taken by ISO on technical comments which accompany a negative letter ballot. Mr. Raby (ISO) explained that technical comments on a proposed ISO Recommendation were referred to the Technical Secretariat of IC/92 (the British Standards Institute) who would decide if the comments were important enough to require reconsideration of the proposed ISO Recommendation by TC/92.

The Chairman then called for a vote on the resolution. It was passed by the vote of 10 for, 4 against, and 1 abstention. France, Germany, Norway, Sweden voted against and the USA abstained.

A number of countries, including the USA, immediately asked that Working Group 2 be requested to consider technical comments on the proposed Non-combustibility Test made during the meeting. After considerable discussion, resulting from an apparent misunderstanding between the Chairman and the delegates, it was generally agreed that this was already a task assigned to the Working Group. It is expected that the Working Group will begin immediate consideration of technical comments (including those of the USA) which were not considered by the Plenary Session due to lack of time.

The Committee then began consideration of the proposed ISO Recommendation for a "Calorimetric Bomb Test" (ISO/TC92/WG 2 (Secretariat-5)13). It was obvious from the beginning that the proposed test was largely a French effort and that several countries were not strong supporters of the proposal.

Professor Herpol (Belgium), in answer to a question from Dr. Robertson (USA), explained that the differential method had been discarded by the Working Group early in their deliberations because (1) It was complicated and (2) Small testing differences caused large variations in results.

Both Sweden and Germany questioned the need for ISO to have a recommendation for measuring calorific potential. It was explained that this was useful, primarily, for measuring possible fuel contribution to a fire.

Mr. Ackroyd (UK) and Dr. Robertson (USA) pointed out that materials containing elements other than carbon, oxygen, and hydrogen, and, in particular, materials containing metals, would give values in the bomb calorimeter which could not be expected in a building fire. These and other points were clarified by appropriate footnotes and corrections to the text.

A resolution, No. 53, to submit the draft recommendation to ISO for letter ballot was favorably acted on by the Committee, the vote being 11 for, 0 against, 4 abstentions. The USA abstained. The agreed revisions to Reference 4 are presented in Attachment "C".

Mr. Malhotra (UK) introduced Reference 10 which reports the progress of WG-3 since the last plenary meeting. This describes the results of preliminary tests in an attempt to measure the heat transfer through cracks around doors. These tests seemed to emphasize the complexity of the problem and, as a result, recent work has been confined to relatively simple experiments. Appendix B of Reference 10, describes an arrangement of specimen and test program for study of gas flow as a result of pressure differential across the door. The gases are collected and their temperature measured with thermocouples located in a canopy arranged to collect gases as they rise above the top of the unexposed side of the simulated door. One laboratory has completed the measurements with promising results; others are expected to report on their findings well before the next meeting of the WG-3 in April 1968. They plan, also, to study radiation from doors and discuss this in later reports. One laboratory has conducted a study on the ignition of cotton pads and filter paper. Another is in process of studying gas flow through cracks. Both phenomena are of interest in connection with ignition of cotton as a failure criterion. Malhotra asked acceptance of his report and:

1. Permission to increase membership of WG-3 by adding USA and Canada.

2. Guidance on further consideration they should take of smoke-stop doors.

Thursday, 9 November 1967

As is frequently done in meetings of this type, time was taken for a visit which would be of technical interest to the delegates. On this occasion, a trip had been arranged to the Philips plant at Eindhoven. Their technical exhibit was excellent and of considerable general interest to the delegates, however, in view of the lengthy agenda, one may question the propriety of the trip. The fact that a full day was spent this way probably reflects a difference in business attitudes.

Friday, 10 November 1967

Discussion of the report of WG-3 was continued. The Secretary pointed out that any P member of ISO/TC-92 could join any working group by simple request to the Secretariat and/or expressed desire of the working group involved.

The Chairman proposed a resolution to thank WG-3 for its report and requested that it continue its work to draft a fire test for doors, and also, that it continue to gather information that would ultimately allow it to draft a standard for smoke-stop doors. The resulting vote was unanimous in favor of the resulution.

