Report of the Committee on Fire Tests

William E. Fitch, *Chair*
Omega Point Laboratories Inc., TX [RT]

Jesse J. Beitel, Hughes Associates, Inc., MD [SE]
April L. Berkol, Starwood Hotels & Resorts Worldwide, Inc., NY [U]
Rep. American Hotel & Lodging Association
Robert G. Bill, Jr., FM Global, MA [I]
John A. Blair, The DuPont Company, DE [M]
Rep. Society of the Plastics Industry, Inc.
Gordon H. Damant, Inter-City Testing & Consulting Corp. of California, CA [SE] **Thomas W. Fritz,** Armstrong World Industries, Inc., PA [M]
Pravinray D. Gandhi, Underwriters Laboratories Inc., IL [RT]
James R. Griffith, Southwest Research Institute, TX [RT]
Gordon E. Hartzell, Hartzell Consulting, Inc., TX [SE]
Marcelo M. Hirschler, GBH International, CA [SE]
Alfred J. Hogan, Reedy Creek Improvement District, FL [E]
Rep. International Fire Marshals Association
William E. Koffel, Koffel Associates, Inc., MD [SE]
James R. Lawson, US National Institute of Standards & Technology, MD [RT]
Rodney A. McPhee, Canadian Wood Council, Canada [M]
Frederick W. Mowrer, University of Maryland, MD [SE]
David T. Sheppard, US Department of Justice, MD [RT]
Kuma Sumathipala, American Forest & Paper Association, DC [M]
T. Hugh Talley, Hugh Talley Company, TN [M]
Rep. Upholstered Furniture Action Council
Rick Thornberry, The Code Consortium, Inc., CA [SE]
William A. Webb, Schirmer Engineering Corporation, IL [I]
Robert A. Wessel, Gypsum Association, DC [M]
Robert J. Wills, American Iron and Steel Institute, AL [M]
Peter J. Willse, GE Global Asset Protection Services, CT [I]

Alternates

Robert M. Berhinig, Underwriters Laboratories Inc., IL [RT]
(Alt. to Pravinray D. Gandhi)
Delbert F. Boring, Jr., American Iron and Steel Institute, OH [M]
(Alt. to Robert J. Wills)
Richard J. Davis, FM Global, MA [I]
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Sam W. Francis, American Forest & Paper Association, PA [M]
(Alt. to Kuma Sumathipala)
Richard G. Gann, US National Institute of Standards & Technology, MD [RT]
(Alt. to James R. Lawson)
Paul A. Hough, Armstrong World Industries, Inc., PA [M]
(Alt. to Thomas W. Fritz)
Marc L. Janssens, Southwest Research Institute, TX [RT]
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James K. Lathrop, Koffel Associates, Inc., CT [SE]
(Alt. to William E. Koffel)
James A. Milke, University of Maryland, MD [SE]
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Arthur J. Parker, Hughes Associates, Inc., MD [SE]
(Alt. to Jesse J. Beitel)
Ronald A. Schulz, GE Global Asset Protection Services, MI [I]
(Alt. to Peter J. Willse)
Ineke Van Zeeland, Canadian Wood Council, Canada [M]
(Alt. to Rodney A. McPhee)
Joe Ziolkowski, American Furniture Manufacturers Association, NC [M]
(Alt. to T. Hugh Talley)

Nonvoting

Robert H. Barker, American Fiber Manufacturers Association, VA [M]
(Alt. to Nonvoting Principal)
Tod L. Jilg, Hoechst Celanese Corporation, NC [M]
Rep. American Fiber Manufacturers Association
Rohit Khanna, US Consumer Product Safety Commission, MD [C]

Staff Liaison: **Milosh T. Puchovsky**

Committee Scope: This Committee shall have primary responsibility for documents on fire testing procedures, for reviewing existing fire test standards and recommending appropriate action to NFPA, for recommending the application of and advising on the interpretation of acceptable test standards for fire problems of concern to NFPA technical committees and members, and for acting in a liaison capacity between NFPA and the committees of other organizations writing fire test standards. This Committee does not cover fire tests that are used to evaluate extinguishing agents, devices, or systems.

This list represents the membership at the time the Committee was balloted on the text of this edition. Since that time, changes in the membership may have occurred. A key to classifications is found at the front of this book.

The Technical Committee on Fire Tests is presenting four Reports for adoption, as follows:

Report I of this Report on Comments was prepared by the **Technical Committee on Fire Tests**, and documents its action on the comments received on its Report on Proposals on NFPA 251, **Standard Methods of Tests of Fire Endurance of Building Construction and Materials**, 1999 edition, as published in the Report on Proposals for the 2005 June Meeting.

NFPA 251 has been submitted to letter ballot of the **Technical Committee on Fire Tests**, which consists of 24 voting members. The results of the balloting, after circulation of any negative votes, can be found in the report.

Report II of this Report on Comments was prepared by the **Technical Committee on Fire Tests**, and documents its action on the comments received on its Report on Proposals on NFPA 255, **Standard Method of Test of Surface Burning Characteristics of Building Materials**, 2000 edition, as published in the Report on Proposals for the 2005 June Meeting.

NFPA 255 has been submitted to letter ballot of the **Technical Committee on Fire Tests**, which consists of 24 voting members. The results of the balloting, after circulation of any negative votes, can be found in the report.

Report III of this Report on Comments was prepared by the **Technical Committee on Fire Tests**, and documents its action on the comments received on its Report on Proposals on NFPA 285, **Standard Method of Test for the Evaluation of Flammability Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components Using the Intermediate Scale,** 1998 edition, as published in the Report on Proposals for the 2005 June Meeting.

NFPA 285 has been submitted to letter ballot of the **Technical Committee on Fire Tests**, which consists of 24 voting members. The results of the balloting, after circulation of any negative votes, can be found in the report.

Report IV of this Report on Comments was prepared by the **Technical Committee on Fire Tests**, and documents its action on the comments received on its Report on Proposals on NFPA 286, **Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth,** 2000 edition, as published in the Report on Proposals for the 2005 June Meeting.

NFPA 286 has been submitted to letter ballot of the **Technical Committee on Fire Tests**, which consists of 24 voting members. The results of the balloting, after circulation of any negative votes, can be found in the report.

255-1 Log #10 **Final Action: Hold**
(B.11)

SUBMITTER: Marcelo M. Hirschler, GBH International
COMMENT ON PROPOSAL NO: 255-18
RECOMMENDATION: Reject this proposal.
SUBSTANTIATION: The technical committee on fire tests developed NFPA 262 in order to test wires and cables in the Steiner tunnel. This was developed (in 1985) because (as stated in the Origin and Development Section of NFPA 262): "The test procedure covered by this standard was originally developed by Underwriters Laboratories Inc. and published as UL 910, Standard for Safety Test for Flame-Propagation and Smoke-Density Values for Electrical and Optical-Fiber Cables Used in Spaces Transporting Environmental Air. It is an adaptation of the Steiner tunnel test (NFPA 255, Standard Method of Test of Surface Burning Characteristics of Building Materials; ASTM E 84, Standard Test Method for Surface Burning Characteristics of Building Materials; UL 723, Tests for Surface Burning Characteristics of Building Materials), which was designed to provide information for evaluating the potential for fire spread along cables and wires housed in a plenum or other environmental space." NFPA 262 was most recently revised in 2002. The technical committee on fire tests has never discussed the use of NFPA 255 for testing wires and cables. In fact, both the ASTM E05 and ASTM D09 committees discussed the use of the Steiner tunnel test for wires and cables, always with the understanding that this would address a standard modification of the tunnel test apparatus for testing wires and cables for use in plenums 9such as NFPA 262) and not an application of ASTM E 84 or of NFPA 255.
COMMITTEE MEETING ACTION: Hold
COMMITTEE STATEMENT: See Committee Action and Statement on Comment 255-8 (Log #29).
NUMBER ELIGIBLE TO VOTE: 24
BALLOT RESULTS: Affirmative: 20 Negative: 1 Abstain: 2
BALLOT NOT RETURNED: 1 LAWSON
EXPLANATION OF NEGATIVE:
BILL: See my Explanation of Negative on 255-6 (Log #22).
EXPLANATION OF ABSTENTION:
HIRSCHLER: I am abstaining because of the potential for client interest.
KOFFEL: See my reason for abstaining on Comment 255-6 (Log #22).