After considerable discussion, a new resolution was proposed to thank WG-2 for their work in preparing two draft recommendations and further request it to review the two tests, as well as other possible methods of defining non-combustible materials. The vote on this was unanimous. Professor Herpol asked that Norway, Italy, and USA be added to membership of WG-2. We agreed to notify the Secretariat of our interest.

A resolution was then proposed by Sweden to establish a new WG to discuss problems of fire action and resistance with a view to recommending action by other working groups. An important item for early consideration would involve consideration of problems in characterizing non-combustibility with the objective of replacing this term by other better defined technical properties. A vote on this showed 7 for (USA), 4 no, 4 abstain. It was decided that the resolution had passed.

The work of WG-4 on reaction to fire was next presented by Dr. van Hoogstraten, Reference 12. In summary, it was reported that a series of 26 materials had been studied using the test methods of six different countries. The order of ranking materials was so different between some of the test methods that it was questioned if the same properties were being measured. Mr. Amy had tried, without success, to understand the difference in manner of classification. As a result, at the last meeting of the WG, it was decided to start all over with the use of only two specimens at two extremes of the flammability range. They have planned for two meetings in 1968, the first in April. As requested, they have collected information on smoke and toxic products, but have considered it beyond their scope to consider work on measurement methods for toxicity. The WG looks to the C.I.B. working group on fire for smoke measurement methods.

A resolution to thank WG-4 for their report on work completed and request that it continue with the objective of presenting the Committee with a test or tests for reaction of materials to fire and further, to gather information on smoke and thermal decomposition products. This was accepted unanimously.

The report of WG-5 by Professor Pettersson was passed over since there was no immediate time for its presentation.

Mr. Amy was asked to summarize the activities of WG-6 on terminology, Reference 13. He did this by pointing out the difficulties of defining terms which, in each of the several languages, were used to connote the same phenomena or concept. He requested that the document which had been prepared not be considered as a recommendation, since more work was necessary on it. He asked that the Secretariat for this WG be assigned to France, if it is agreed that the group continue their work.

The Chairman proposed a resolution to thank WG-6 for their report and work and ask that they continue work on this subject until the next meeting, it being agreed that the Secretariat for this WG be held by France. This resolution was unanimously accepted.

The Chairman proposed a resolution for formation of WG-7 as follows:

> The planary session agreed to form WG-7 to consider the interrelation between combustibility and reaction to fire, and to be composed of the following members:
>
> | | |
> |---|---|
> | Professor Herpol | - Belgium |
> | Mr. Malhotra | - United Kingdom |
> | Dr. Van Hoogstraten | - Netherlands |
> | Professor Pettersson | - Sweden |
> | Mr. Amy | - France |

This was passed unanimously, the membership being composed of the chairmen of the working groups of ISO/TC-92. At the request of Colonel Cabret, the USA was also asked to designate a member.

It was also resolved and unanimously accepted that WG-6 should be asked to prepare a glossary relating to fire test methods in the language of member countries.

The USA proposed a resolution to effect the establishment of WG-8 for the purpose of consideration of possible need for revision of Recommendation 1060 in the light of recent developments since its adoption. This was accepted with only two countries abstaining, Sweden and UK. The following were suggested as initial members: UK, Belgium, Netherlands, France, USA, Sweden and Germany.

The Chairman noted that there was no time for the half-hour report proposed by the Chairman of WG-5. He, therefore, proposed acceptance of their written report, Reference 14, as follows:

> The Plenary Session thanks WG-5 for work accomplished and asks that they continue to collect information on loading, restraint and deformation with the objective of developing a recommendation for inclusion in Recommendation 1060.

This was passed unanimously. At the suggestion of the US delegation, Professor Pettersson was invited to present his report and show his slides after the 5:00 p.m. adjournment hour which must be respected.

The date proposed for the next meeting was suggested as September 1969 in Copenhagen, Denmark.

A majority of the delegates remained to hear Professor Pettersson's presentation which would be circulated later as an ISO document. The presentation was supported with slide projections of drawings. The paper was a scholarly discussion of some aspects of the fire endurance test as related to loading, restraint, and deformation.

It was first suggested that the shape of the time temperature curve was quite different between laboratory and real fires. Results of theoretical calculations were presented to show that there might well be merit to retaining load on the structure during a controlled cooling down period after a fire test, since steel temperatures may well continue to increase. The computations had been made for various emissivity conditions cooling rates and specimen geometries.

It was also emphasized that there was need for consideration of the restraint conditions applied by real structures and the way in which this could be properly simulated during laboratory tests. He showed two slides depicting the test arrangement and experimental results recently developed by Professor Bletzacker of Ohio State University.

He further called for reconsideration of the way in which both load bearing and nonbearing wall panels are tested, and a review of the applicability to conditions during building fires.

Conclusions

1. The USA Delegation was well received and able to take a constructive part in the work of the Committee.

2. It was immediately obvious that plenary sessions do not provide an appropriate opportunity to discuss and achieve consideration of technical aspects of proposed recommendations. Similarly, comment obtained during letter ballot on proposed recommendations is likely to be too late to achieve serious consideration.

3. There is an urgent need for high calibre technical participation at the working group level. This participation must, to be effective, involve both participation in the meeting and cooperation in interlaboratory and other technical aspects of the work of the working groups. Continuity of representation is essential if our participation is to be effective and welcomed.

4. The vigor and level of technical studies on problems relating to fire test methods is of high caliber and there is real evidence of new and progressive thinking. There was little evidence of reluctance to change test methods, if technically necessary, because of existing standards.

References

1. Report of Meeting of ISO/92 on Fire Tests. J. V. Ryan, NBS TR 9362, July 12, 1967.

2. Report on the Work Conducted by WG 2 Since the Plenary Meeting of ISO/TC in Brussels, October 1965. ISO/TC 92 (Secretariat-110)249E.

3. Draft Proposal for an ISO Recommendation "Non-Combustibility Test for Building Materials". ISO/TC 92/WG 2(Secretariat-4) 12E.

4. Draft Proposal for an ISO Recommendation "Calorimetric Bomb Test" ISO/TC 92/WG 2(Secretariat-5) 13E.

5. Comparative Tests in a Furnace on Building Materials and Their Repercussions on the Draft Proposal "Test for the Non-Combustibility of Building Materials" ISO/TC 92 (France-1) 246E.

6. Comments from the Chairman of Eurisol, the Association of European Inorganic Fibre Manufacturers, Summarising some Objections to the Method for the Determination of the Non-Combustibility Test of Building Materials. ISO/TC (Secretariat-109)248.

7. Some Remarks to the Document ISO/TC 92 (Secretariat-110) 249E. Prof. O. Pettersson. ISO/TC 92 (Secretariat-115) 254E

8. A Study of Mineral Fiber-Base Materials of Very Low Density by Means of Furnace Test--Submitted for Consideration as Test for Non-Combustibility of Building Materials. L. Amy and C. Jumentier. ISO/TC 92 (Secretariat-119) 258F.

9. Briefminutes for 7th November 1967 Plenary Session of ISO/TC 92. ISO/TC 92 (The Hague 1967) 264E. (See Attachment "D")

10. Report of the Chairman of WG 3 Since the Fourth Plenary Meeting - Brussels October 1965. ISO/TC 92 (Secretariat-114) 253E.

11. Briefminutes for 8th November 1967 Plenary Session of ISO/TC 92. Resolutions ISO/TC 92 (The Hague 1967-4) 266E. (See Attachment "E")

12. Report of Working Group 4 Since Fourth Plenary Meeting in Brussels-October 1965. ISO/TC 92 (Secretariat-111) 250.

Annex to Summary of Report of WG 4 Since Fourth Plenary Meeting in Brussels, October 1965. ISO/TC 92 (Secretariat-111) 250.

WG 4 Spread of Flame Test. Part III - Statistical Analysis of the Results of "Spread of Flame Test." ISO/TC 92 WG 4 (France-1) 1.

Statistical Analysis of the Results of Reaction to Fire Test on Specimens of Similar Composition by German, English, Belgian, Danish, French and Dutch Methods. (Presented as an Annex to Report of the Chairman of WG 4 at the Fifth Plenary Meeting (The Hague) November 6th-9th, 1967. ISO/TC 92 WG 4 (France-4) 18.