255-2 Log #13 **Final Action: Accept in Principle in Part**
(1.1)

SUBMITTER: Marcelo M. Hirschler, GBH International
COMMENT ON PROPOSAL NO: 255-3
RECOMMENDATION: This proposal should have been accepted at least in part in principle
1.1 Scope.
1.1.1 This standard describes a method of testing the comparative surface burning characteristics of building materials with regard to flame spread and smoke developed.
1.1.2 This test method is applicable to any type of building material that by its own structural quality or the manner in which it is applied, is capable of supporting itself in position or is supported in the test furnace to a the thickness ~~comparable to its~~ recommended for use.
1.1.3* This test method is not applicable to any material that is not capable of supporting itself in position or of being supported in the test furnace.
1.1.4* This test method shall not be used to evaluate the fire resistance or materials or assemblies.
A1.1.3 Test specimens for materials that are capable of supporting themselves in position are known as self-supporting specimens.
A1.1.4 See NFPA 251, Standard Methods of Tests of Fire Endurance of Building Construction and Materials, for procedures for determining fire resistance. NFPA 251 can assess the performance, under fire exposure conditions, of building constructions and materials where incorporated in a test structure and subject to a standard exposing fire of controlled extent and severity.
3.xx Self-supporting Specimen. A specimen that remains in place by its own structural characteristics both before and during the fire test.
SUBSTANTIATION: The changes recommended to 1.1.1 explain what the test method does and are consistent with what is stated in ASTM E 84. The test method is (and always has been) intended to assess comparative information and not absolute information.
The new 1.1.2 explains clearly to what this test method applies.
The new 1.1.3 makes it clear that this test method is not suitable if the material under test cannot be held in place during the test. The corresponding annex note explains that the specimen representing a material that is capable of supporting itself in position is known as a self-supporting specimen. Associated with this it is important to add a definition of "self-supporting specimen". The reason this concept is important is that materials will be mounted differently if they are self supporting than if they are not. . The scope of the standard says that the test specimen must be capable of supporting itself in position, but that concept is not defined in the standard. Moreover, it is important to highlight the fact that this test method is not applicable to those materials that are not capable of supporting themselves in position or of being supported in the test furnace. If a material is not capable of supporting itself or of being supported, the test results are going to be misleading.
The new 1.1.4 makes it clear that this is not a fire resistance test. Many people confuse fire resistance tests and reaction-to-fire tests. The information about NFPA 251 is already in the 2000 (current) edition of NFPA 255 and is being moved for conformity to MOS.
COMMITTEE MEETING ACTION: Accept in Principle in Part
1. See Committee Action and Statement on Comment 255-5 (Log #18).
2. Reject the submitter's proposed section 3.x.x.
COMMITTEE STATEMENT: 1. See Committee Action and Statement on Comment 255-5 (Log #18).
2. The term "self-supporting specimen" is not used in the standard.
NUMBER ELIGIBLE TO VOTE: 24
BALLOT RESULTS: Affirmative: 22 Negative: 1
BALLOT NOT RETURNED: 1 LAWSON
EXPLANATION OF NEGATIVE:
HIRSCHLER: See my Explanation of Negative on 255-5.

255-3 Log #14 **Final Action: Accept in Principle in Part**
(1.1)

SUBMITTER: Marcelo M. Hirschler, GBH International
COMMENT ON PROPOSAL NO: 255-3
RECOMMENDATION: This proposal should have been accepted at least in part in principle.
1.1 Scope.
1.1.1 This standard describes a method of testing the comparative surface burning characteristics of building materials with regard to flame spread and smoke developed.
1.1.2 This test method is applicable to any type of building material that by its own structural quality or the manner in which it is applied, is capable of supporting itself in position or is supported in the test furnace to a the thickness ~~comparable to its~~ recommended for use.
1.1.3* This test method is not applicable to any material that is not capable of supporting itself in position or of being supported in the test furnace.
1.1.4* This test method shall not be used to evaluate the fire resistance or materials or assemblies.
1.1.5* This test method shall not be used to evaluate the fire resistance or materials or
assemblies.
A1.1.3 Test specimens for materials that are capable of supporting themselves in position are known as self-supporting specimens.
A1.1.4 See NFPA 251, Standard Methods of Tests of Fire Endurance of Building Construction and Materials, for procedures for determining fire resistance. NFPA 251 can assess the performance, under fire exposure conditions, of building constructions and materials where incorporated in a test structure and subject to a standard exposing fire of controlled extent and severity.
A1.1.5 See NFPA 251, Standard Methods of Tests of Fire Endurance of Building Construction and Materials, for procedures for determining fire resistance. NFPA 251 can assess the performance, under fire exposure conditions, of building constructions and materials where incorporated in a test structure and subject to a standard exposing fire of controlled extent and severity.
3.xx Self-supporting Specimen. A specimen that remains in place by its own structural characteristics both before and during the fire test.
SUBSTANTIATION: The changes recommended to 1.1.1 explain what the test method does and are consistent with what is stated in ASTM E 84. The test method is (and always has been) intended to assess comparative information and not absolute information.
The new 1.1.2 explains clearly to what this test method applies.
The new 1.1.3 makes it clear that this test method is not suitable if the material under test cannot be held in place during the test. The corresponding annex note explains that the specimen representing a material that is capable of supporting itself in position is known as a self-supporting specimen. Associated with this it is important to add a definition of "self-supporting specimen". The reason this concept is important is that materials will be mounted differently if they are self supporting than if they are not. The scope of the standard says that the test specimen must be capable of supporting itself in position, but that concept is not defined in the standard. Moreover, it is important to highlight the fact that this test method is not applicable to those materials that are not capable of supporting themselves in position or of being supported in the test furnace. If a material is not capable of supporting itself or of being supported, the test results are going to be misleading.
The new 1.1.4 makes it clear that this is not a fire resistance test. Many people confuse fire resistance tests and reaction-to-fire tests. The information about NFPA 251 is already in the 2000 (current) edition of NFPA 255 and is being moved for conformity to MOS.
COMMITTEE MEETING ACTION: Accept in Principle in Part
See Committee Action and Statement on Comment 255-5 (Log #18).
COMMITTEE STATEMENT: See Committee Action and Statement on Comment 255-5 (Log #18).
NUMBER ELIGIBLE TO VOTE: 24
BALLOT RESULTS: Affirmative: 22 Negative: 1

BALLOT NOT RETURNED: 1 LAWSON
EXPLANATION OF NEGATIVE:
HIRSCHLER: See my Explanation of Negative on 255-5.

255-4 Log #17 **Final Action: Accept in Principle**
(1.1)

SUBMITTER: Marcelo M. Hirschler, GBH International
COMMENT ON PROPOSAL NO: 255-3
RECOMMENDATION: This proposal should have been accepted at least in part in principle.

1.1 Scope.

1.1.1 This standard describes a method of testing the comparative surface burning characteristics of building materials with regard to flame spread and smoke developed.

1.1.2 This test method is applicable to any type of building material that by its own structural quality or the manner in which it is applied, is capable of supporting itself in position or is supported in the test furnace to ~~a~~ the thickness ~~comparable to its~~ recommended for use.

1.1.3 This test method is not applicable to any material that is not capable of supporting itself in position or of being supported in the test furnace.

1.1.4* This test method shall not be used to evaluate the fire resistance or materials or assemblies.

A1.1.4 See NFPA 251, Standard Methods of Tests of Fire Endurance of Building Construction and Materials, for procedures for determining fire resistance. NFPA 251 can assess the performance, under fire exposure conditions, of building constructions and materials where incorporated in a test structure and subject to a standard exposing fire of controlled extent and severity.

SUBSTANTIATION: The new 1.1.2 explains clearly to what this test method applies.

The new 1.1.3 makes it clear that this test method is not suitable if the material under test cannot be held in place during the test.

The new 1.1.4 makes it clear that this is not a fire resistance test. Many people confuse fire resistance tests and reaction-to-fire tests. The information about NFPA 251 is already in the 2000 (current) edition of NFPA 255 and is being moved for conformity to MOS.

COMMITTEE MEETING ACTION: Accept in Principle
See Committee Action and Statement on Comment 255-5 (Log #18).
COMMITTEE STATEMENT: See Committee Action and Statement on Comment 255-5 (Log #18).
NUMBER ELIGIBLE TO VOTE: 24
BALLOT RESULTS: Affirmative: 23
BALLOT NOT RETURNED: 1 LAWSON

255-5 Log #18 **Final Action: Accept in Principle in Part**
(1.1)

SUBMITTER: Marcelo M. Hirschler, GBH International
COMMENT ON PROPOSAL NO: 255-3
RECOMMENDATION: This proposal should have been accepted at least in part in principle.

1.1 Scope.

1.1.1 This standard describes a method of testing the comparative surface burning characteristics of building materials with regard to flame spread and smoke developed.

1.1.2 This test method is applicable to any type of building material that by its own structural quality or the manner in which it is applied, is capable of supporting itself in position, or is supported in the test furnace, in ~~a~~ the thickness ~~comparable to its~~ recommended for use.

1.1.3 This test method is not applicable to any material that is not capable of supporting itself in position or of being supported in the test furnace.

1.1.4* This test method has limitations when testing certain materials; some of these limitations can be ameliorated by an appropriate use of mounting materials.

1.1.5* This test method shall not be used to evaluate the fire resistance or materials or assemblies.

1.1.6 This test method shall not be used to provide information about the combustibility of materials.

A1.1.4 (1) Some materials cannot generate self supporting specimens and require support to remain in place during the test, they are often supported by a metal screen. The supporting screen tends to produce low flame spread index values relative to those obtained for materials that are not so supported.

(2) Conversely, materials that are supported on rods can produce higher flame spread indices if retained on the ceiling rather than allowed to burn on the floor.

(3) Some materials can delaminate during the test. Delamination can cause two possible responses. Either the material can expose two or more surfaces to the flame, increasing the flame spread index, or the material can sag or one end can drop into the fire chamber, impeding further flame spread and decreasing the flame spread index.

(4) Some materials fall to the floor if they are not mechanically fastened; when they fall to the floor they usually produce relatively low flame spread index values. On the other hand, if supported on wire screen rods, or other supports, these materials can become completely engulfed in flame, thereby creating a questionable comparison between the flame spread index values of the material under test and that of the red oak flooring material.

(5) Materials that drip, melt, delaminate, draw away from the fire, or need artificial support present unique problems and necessitate careful interpretation of the test results. Some of these materials that are assigned a low flame spread index based on this test method can exhibit an increasing propensity for generating flashover conditions during room fire test with increasing area of material exposure and increasing intensity of fire exposure. The result, therefore, is probably not indicative of their performance if evaluated under realistic full-scale test procedures. Alternative means of testing should be used to fully evaluate some of these materials.

(6) The flame spread index of some materials varies depending on environmental conditions. The prescribed limits on the temperature and relative humidity for specimen conditioning and tunnel air supply {both 73.4º F + 5º F (23º C + 2.8º C). 50% relative humidity + 5% relative humidity} were selected to minimize these effects.

A1.1.5 See NFPA 251, Standard Methods of Tests of Fire Endurance of Building Construction and Materials, for procedures for determining fire resistance. NFPA 251 can assess the performance, under fire exposure conditions, of building constructions and materials where incorporated in a test structure and subject to a standard exposing fire of controlled extent and severity.

A1.1.6 The difficulty of defining materials that contribute little or no fuel to a fire has in the past led to the use of NFPA 255 and/or ASTM E 84 to provide information about the combustibility of materials. The NFPA Technical Committee on Fire Tests does not now, and has not in the past, recommended that the results of these tests alone be used to describe material combustibility.

SUBSTANTIATION: The changes recommended to 1.1.1 explain what the test method does and are consistent with what is stated in ASTM E 84. The test method is (and always has been) intended to assess comparative information and not absolute information.

The new 1.1.2 explains clearly to what this test method applies.

The new 1.1.3 makes it clear that this test method is not suitable if the material under test cannot be held in place during the test. The corresponding annex note explains that the specimen representing a material that is capable of supporting itself in position is known as a self-supporting specimen. Associated with this it is important to add a definition of "self-supporting specimen". The reason this concept is important is that materials will be mounted differently if they are self supporting than if they are not. . The scope of the standard says that the test specimen must be capable of supporting itself in position, but that concept is not defined in the standard. Moreover, it is important to highlight the fact that this test method is not applicable to those materials that are not capable of supporting themselves in position or of being supported in the test furnace. If a material is not capable of supporting itself or of being supported, the test results are going to be misleading.

The new 1.1.4 makes it clear that this is not a fire resistance test. Many people confuse fire resistance tests and reaction-to-fire tests. The information about NFPA 251 is already in the 2000 (current) edition of NFPA 255 and is being moved for conformity to MOS.

COMMITTEE MEETING ACTION: Accept in Principle in Part
1. Accept the submitter's recommendation to section 1.1.1.
2. Accept the submitter's recommendation to section 1.1.2 with the following changes.:

1.1.2 This test method is applicable to any type of building material that by its own structural quality or the manner in which it is applied ~~,~~ is capable of supporting itself in position , or is supported in the test furnace , in ~~to~~ the thickness recommended for use.

3. Do not accept the submitter's recommendation regarding sections 1.1.3, 1.1.4 and 1.1.6, and the accompanying annex sections.
4. Accept the submitter's recommendation regarding section 1.1.5 but renumber as a new 1.2.3. Also, add the submitter's proposed new section A.1.1.5 as A.1.2.3.

COMMITTEE STATEMENT: 1. The submitters recommendation regarding 1.1.1 was accepted.

2. The changes to the submitter's recommendation regarding 1.1.2 are editorial.

3. The submitter's recommendations regarding sections 1.1.3, 1.1.4 and 1.1.6 were not accepted because the committee believes that the proposed requirements are vague in some cases and in other instances redundant to current wording in the standard. With regard to 1.1.6, the committee is of the opinion that the requirement introduces a significant change with no technical justification. The committee also makes reference to Annex D of the current document.

4. The changes to the submitter's recommendation regarding 1.1.5 are editorial.

NUMBER ELIGIBLE TO VOTE: 24
BALLOT RESULTS: Affirmative: 19 Negative: 4
BALLOT NOT RETURNED: 1 LAWSON
EXPLANATION OF NEGATIVE:
FRITZ: 1.1.5 Looks like a typo: Word after resistance should be "of" not "or"?

A.1.1.5 Reason for Negative vote:

I would like to see revised wording for the second sentence.

NFPA 251 can assess the performance, under fire exposure conditions, of building constructions and assemblies ~~materials~~ when ~~where~~ exposed ~~incorporated~~ in a standard test ~~structure~~ furnace and subject to a standard

exposing fire of controlled extent and severity.

Reason: The current wording is not specific enough to measuring fire resistance. The same description could be applied to testing in NFPA 286. The use of the word materials does not seem appropriate in the context of fire resistance. What material, in and of itself, is evaluated independently for fire resistance? I think we need to be clear in defining the limitations of current fire resistance testing.

HIRSCHLER:

The committee was wrong in rejecting the proposed Sections 1.1.3, 1.1.4 and 1.1.6 and the proposed definition of self-supporting specimen.

1.1.3 This test method is not applicable to any material that is not capable of supporting itself in position or of being supported in the test furnace. With regard to rejected proposed section 1.1.3, it has long been accepted that the NFPA 255 test (i.e., the Steiner tunnel test) should not be used for materials that are not self-supporting or that are incapable of being supported in position in the test furnace. This proposed section, together with the proposed definition of self-supporting specimen (Self-supporting Specimen. A specimen that remains in place by its own structural characteristics both before and during the fire test), is needed, because the mounting methods distinguish between the way the test method should be used for self-supporting materials or for materials that can be supported in the test furnace.