References (concluded)

13. Report by the President of WG 6 "Terminology" to the Fifth Plenary Meeting (The Hague) November 6th-9th 1967. ISO/TC 92 (Secretariat-116) 255F.

14. Report on the Work Conducted by WG 5 for Presentation at the Fifth Plenary Meeting of ISO/TC 92 The Hague, Holland, 6th-10th November 1967. Prof. Dr. O. Pettersson. ISO/TC 92 (Secretariat)-117) 256E.

ATTACHMENT "A"

ISO/TC/92 (Secretariat - 118)257 b

November 1967

Fifth Plenary Meeting - The Hague, 6th - 10th November 1967

~~PRELIMINARY~~ LIST OF DELEGATES

(Names of Heads of Delegations have been underlined)

'P' PARTICIPATING MEMBERS

BELGIUM	Prof. G.A. Herpol	Professeur à L'Université de Gend. Directeur du Laboratoire pour L'Emploi des Combustibles.
	Mr. P. Minne	Chef des Travaux à L'Université de Gend.
	Mr. van Engelen	Engineer a l'Institut Beege de Normalisation.
DENMARK	Mr. K. Malmstedt	Sectional Engineer, Royal Danish Testing Institute. State Testing Laboratory.
	Mr. L. Nørgard	Civil Engineer, Danish Standards Association.
CANADA	Mr. D.I. Lawson	Director, Joint Fire Research Organisation (acting for Canada)
FRANCE	Mr. Cabret	Centre Scientifique & Technique du Bâtiment.
	Mr. Amy	Compagnie Saint-Gobain
	Mr. Arnault	Convention Europeenne de la Construction Metallique.
	Mr. Bellisson	Centre Scientifique & Technique du Bâtiment.
	Mr. Forestier	Laboratoire Municipal de la Ville de Paris.
	Mr. Gavelle	Inspecteur - SNCF - Division des Bâtiments - Commission Centrale d'Incendie.
	Mr. Jean	Centre Technique du Bois.
	Mr. Laurin	Ingènieur au Laboratoire National d'Essais (Section des Matériaux)AFNOR.

FINLAND	Mr. Pekka Huopaniemi	A.Ahlström Osakeyhtiö, Karhula factory.
GERMANY	Dr. Ing. Seekamp	Professor, Berlin. (Alternative Head of Delegation in absence of Prof. Kordina) Bundesanstalt für Materialprüfunf.
	Mr. Dreyer	Inst. für Baustoffkunde und Stahlbetonbau, Braunschweig.
	Dr. Ing. Rumberg	Regierungsrat. Staatl. Materialprüfamt, Nordthein-Westfalen, Dortmund-Aplerbeck,
	Dr. R. Teichgräber	Oberkonservator, Institut für Holzforschung und Holztechnik der Universität München
	Mr. Stanke	Bundesanstalt für Materialprüfung
	Dr. Ing. Westhoff	Oberregierungsrat. Staatl. Materialprüfamt, Nordrhein-Westfalen Dortmund-Aplerbeck.
ITALY	Dr. Eng. S. Bruschetta	Centro Studi Ed Esperienze Antincendi Ministero degli Interni - Servizi Antincendi Roma.
	Dr. Ing. A. di Biase	Registro Italiano Navale
	Dr. Eng. G. Bologna	A.I.T.E.C., Roma
	Dr. Eng. E. Tringali	I.S.E.S., Roma
	Mr. O. Piermarini Dr. Ing.	Unsider-Finsider, Roma
	Mr. G. Toletti	Representative of Eternit, Italy
NETHERLANDS	Dr. C.W. van Hoogstraten	Director, Brandveiligheidsinstituut, T.N.O. Delft
	Dr. van Elteren	Head of Fire Research Department T.N.O. Delft
	Mr. Rietdijk	Stichting Technisch Bureau Brandverzekering
	Mr. Toutenhoofd	Nederlands Normalisatie-instituut
NORWAY	Mr. A. Kielland	Chief Engineer, Head of the Building Technical Department of the the Directorate of Public Construction and Property, Oslo.
	Mr. W. Gundersen	Civil Engineer, Research Officer Norges Brannlaboratorium, NTH The Fire Research Laboratory at the Technical University of Norway Trondheim.

Original : ENGLISH

ISO/TC 92 (Secretariat - 107) 245 E
May 1967

ATTACHMENT "B"

ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

TECHNICAL COMMITTEE ISO/TC 92 - FIRE TESTS ON BUILDING MATERIALS AND STRUCTURES

Secretariat :

British Standards Institution
2 Park Street
London W. 1.

DRAFT AGENDA

FOR THE FIFTH PLENARY MEETING OF ISO/TC 92 -
FIRE TESTS ON BUILDING MATERIALS AND STRUCTURES

to be held at Het Koninklijk Instituut van Ingenieurs
Prinsessegracht 23, The Hague

from 6 to 10 November 1967

The opening session will begin at 10 a.m.

1. Opening of the meeting.
2. Adoption of the agenda.
3. Appointment of a "Resolution Committee" and "Drafting Committee for brief minutes".
4. Consideration of the report submitted by the Chairman of Working Group 2, Prof. Ir. G.A. Herpol.
5. Consideration of the report submitted by the Chairman of Working Group 3, Mr. H.L. Malhotra.
6. Consideration of the report submitted by the Chairman of Working Group 4, Dr. C.W. van Hoogstraten.
7. Consideration of the report submitted by the Chairman of Working Group 5, Prof. O. Pettersson.
8. Consideration of the report submitted by the Chairman of Working Group 6, Mr. L. Amy.
9. Consideration of a draft proposal for an ISO Recommendation, "Non-combustibility test" (Document ISO/TC 92/WG 2(Secretariat - 4) 12 E & F).
10. Consideration of a draft proposal for an ISC Recommendation, "Bomb Calorimeter Test" (Document ISO/TC 92/WG 2 (Secretariat - 5) 13 E & F).
11. Consideration of proposals for further work.
12. Any other business.
13. Date and venue of next meeting.
14. Closure of the meeting.

ISO

International Organization for Standardization
Organisation Internationale de Normalisation
Международная Организация по Стандартизации

CENTRAL SECRETARIAT
1, rue de Varembé
1211 GENEVA 20, Switzerland

Telephone 34 12 40 — Cable address : ISORGANIZ

Our Ref. : ISO/TC 92 - MB — 30 May 1967

TO ALL THE ISO MEMBER BODIES

Gentlemen,

NOTICE OF MEETING

FIFTH PLENARY MEETING OF ISO/TC 92 -
FIRE TESTS ON BUILDING MATERIALS AND STRUCTURES

We have pleasure in informing you that Technical Committee ISO/TC 92 - Fire tests on building materials and structures - will hold its fifth plenary meeting from 6 to 10 November 1967 at Het Koninklijk Instituut van Ingenieurs, Prinsessegracht 23, The Hague, Netherlands. The opening session will begin at 10 a.m.

Please find overleaf the draft agenda for this meeting (document ISO/TC 92 (Secretariat - 107) 245 E); the working documents will be sent direct by the ISO/TC 92 Secretariat.

The (P) Members of the Technical Committee are urgently requested to inform the ISO/TC 92 Secretariat (British Standards Institution, 2 Park Street, London W 1) and the host Member Body (Nederlands Normalisatie-instituut, Polakweg 5, Rijswijk (ZH)) as soon as possible whether they intend to be represented at the meeting and, in the affirmative, to indicate the approximate number of their delegates. Furthermore, they are requested to send to the ISO/TC 92 Secretariat, not later than 8 September 1967, a list showing the names, professions and posts held by their delegates, and also the name of the head of the delegation.

It is recalled that (O) Members may delegate observers, who will be entitled to be present at the meeting and, if invited by the Chairman of the meeting, to take part in the discussion.

Yours sincerely,

R. Maréchal
Assistant Secretary-General

Copy to : President
Vice-President
General Secretary IEC

67/22704

A:13775-1/E

Draft agenda overleaf /see over.