1.1.4* This test method has limitations when testing certain materials; some of these limitations can be ameliorated by an appropriate use of mounting methods.

A.1.14

(1) Some materials cannot generate self supporting specimens and require support to remain in place during the test, they are often supported by a metal screen. The supporting screen tends to produce low flame spread index values relative to those obtained for materials that are not so supported.

(2) Conversely, materials that are supported on rods can produce higher flame spread indices if retained on the ceiling rather than allowed to burn on the floor.

(3) Some materials can delaminate during the test. Delamination can cause two possible responses. Either the material can expose two or more surfaces to the flame, increasing the flame spread index, or the material can sag or one end can drop into the fire chamber, impeding further flame spread and decreasing the flame spread index.

(4) Some materials fall to the floor if they are not mechanically fastened; when they fall to the floor they usually produce relatively low flame spread index values. On the other hand, if supported on wire screen, rods, or other supports, these materials can become completely engulfed in flame, thereby creating a questionable comparison between the flame spread index values of the material under test and that of the red oak flooring material.

(5) Materials that drip, melt, delaminate, draw away from the fire, or need artificial support present unique problems and necessitate careful interpretation of the test results. Some of these materials that are assigned a low flame spread index based on this test method can exhibit an increasing propensity for generating flashover conditions during room fire tests with increasing area of material exposure and increasing intensity of fire exposure. The result, therefore, is probably not indicative of their performance if evaluated under realistic full-scale test procedures. Alternative means of testing should be used to fully evaluate some of these materials.

(6) The flame spread index of some materials varies depending on environmental conditions. The prescribed limits on the temperature and relative humidity for specimen conditioning and tunnel air supply [both 73.4°F ± 5°F (23°C ± 2.8°C), 50% relative humidity ± 5% relative humidity] were selected to minimize these effects.

With regard to rejected proposed section 1.1.4 (together with its recommended annex sections), this is a critical way of making clear some of the known limitations of the test method, which are usually resolvable by means of appropriate mounting methods. These limitations include issues associated with materials that are tested using metal screens (also known as chicken wire), materials tested supported with rods, materials that delaminate, materials that fall to the floor, materials that melt and drip, and with control of environmental conditions. All of these issues are included in section X4.7 (Uses and Limitations) of ASTM E 84, which also represents the Steiner tunnel test. NFPA 255 should contain the same information on limitations as are in ASTM E 84, or should simply be eliminated, as they are both used interchangeably in NFPA codes and standards.

1.1.6 This test method shall not be used to provide information about the combustibility of materials.

A.1.1.6 The difficulty of defining materials that contribute little or no fuel to a fire has in the past led to the use of NFPA 255 and/or ASTM E 84 to provide information about the combustibility of materials. The NFPA Technical Committee on Fire Tests does not now, and has not in the past, recommended that the results of these tests alone be used to describe material combustibility.

With regard to rejected proposed section 1.1.6 (together with its recommended annex sections), this is a critical way of making it clear that this test method is not suitable for selecting materials that are classified as noncombustible or limited combustible. Once more, all of this is not new information, but is something that has been known for many years and is also included in section X.4.7.3 of ASTM E 84. It is common for specifiers without knowledge of the test method to require NFPA 255 for tests of combustibility.

MCPHEE: I agree with Mr. Fritz's comment and vote negative on the Proposed Appendix wording for A.1.1.5 and would recommend the wording be revised to read:

A.1.1.5 See NFPA 251, Standard Methods of Tests of Fire Endurance of Building Construction and Materials, for procedures for determining fire resistance rating. NFPA 251 can assess the performance, under fire exposure conditions, of building constructions and assemblies materials where incorporated in a test structure and subject to a standard exposing fire of controlled extent and severity.

THORNBERRY: My reason for this is twofold. First, I tend to agree with the negative comments submitted by Tom Fritz. Second, I do not believe it is necessary to have a statement such as that proposed for new Section 1.2.3 with the associated Annex note A.1.2.3 as a disclaimer for for this test method not to be used to evaluate the fire resistance of materials or assemblies. To me it is very obvious that this test method is not to be used for that purpose so where do we stop the laundry list of those tests for which this test method should not be used?

255-6 Log #22 **Final Action: Accept in Principle in Part**
(1.1)

SUBMITTER: Marcelo M. Hirschler, GBH International
COMMENT ON PROPOSAL NO: 255-2
RECOMMENDATION: Accept this proposal in principle and use the following language:

1.1.1 This standard describes a method of testing the comparative surface burning characteristics of building materials with regard to flame spread and smoke developed.

1.1.2* This test method is applicable to any type of building material that by its own structural quality or the manner in which it is applied, is capable of supporting itself in position or is supported in the test furnace to a the thickness ~~comparable to its~~ recommended for use.

A.1.1.2 This means that the test method should not be applied to materials that are not building materials, including wire and cable materials. NFPA 262, Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces, should be used when evaluating the potential for flame spread and smoke developed along cables and wires housed in a plenum or other environmental space.

SUBSTANTIATION: The technical committee on fire tests developed NFPA 262 in order to test wires and cables in the Steiner tunnel. This was developed (in 1985) because (as stated in the Origin and Development Section of NFPA 262): "The test procedure covered by this standard was originally developed by Underwriters Laboratories Inc. and published as UL 910, Standard for Safety Test for Flame-Propagation and Smoke-Density Values for Electrical and Optical-Fiber Cables Used in Spaces Transporting Environmental Air. It is an adaptation of the Steiner tunnel test (NFPA 255, Standard Method of Test of Surface Burning Characteristics of Building Materials; ASTM E 84, Standard Test Method for Surface Burning Characteristics of Building Materials; UL 723, Tests for Surface Burning Characteristics of Building Materials), which was designed to provide information for evaluating the potential for fire spread along cables and wires housed in a plenum or other environmental space." NFPA 262 was most recently revised in 2002. The technical committee on fire tests has never discussed the use of NFPA 255 for testing wires and cables. In fact, both the ASTM E05 and ASTM D09 committees discussed the use of the Steiner tunnel test for wires and cables, always with the understanding that this would address a standard modification of the tunnel test apparatus for testing wires and cables for use in plenums 9such as NFPA 262) and not an application of ASTM E 84 or of NFPA 255.
COMMITTEE MEETING ACTION: Accept in Principle in Part

1. See Committee Action and Statement on Comment 255-5 (Log #18) with regard to submitter's recommendation on sections 1.1.1 and 1.1.2.

2. With regard to the submitter's recommendation regarding A.1.1.2, the committee recommends an action of "Hold for Further Study".

COMMITTEE STATEMENT: 1. See Committee Action and Statement on Comment 255-5 (Log #18) with regard to submitter's recommendation on sections 1.1.1 and 1.1.2.

2. With regard to the committee's action on the submitter's recommendation to proposed section A.1.1.2, see Committee Action and Statement for Comment 255-8 (Log #29).
NUMBER ELIGIBLE TO VOTE: 24
BALLOT RESULTS: Affirmative: 20 Negative: 1 Abstain: 2
BALLOT NOT RETURNED: 1 LAWSON
EXPLANATION OF NEGATIVE:

BILL: The appropriate fire test standard for cables is NFPA 262. The National Fire Protection Research Foundation (NFPRF) has shown that this is a repeatable and reproducible fire test (Reference 1). Indeed the purpose of the study was to harmonize the Steiner Tunnel at five international testing laboratories, develop repeatability and reproducibility data, and develop a revised test to be considered by the NFPA Fire Test Committee. The proposed revised test was accepted by the NFPA Fire Test Committee and incorporated into the revised standard which is specifically for testing flame travel and smoke of wires and cables for use in air handling spaces.

In contrast, NFPA 255, which has the broader scope of testing surface burning characteristics of building materials, has been shown in tests also conducted through the NFPRF to provide "...relatively poor reproducibility."

(P. 14, Reference 2). Thus, selecting NFPA 255 over NFPA 262 as the basis for fire testing cables is clearly inappropriate.