POLAND	Mr. Wlodzimier Struś	Engineer, Expert of Polish Standards Committee
	Mr. Jan Lindner	- ditto -
ROUMANIA	Mr. Ing. A. Cordasevschi	Directeur Technique à l'Office Roumain de Normalisation
	Mr. Ing. V. Calinescu	Ingénieur à la Direction de la Protection contre l'Incendie
SOUTH AFRICA	Mr. C.S. Grobbelaar	Principal Scientist of the South African Bureau of Standards, Pretoria
SWEDEN	Prof. O. Pettersson	Professor, Lund Institute of Technology
	Mr. K. Odeen	Technical Lic., The National Institute for Materials Testing, Stockholm
UNITED KINGDOM	Mr. D.I. Lawson	Chairman of ISO/TC 92, Director, Joint Fire Research Organisation
	Mr. H.L. Malhotra	Chief Experimental Officer, Joint Fire Research Organisation
	Mr. P.S. Wilson-Dickson (representing Mr. H.M. Smith, C.B.E. Home Office)	H.M. Inspector of Fire Services, Home Office
	Mr. G.C. Ackroyd	Chief Technical Officer, Fire Officers' Committee, Joint Fire Research Station
	Mr. F.C. Adams	Experimental Officer, Joint Fire Research Organisation
U.S.A.	Dr. A.F. Robertson	National Bureau of Standards, Fire Research Section, Washington
	Mr. Dale McDaniel	Fire Prevention Engineer, MMT, US Coast Guard, Washington

'O' OBSERVER MEMBERS

CZECHOSLOVAKIA	Mr. Ing. J. Masařik	Czechoslovac Office for Normalization
	Mr. Ing. Pavel Milata	- ditto -
HUNGARY	Mr. S. Fabry	Hungarian Office for Standardization

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION REPRESENTATIVE

Mr. A.H. Raby	Senior Technical Officer

LIAISON REPRESENTATIVE

Dr. J.G. Meyer	Liaison Representative of ISO/TC 61

'O' OBSERVER ASSOCIATIONS

I.M.C.O.	Mr. Y.Sasamura	Inter-Governmental Maritime Consultative Organization
E.U.R.I.S.O.L.	Mr. Chauveau-Dumatray	Association of European manufacturers of mineral wool for insulation purposes
C.E.I.B.O.I.S.	Mr. Gilles	Confédération Européene des Industries du Bois.

SECRETARIAT

UNITED KINGDOM	Mr. R.H.L. Sung O.B.E.	Technical Officer, Building Section, British Standards Institution
	Mr. G. Guy (Secretary Designate)	Technical Officer, Building Section, British Standards Institution

INTERPRETER Miss Herschberg

ATTACHMENT "C"

I S O

International Organization for Standardization

ISO/TC 92 (The Hague 1967-4) 267 E

Technical Committee ISO/TC 92 - Fire Tests on Building Materials and Structures

Resolution No. 52 (Revised) 8th November 1967

ISO/TC 92 accepts the draft proposal for an ISO Recommendation ISO/TC 92 N 12 "Non-Combustibility Test for Building Materials" subject to the alterations recorded in the briefminutes doc. ISO/TC 92 N 264 for submission to the Central Secretariat of ISO for circulation to all ISO member bodies for letter ballot and comments.

Resolution No. 53

ISO/TC 92 accepts the draft proposal for an ISO Recommendation (ISO/TC 92 N 13) "Calorimetric Bomb Test" subject to the alterations recorded in the Briefminutes document ISO/TC 92 N 266 for submission to the Central Secretariat of ISO for circulation to all ISO member bodies for letter ballot and comments.

ATTACHMENT "D"

I S O

International Organization for Standardization

ISO/TC 92 (The Hague 1967) 264 E

(Revised by A. F. Robertson)

Technical Committee ISO/TC 92 - Fire Tests on Building Materials and Structures

Briefminutes 7th November 1967

1. Document ISO/TC 92 N 12 Consideration of ISO/TC 92 N 12 was continued point by point and the following amendments were agreed.