In addition to issues of test methods, I note that FM Global has evaluated cables meeting the current requirements of NFPA 90A using NFPA 262 and found cable performance to be consistent and also meet FM Global requirements for is Group 1 cables (Reference 3). (Group 1 cables are deemed by FM Global to be cables that would not sustain fire propagation under typical hazard conditions and thus do not require sprinkler protection in the absence of more severe hazards.) These results provide additional support to the repeatability and consistency of the fire performance testing provided by NFPA 262.

References:

1. J. T. Chapin and P. Gandhi, "International NFPA Fire Test Harmonization Project," Technical Report NFPRF-24, The Fire Protection Research Foundation, Quincy, MA, 2000.

2. F. B. Clarke and R. G. Gewain, "International Limited Combustible Plenum Cable Fire Test Project, "Technical Report, The Fire Protection Research Foundation, Quincy, MA, 2001.

3. M. Khan and R. G. Bill, "Screening of Plenum Cables Using a Small-Scale Fire Test Protocol," Interflam 2004, Interscience Communications Ltd, 1409-1420, Edinburgh, July, 2004.

EXPLANATION OF ABSTENTION:

HIRSCHLER: See my Explanation of Abstention on 255-1.

KOFFEL: I have abstained in accordance with Standards Council policy.

255-7 Log #15 **Final Action: Accept in Principle**
(1.2)

SUBMITTER: Marcelo M. Hirschler, GBH International
COMMENT ON PROPOSAL NO: 255-4
RECOMMENDATION: Accept this proposal and reword as follows:

1.2 Purpose.

1.2.1 The purpose of the test is to determine the comparative surface burning characteristics of the material under test by evaluating the flame spread over its surface and the resulting optical density of smoke , when exposed to a test fire, thus establishing a basis on which surface burning characteristics of different materials can be compared without specific consideration of all end-use parameters that might affect the surface burning characteristics.

1.2.2 In this test method, flame spread and optical density of smoke information is recorded and used to assess a flame spread index and a smoke developed index. However, there is not necessarily a relationship between these two sets of values .

SUBSTANTIATION: Measurement of "smoke" is insufficiently clear. "Smoke" is defined as everything that is emitted during a fire (both visible and invisible components). This test only assesses the visible components of smoke and does so by measuring optical density of smoke.
COMMITTEE MEETING ACTION: Accept in Principle

Replace the phrase "optical density of smoke" as recommended by the submitter with the phrase "visible smoke" in two places.
COMMITTEE STATEMENT: This is an editorial change as the test method is intended to measure the absorbance of light, and not the optical density of smoke.
NUMBER ELIGIBLE TO VOTE: 24
BALLOT RESULTS: Affirmative: 23
BALLOT NOT RETURNED: 1 LAWSON

255-8 Log #29 **Final Action: Hold**
(1.2.4)

SUBMITTER: Wayne G. Carson, Carson Assoc. Inc.
COMMENT ON PROPOSAL NO: 255-2
RECOMMENDATION: Add sentence to section 1-2.4 and Annex note as follows:

1-2.4* This method does not establish ratings of standards of performance for specific uses, because these ratings depend on service requirements. "This method shall not be used to investigate the fire performance of wires and cables."

A-1-2.4 See NFPA 262, Standard Method of Test for Flame Travel and Smoke of Wires and Cables for use in Air-Handling Spaces" for the fire testing of wires and cables.
SUBSTANTIATION: 1. NFPA 255 was not developed or vetted for testing wire and cable. Simply testing and recording the test results of wire and cable exposed in the NFPA 255 test format does not corroborate that such exposure is consistent with the fire hazard such materials will experience in actual service. The fire record for wire and cable tested in accordance with NFPA 262 is excellent. (See the field data in ASHRAE study RP-1108 for source data.)

2. Just because wire and cable can be tested in the NFPA 255 format does not mean they should be tested in that manner, without an appropriate evaluation of the fire hazards in question for the end use of the product.

3. The test sample placement and exposure to the fire source in NFPA 255 and 262 are different. The sample placement in the NFPA 262 test specifically reflects the intent of the developers to provide a realistic exposure for wire and cable that is to be exposed in air handling plenums.

4. The Origin and Development of NFPA 262 states the following:

It is an adaptation of the Steiner tunnel test which was designed to provide information for evaluating the potential for fire spread along cables and wires housed in a plenum or other environmental space.

The test protocol in NFPA 262 is specifically designed for testing wires and cables to be exposed in plenums, not the test protocol in NFPA 255.

5. NFPA 262, Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces, was specifically developed for testing of wires and cables to be exposed in air handling plenums. The scope of NFPA 262 states:

1.1 Scope.

1.1.1* This standard shall prescribe the methodology to measure flame travel distance and optical density of smoke for insulated, jacketed, or both, electrical wires and cables and optical fiber cables that are to be installed in plenums and other spaces used to transport environmental air without being enclosed in raceways.

The purpose states:

1.2.1 The purpose of this test shall be to measure and record the fire and smoke characteristics of insulated, jacketed, or both, electrical wires and cables and optical fiber cables that are to be installed in ducts, plenums, and other spaces used to transport environmental air without being enclosed in raceways.
COMMITTEE MEETING ACTION: Hold
COMMITTEE STATEMENT: The committee believes that further study is necessary to adequately address whether NFPA 255 is not appropriate for wire and cable, and other types of materials that might not be considered universally as building materials. In accordance with section 4-4.6.2.2 of NFPA's Regulations Governing Committee Projects, the committee notes that the comment recommends material and substantial changes that could not be properly handled within the time frame for processing the Report on Comments. The committee further notes that the committee's action on proposal 255-18 that initially introduced the concept of excluding wire and cable from the scope of NFPA 255 did not pass the committee's letter ballot. Technical committee chair Bill Fitch appointed a task group consisting of Jess Beitel (chair), John Blair, Pravin Gandhi, Robert Bill, Bill Webb, Marcelo Hirschler, Bill Koffel and Stanley Kaufman (guest) to study the relevant issues and provide recommendations to the committee in time for processing the next revision of NFPA 255.
NUMBER ELIGIBLE TO VOTE: 24
BALLOT RESULTS: Affirmative: 20 Negative: 1 Abstain: 2
BALLOT NOT RETURNED: 1 LAWSON
EXPLANATION OF NEGATIVE:

BILL: See my Explanation of Negative on 255-6 (Log #22).
EXPLANATION OF ABSTENTION:

HIRSCHLER: See my Explanation of Abstention on 255-1.

KOFFEL: See my reason for abstaining on Comment 255-6 (Log #22).

255-9 Log #21 **Final Action: Accept in Principle**
(1.3)

SUBMITTER: Marcelo M. Hirschler, GBH International
COMMENT ON PROPOSAL NO: 255-5
RECOMMENDATION: If the annex section regarding NFPA 251 is not added to Section 1.1, then it should be retained in Section 1.3

1.3* Application.

A.1.3 See NFPA 251, Standard Methods of Tests of Fire Endurance of Building Construction and Materials, for procedures for determining fire resistance. NFPA 251 can assess the performance, under fire exposure conditions, of building constructions and materials where incorporated in a test structure and subject to a standard exposing fire of controlled extent and severity.
SUBSTANTIATION: I believe that it is important to make it clear that this is not a fire resistance test. Many people confuse fire resistance tests and reaction-to-fire tests. The information about NFPA 251 is already in the 2000 (current) edition of NFPA 255 and I recommend that it be moved for conformity to MOS to Section 1.1. If it is not moved to Section 1.1, then it should stay in Section 1.3.
COMMITTEE MEETING ACTION: Accept in Principle

See Committee Action and Statement on Comment 255-5 (Log #18).
COMMITTEE STATEMENT: See Committee Action and Statement on Comment 255-5 (Log #18).
NUMBER ELIGIBLE TO VOTE: 24
BALLOT RESULTS: Affirmative: 23
BALLOT NOT RETURNED: 1 LAWSON

255-10 Log #27 **Final Action: Hold**
(1.3)

SUBMITTER: Wayne G. Carson, Carson Assoc. Inc.
COMMENT ON PROPOSAL NO: 255-5
RECOMMENDATION: Add new section 1.3.3 and Annex note as follows:

1.3.3* This method shall not be used to investigate the fire performance of wires and cables.

A-1.3.3 See NFPA 262, "Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces" for the fire testing of wires and cables.

SUBSTANTIATION: 1. NFPA 255 was not developed or vetted for testing wire and cable. Simply testing and recording the test results of wire and cable exposed in the NFPA 255 test format does not corroborate that such exposure is consistent with the fire hazard such materials will experience in actual service. The fire record for wire and cable tested in accordance with NFPA 262 is excellent. (See the field data in ASHRAE study RP-1108 for source data.)

2. Just because wire and cable can be tested in the NFPA 255 format does not mean they should be tested in that manner, without an appropriate evaluation of the fire hazards in question for the end use of the product.

3. The test sample placement and exposure to the fire source in NFPA 255 and 262 are different. The sample placement in the NFPA 262 test specifically reflects the intent of the developers to provide a realistic exposure for wire and cable that is to be exposed in air handling plenums.

4. The Origin and Development of NFPA 262 states the following:

It is an adaptation of the Steiner tunnel test which was designed to provide information for evaluating the potential for fire spread along cables and wires housed in a plenum or other environmental space.

The test protocol in NFPA 262 is specifically designed for testing wires and cables to be exposed in plenums, not the test protocol in NFPA 255.

5. NFPA 262, Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces, was specifically developed for testing of wires and cables to be exposed in air handling plenums. The scope of NFPA 262 states:

1.1 Scope.

1.1.1* This standard shall prescribe the methodology to measure flame travel distance and optical density of smoke for insulated, jacketed, or both, electrical wires and cables and optical fiber cables that are to be installed in plenums and other spaces used to transport environmental air without being enclosed in raceways.

The purpose states:

1.2.1 The purpose of this test shall be to measure and record the fire and smoke characteristics of insulated, jacketed, or both, electrical wires and cables and optical fiber cables that are to be installed in ducts, plenums, and other spaces used to transport environmental air without being enclosed in raceways.

COMMITTEE MEETING ACTION: Hold
COMMITTEE STATEMENT: See Committee Action and Statement on Comment 255-8 (Log #29).
NUMBER ELIGIBLE TO VOTE: 24
BALLOT RESULTS: Affirmative: 20 Negative: 1 Abstain: 2
BALLOT NOT RETURNED: 1 LAWSON
EXPLANATION OF NEGATIVE:
BILL: See my Explanation of Negative on 255-6 (Log #22).
EXPLANATION OF ABSTENTION:
HIRSCHLER: See my Explanation of Abstention on 255-1.
KOFFEL: See my reason for abstaining on Comment 255-6 (Log #22).

255-11 Log #28 **Final Action: Hold**
(1.3)

SUBMITTER: Wayne G. Carson, Carson Assoc. Inc.
COMMENT ON PROPOSAL NO: 255-2
RECOMMENDATION: Add new section 1-3 and Annex as follows:

1-3* This method shall not be used to investigate the fire performance of wires and cables.

A-1-3 See NFPA 262, "Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces" for the fire testing of wires and cables.

SUBSTANTIATION: 1. NFPA 255 was not developed or vetted for testing wire and cable. Simply testing and recording the test results of wire and cable exposed in the NFPA 255 test format does not corroborate that such exposure is consistent with the fire hazard such materials will experience in actual service. The fire record for wire and cable tested in accordance with NFPA 262 is excellent. (See the field data in ASHRAE study RP-1108 for source data.)

2. Just because wire and cable can be tested in the NFPA 255 format does not mean they should be tested in that manner, without an appropriate evaluation of the fire hazards in question for the end use of the product.

3. The test sample placement and exposure to the fire source in NFPA 255 and 262 are different. The sample placement in the NFPA 262 test specifically reflects the intent of the developers to provide a realistic exposure for wire and cable that is to be exposed in air handling plenums.

4. The Origin and Development of NFPA 262 states the following:

It is an adaptation of the Steiner tunnel test which was designed to provide information for evaluating the potential for fire spread along cables and wires housed in a plenum or other environmental space.

The test protocol in NFPA 262 is specifically designed for testing wires and cables to be exposed in plenums, not the test protocol in NFPA 255.

5. NFPA 262, Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces, was specifically developed for testing of wires and cables to be exposed in air handling plenums. The scope of NFPA 262 states:

1.1 Scope.

1.1.1* This standard shall prescribe the methodology to measure flame travel distance and optical density of smoke for insulated, jacketed, or both, electrical wires and cables and optical fiber cables that are to be installed in plenums and other spaces used to transport environmental air without being enclosed in raceways.

The purpose states:

1.2.1 The purpose of this test shall be to measure and record the fire and smoke characteristics of insulated, jacketed, or both, electrical wires and cables and optical fiber cables that are to be installed in ducts, plenums, and other spaces used to transport environmental air without being enclosed in raceways.

COMMITTEE MEETING ACTION: Hold
COMMITTEE STATEMENT: See Committee Action and Statement on Comment 255-8 (Log #29).
NUMBER ELIGIBLE TO VOTE: 24
BALLOT RESULTS: Affirmative: 20 Negative: 1 Abstain: 2
BALLOT NOT RETURNED: 1 LAWSON
EXPLANATION OF NEGATIVE:
BILL: See my Explanation of Negative on 255-6 (Log #22).
EXPLANATION OF ABSTENTION:
HIRSCHLER: See my Explanation of Abstention on 255-1.
KOFFEL: See my reason for abstaining on Comment 255-6 (Log #22).

255-12 Log #23 **Final Action: Accept**
(2.1.4)

SUBMITTER: Bob Eugene, Underwriters Laboratories Inc.
COMMENT ON PROPOSAL NO: 255-6
RECOMMENDATION: Proposed Revision to NFPA 255 Mounting Methods
2.1.4* …. (no change up to the present text) The entire lid assembly shall be protected with flat sections
of high-density [nominal ~~110~~ 90 ± 10 lb/ft^3 (~~1762~~ 1446 ± 165 kg/m^3)] 1/4-in. (6.3-mm) ~~inorganic-~~ reinforced cement board (complying with ASTM C 1186 and passing ASTM E136) , maintained in an unwarped and uncracked condition through continued replacement. This protective board shall be permitted to be either secured or not secured to the furnace lid. When in place, the top shall be sealed completely against the leakage of air into the fire test chamber during the test.

(No change in remainder the proposed text)

SUBSTANTIATION: ASTM Tunnel Operators Group has developed the specification of the reinforced cement board with a nominal density of 90 ± 10 lb/ft^3 . The proposed change will harmonize NFPA 255 with ASTM E 84 and the tunnel operators practice. The density spec being proposed accurately describes the products currently being used by the tunnel operators.
COMMITTEE MEETING ACTION: Accept
NUMBER ELIGIBLE TO VOTE: 24
BALLOT RESULTS: Affirmative: 23
BALLOT NOT RETURNED: 1 LAWSON

255-13 Log #1 **Final Action: Reject**
(3.x.x)

SUBMITTER: Marcelo M. Hirschler, GBH International
COMMENT ON PROPOSAL NO: 255-10
RECOMMENDATION: Accept this proposal and add a new definition as follows:

3.xx Self-supporting Specimen. A specimen that remains in place by its own structural characteristics both before and during the fire test.

SUBSTANTIATION: This definition is needed because the concept is used in the standard. The definition comes from ASTM E 2231. Also, a discussion of the term has been added to ASTM E 84 and has been proposed for addition to NFPA 255 in a comment. The reason this concept is important is that materials will be mounted differently if they are self supporting than if they are not. The scope of the standard says that the test specimen must be capable of supporting itself in position, but that concept is not defined in the standard. Moreover, it is important to highlight the fact that this test method is not applicable to those materials that are not capable of supporting themselves in position or of being supported in the test furnace. If a material is not capable of supporting itself or of being supported, the test results are going to be misleading.
COMMITTEE MEETING ACTION: Reject
COMMITTEE STATEMENT: The term is not used in the standard.
NUMBER ELIGIBLE TO VOTE: 24
BALLOT RESULTS: Affirmative: 22 Negative: 1
BALLOT NOT RETURNED: 1 LAWSON
EXPLANATION OF NEGATIVE:
HIRSCHLER: See my Explanation of Negative on 255-5.