Item 1.3 Scope: Change the word "can" to "may" in footnote (1) (English text only) and delete "le construction" (in French text only).
Add to end of sentence "whether coated or not, but it is not intended to apply to the coating alone."
Insert reference to footnote "(2)".
Insert the following footnote:

Footnote:
"(2)" Note: "Doubts were expressed about the validity of the test as applied to materials less than 50 kg/m^3 in density and further studies are necessary on the subject"

Item 2.1.1 Furnace: Third line, delete "Between" and insert "of" and delete "and 175".

Iten 2.1.3 Furnace control: On the second line, delete "in the central part" and insert "at mid-height".

Item 2.1.4 Temperature measurements: Second line delete "shielded" and insert "sheathed" (English text only).
After the third sentence insert the following sentence "Measurement shall be made at intervals of not greater than 10 seconds."
In the last, delete all after "0.5%."

Item 2.2.1 Preparation of Specimens: After specimen in the first sentence, add "the specimens shall be as representative as possible of the average properties off the sample and"

Item 2.2.2 Number and Size: to the right of volume, change 80 mm to 80 cm^3.

Item 2.3.5 Number of specimens tested: Delete sentence and insert "The test is carried out on three specimens, if necessary, prepared as in section 2.2.1 and 2.2.2."

Item 3.1 Non-Combustibility: Amend subclause "c)" to read "flame for 10 seconds or more. Flaming duration for less than 10 seconds should be ignored."

Figure: Secretariat was requested to make certain minor alterations to the figures.

2. ISO/TC 92 asked the drafting committee to prepare Resolution No. 52.

USCOMM-NBS-DC

ATTACHMENT "E"

I S O

International Organization for Standardization

ISO/TC 92 (The Hague 1967-4) 266 E
(Revised by A. F. Robertson)

Technical Committee ISO/TC 92 - Fire Tests
on Building Materials and Structures

Briefminutes 8th November 1967

Resolutions

1. Resolution No. 52 (Revised) was approved.

2. Document 92 N 13.
ISO/TC 92 commenced consideration of Document 92 N 13 point by point and the following amendments were agreed.

Item 1.3 Scope.
Add footnote: "For materials containing metals, however, the calorific potential does not always represent the fire load."

Item 2.1 Gross calorific value.
Amend "value" to read "potential," (English text only). Insert title of 2.1 (French text only).

Item 2.1.3 Specimen
Amend to read "Eprouvettes" (French text only).

Item 2.1.3.1 Preparation
Throughout 2.1.3.1 amend "initial sample" to read "sample" and amend "final sample" to read "specimen."

Sub clause a) in title, delete all after "materials" up to and including "as such."

Item 2.1.4 Test procedure
Fourth paragraph, add new sentence "The temperature rise of the water in calorimetric vessel due to the firing and complete combustion of the specimen shall be of the order of 3°C."
French text only, sixth paragraph, amend "enchantillon" to read "eprouvettes."

Item 2.1.5 Calculation of results.

Subclause b) Insert after title C = ΣCn (n = 1, 2 etc.)
Last paragraph, add note as follows.
"Note, where elements other than Carbon, Hydrogen or Oxygen are likely to be present, a full chemical analysis of the material must be made in order to determine what corrections are to be applied under subclause b) 3 above."

Item 2.1.6 Number of tests.

Amend as follows: "Numbers of specimens
The text is carried out on three specimens. The results of these three shall not differ by more than 40 cal/kg. If the difference between any two tests is greater than 40 kcal/kg the entire text shall be repeated."

Item 2.1.7 Gross calorific potential

French text only. Amend second line to read "est la moyenne des resultats obtenus sur les trois eprouvettes."

Item 2.2 Nett calorific potential

Subclause b) Amend "2.3" to read "2.1.3."

Item 2.2.1 Test procedure

Delete

Item 2.2.2 Number of tests

Amend clause to read "Number of specimens:
The test is carried out on two specimens."

Item 2.2.3 Proportional content of water condensed.

Insert "w" between "condensed" and "is."

Item 2.2.5 Nett calorific potential

In line two amend "inférieure" to "supérieure" (French text only).

Item 3. Test report

Insert "1) Name of testing body" and amend document 92 N 12 similarly.

3. Draft Resolution No. 53 was taken.

4. ISO/TC 92 commenced consideration of the WG 3 report.

5. Mr. Sung was thanked for his work with the committee.