255-14 Log #16 **Final Action: Accept in Principle**
(3.xx)

SUBMITTER: Marcelo M. Hirschler, GBH International
COMMENT ON PROPOSAL NO: 255-9
RECOMMENDATION: The committee should have accepted these proposals as shown, or at least included the phrase "expressed as a dimensionless number".

3.xx Flame spread index. A comparative measure, expressed as a dimensionless number, derived from visual measurements of the spread of

flame vs. time for a material tested in accordance with NFPA 255 or with ASTM E 84.

3.xx Smoke developed index. A comparative measure, expressed as a dimensionless number, derived from measurements of smoke obscuration vs. time for a material tested in accordance with NFPA 255 or with ASTM E 84

SUBSTANTIATION: After many years of struggling with the definitions of "flame spread index" and "smoke developed index", a consensus has emerged and the same basic definition has been included in ASTM E 176, in ASTM E 84 and in the ICC, as well as in several NFPA documents: NFPA 101, 5000, 90A and so on. All of them contain the phrase *"expressed as a dimensionless number"* , because that is fairly critical. It would be quite inconsistent if NFPA 255 had a different definition. Both flame spread index and smoke developed index are the ratios of two areas, one for the material under test and one for "select grade red oak flooring", and are thus dimensionless.

With regard to the addition of the reference to ASTM E 84, the NFPA 101 and NFPA 5000 Technical Correlating Committees are encouraging the references to equivalent consensus standards.

COMMITTEE MEETING ACTION: Accept in Principle

1. Accept the submitter's recommendation with the following revisions:

3.xx* Flame spread index. A comparative measure, expressed as a dimensionless number, derived from visual measurements of the spread of flame vs. time f ~~or a material tested in accordance with NFPA 255 or with ASTM E 84.~~

3.xx* Smoke developed index. A comparative measure, expressed as a dimensionless number, derived from measurements of smoke obscuration vs. time f ~~or a material tested in accordance with NFPA 255 or with ASTM E 84~~

2. Add annex material for the term's "flame spread index" and "smoke developed index" to read as follows:

This index is determined by testing a material in accordance with NFPA 255, ASTM E84 or UL 723.

COMMITTEE STATEMENT: This action is a result of NFPA's Manual of Style which does not allow for requirements within definitions.

NUMBER ELIGIBLE TO VOTE: 24

BALLOT RESULTS: Affirmative: 22 Negative: 1

BALLOT NOT RETURNED: 1 LAWSON

EXPLANATION OF NEGATIVE:

MOWRER: Calling the Flame Spread Index and Smoke Developed Index "dimensionless numbers" implies a more fundamental validity for these parameters than actually exists. The FSI and SDI are simply ratios of two measurements for different materials. In the more scientific usage of this term, it represents a ration between competing factors. The FSI and SDI can hardly be compared with valid dimensionless groups such as the Reynolds Number, the Prandtl Number, the Nusselt Number, etc.

255-15 Log #2 **Final Action: Accept**
(3.1.3)

SUBMITTER: Marcelo M. Hirschler, GBH International
COMMENT ON PROPOSAL NO: 255-12
RECOMMENDATION: Reject this proposal.
SUBSTANTIATION: As explained in the negatives and comments submitted, the action on this proposal contradicts the action on 255-11. The action on 255-11 is the correct one, since labs should be allowed to stop the test early if the sample has been consumed.
COMMITTEE MEETING ACTION: Accept
NUMBER ELIGIBLE TO VOTE: 24
BALLOT RESULTS: Affirmative: 23
BALLOT NOT RETURNED: 1 LAWSON

255-16 Log #26 **Final Action: Accept in Principle**
(3.4(4))

SUBMITTER: Jesse J. Beitel, Hughes Assoc., Inc.
COMMENT ON PROPOSAL NO: 255-15
RECOMMENDATION: Revise existing Section 3.4(4) as:

Replace the words "the presence of flaming droplets" with the following: the presence of flaming particles, debris or materials

SUBSTANTIATION: While I agree with the intent of the proposed change, other flaming items besides "droplets" occur many times. Items such as large, flaming particles, debris, etc. have been seen to fall from the sample. This needs to be revised since it appears to only address thermoplastic materials and not other materials which exhibit the same phenomena.

COMMITTEE MEETING ACTION: Accept in Principle

Accept the submitter's recommendation with the following revision.

"...the presence of flaming, droplets, debris or materials...".

COMMITTEE STATEMENT: It is still appropriate to use the term droplets.

NUMBER ELIGIBLE TO VOTE: 24

BALLOT RESULTS: Affirmative: 23

BALLOT NOT RETURNED: 1 LAWSON

COMMENT ON AFFIRMATIVE

HIRSCHLER: The section should read as follows:

"...the presence of flaming, droplets, debris or materials..."

255-17 Log #3 **Final Action: Reject**
(Chapter 6 (new))

SUBMITTER: Marcelo M. Hirschler, GBH International
COMMENT ON PROPOSAL NO: 255-17
RECOMMENDATION: Accept this proposal in part in principle and make the following changes:

Chapter 6. Mounting methods for selected test materials

6.1* This chapter contains methods for mounting selected building materials in the fire test chamber. These mounting methods are required for test method uniformity and convenience.

6.2 Wherever reinforced cement board is specified as a backing in subsequent paragraphs, the material shall be nominal 1/4 in. (6.3 mm) thick, complying with ASTM C 1186 and passing ASTM E 136, and uncoated. Where metal rods are specified as supports, 1/4-in. (6.3-mm) metal rods spanning the width of the tunnel shall be used. Rods shall be placed approximately 2 in. (51 mm) from each end of each panel, and additional rods shall be placed approximately at 2-ft (0.61-m) intervals, starting with the first rod at the fire end of each panel.

6.3 Whenever wood is specified in this chapter, the wood shall be untreated plywood, with a face veneer of Douglas fir. The plywood shall comply with NIST Voluntary Product Standard PS 1-95, Construction and Industrial Plywood.

6.4 Acoustical and Other Similar Panel Products of Less Than 20 in. (508 mm).

6.4.1 For acoustical materials and other similar panel products with a maximum dimension of less than 20 in. (508 mm), use metal splines or wood furring strips and metal fasteners.

6.4.2 Steel tee splines for mounting kerfed-acoustical tile shall be nominal 1/2 in. (12.7 mm) web 3/4 in. (19 mm) flange, formed No. 24 MS gauge sheet metal.

6.4.3 Wood furring frames for mounting acoustical materials and other similar panel products of less than 20 in. (508 mm) shall be nominal 1 in. 2 in. (25.4 mm 51 mm) wood furring joined with corrugated metal fasteners. Two frames shall be used, as shown in Figure B-2.3.

Figure 6.4.3 Wood frame for acoustical materials and other similar panel products of less than 20 in. (508 mm). *Use present figure B2.3*

A6.1 Some building materials are not discussed in this chapter. Therefore, none of the mounting methods described in this chapter may be applicable. In such cases, other means of support may need to be devised.

Also, add a reference to a new NIST Standard: Voluntary Product Standard PS 1-95 - Construction and Industrial Plywood, as well as ASTM C 1186 and ASTM E 136 to the list of referenced standards in the new Chapter 2.

~~B-2 Acoustical and Other Similar Panel Products of Less Than 20 in. (508 mm).~~

~~B-2.1 For acoustical materials and other similar panel products with a maximum dimension of less than 20 in. (508 mm), metal splines or wood furring strips and metal fasteners should be used.~~

~~B-2.2 Steel tee splines for mounting kerfed-acoustical tile should be nominal 1/2 in. (12.7 mm) web 3/4 in. (19 mm) flange, formed No. 24 MS gauge sheet metal.~~

~~B-2.3~~

~~Wood furring frames for mounting acoustical materials and other similar panel products of less than 20 in. (508 mm) should be nominal 1 in. 2 in. (25.4 mm 51 mm) wood furring joined with corrugated metal fasteners. Two frames should be used, as shown in Figure B-2.3.~~

~~Figure B-2.3 Wood frame for acoustical materials and other similar panel products of less than 20 in. (508 mm).~~

SUBSTANTIATION: The mounting methods for the Steiner tunnel need to be standardized. If they are not each lab will conduct its own way of running tests, with results that are not comparable to one another. Since the Annexes of NFPA standards are not mandatory this comment creates a new chapter on mounting methods a new chapter, at the end of the standard (following Chapter 1, Administration; Chapter 2 References, Chapter 3, Definitions, Chapter 4, Test Equipment and Specimens and Chapter 5, Conduct of Test). This chapter will include those building materials for which clear mounting methods exist. This is the first of several comments adding each individual material that is suitable for standardization. This comment also addresses and fixes two issues brought up during the voting: (a) the non mandatory aspects of the introduction in 6.1 and (b) a clearer description of the wood to be used.

COMMITTEE MEETING ACTION: Reject

COMMITTEE STATEMENT: The committee does not believe that the mounting methods that are currently located in Appendix B should be moved to the body of the standard. The proposed text, which would become mandatory, might not be appropriate for all types of materials currently tested in accordance with NFPA 255. The committee believes that the methods for mounting of test specimens should remain as Annex material.

NUMBER ELIGIBLE TO VOTE: 24

BALLOT RESULTS: Affirmative: 22 Negative: 1

BALLOT NOT RETURNED: 1 LAWSON

EXPLANATION OF NEGATIVE:

HIRSCHLER: See my Explanation of Negative on 255-23.

255-18 Log #4 **Final Action: Reject**
(Chapter 6 (new))

SUBMITTER: Marcelo M. Hirschler, GBH International
COMMENT ON PROPOSAL NO: 255-17
RECOMMENDATION: Accept this proposal in part in principle and make the following changes:

Chapter 6. Mounting methods for selected test materials

6.1* This chapter contains methods for mounting selected building materials in the fire test chamber. These mounting methods are required for test method uniformity and convenience.

6.2 Wherever reinforced cement board is specified as a backing in subsequent paragraphs, the material shall be nominal 1/4 in. (6.3 mm) thick, complying with ASTM C 1186 and passing ASTM E 136, and uncoated. Where metal rods are specified as supports, 1/4-in. (6.3-mm) metal rods spanning the width of the tunnel shall be used. Rods shall be placed approximately 2 in. (51 mm) from each end of each panel, and additional rods shall be placed approximately at 2-ft (0.61-m) intervals, starting with the first rod at the fire end of each panel.

6.3 Whenever wood is specified in this chapter, the wood shall be untreated plywood, with a face veneer of Douglas fir. The plywood shall comply with NIST Voluntary Product Standard PS 1-95, Construction and Industrial Plywood.

6.4 Acoustical and Other Similar Panel Products of Less Than 20 in. (508 mm).

6.4.1 For acoustical materials and other similar panel products with a maximum dimension of less than 20 in. (508 mm), use metal splines or wood furring strips and metal fasteners.

6.4.2 Steel tee splines for mounting kerfed-acoustical tile shall be nominal 1/2 in. (12.7 mm) web 3/4 in. (19 mm) flange, formed No. 24 MS gauge sheet metal.

6.4.3 Wood furring frames for mounting acoustical materials and other similar panel products of less than 20 in. (508 mm) shall be nominal 1 in. 2 in. (25.4 mm 51 mm) wood furring joined with corrugated metal fasteners. Two frames shall be used, as shown in Figure B-2.3.

Figure 6.4.3 Wood frame for acoustical materials and other similar panel products of less than 20 in. (508 mm). *Use present figure B2.3*

6.5 Adhesives. To determine the surface burning characteristics of adhesives, they shall be mixed as specified in the manufacturer's instructions and applied to reinforced cement board in the thickness or at the coverage rate recommended by the manufacturer. The adhesive application shall be cured prior to testing.

6.6 Batt- or Blanket-Type Insulating Materials. Batt or blanket materials that do not have sufficient rigidity or strength to support themselves shall be supported by metal rods inserted through the material and positioned so that the bottom of the rod is approximately 1/4 in. (6.3 mm) from the surface to be exposed to the flame. This mounting method is not suitable for batt or blanket materials less than 1 in. (25.4 mm) thick.

A6.1 Some building materials are not discussed in this chapter. Therefore, none of the mounting methods described in this chapter may be applicable. In such cases, other means of support may need to be devised.

Also, add a reference to a new NIST Standard: Voluntary Product Standard PS 1-95 - Construction and Industrial Plywood, as well as ASTM C 1186 and ASTM E 136 to the list of referenced standards in the new Chapter 2.

~~B-2 Acoustical and Other Similar Panel Products of Less Than 20 in. (508 mm).~~

~~B-2.1 For acoustical materials and other similar panel products with a maximum dimension of less than 20 in. (508 mm), metal splines or wood furring strips and metal fasteners should be used.~~

~~B-2.2 Steel tee splines for mounting kerfed-acoustical tile should be nominal in. (12.7 mm) web 3/4 in. (19 mm) flange, formed No. 24 MS gauge sheet metal.~~

~~B-2.3 Wood furring frames for mounting acoustical materials and other similar panel products of less than 20 in. (508 mm) should be nominal 1 in. 2 in. (25.4 mm 51 mm) wood furring joined with corrugated metal fasteners. Two frames should be used, as shown in Figure B-2.3.~~

~~Figure B-2.3 Wood frame for acoustical materials and other similar panel products of less than 20 in. (508 mm).~~

~~B-3 Adhesives. To determine the surface burning characteristics of adhesives, they are to be mixed as specified in the manufacturer's instructions and applied to inorganic-reinforced cement board in the thickness or at the coverage rate recommended by the manufacturer. The adhesive application should be cured prior to testing.~~

~~B-4 Batt- or Blanket-Type Insulating Materials.~~

~~Batt or blanket materials that do not have sufficient rigidity or strength to support themselves should be supported by metal rods inserted through the material and positioned so that the bottom of the rod is approximately 1/4 in. (6.3 mm) from the surface to be exposed to the flame. It is recommended that batt or blanket materials less than 1 in. (25.4 mm) thick not be mounted for testing in this manner.~~

SUBSTANTIATION: The mounting methods for the Steiner tunnel need to be standardized. If they are not each lab will conduct its own way of running tests, with results that are not comparable to one another. Since the Annexes of NFPA standards are not mandatory this comment creates a new chapter on mounting methods a new chapter, at the end of the standard (following Chapter 1, Administration; Chapter 2 References, Chapter 3, Definitions, Chapter 4, Test Equipment and Specimens and Chapter 5, Conduct of Test). This chapter will include those building materials for which clear mounting methods exist. This is the first of several comments adding each individual material that is suitable for standardization. This comment also addresses and fixes two issues brought up during the voting: (a) the non mandatory aspects of the introduction in 6.1 and (b) a clearer description of the wood to be used.
COMMITTEE MEETING ACTION: Reject
COMMITTEE STATEMENT: See Committee Action and Statement for Comment 255-17 (Log #3).
NUMBER ELIGIBLE TO VOTE: 24
BALLOT RESULTS: Affirmative: 22 Negative: 1
BALLOT NOT RETURNED: 1 LAWSON
EXPLANATION OF NEGATIVE:
HIRSCHLER: See my Explanation of Negative on 255-23.

255-19 Log #5 **Final Action: Reject**
(Chapter 6 (NEW))

SUBMITTER: Marcelo M. Hirschler, GBH International
COMMENT ON PROPOSAL NO: 255-17
RECOMMENDATION: Accept this proposal in part in principle and make the following changes:

Chapter 6. Mounting methods for selected test materials

6.1* This chapter contains methods for mounting selected building materials in the fire test chamber. These mounting methods are required for test method uniformity and convenience.

6.2 Wherever reinforced cement board is specified as a backing in subsequent paragraphs, the material shall be nominal 1/4 in. (6.3 mm) thick, complying with ASTM C 1186 and passing ASTM E 136, and uncoated. Where metal rods are specified as supports, 1/4-in. (6.3-mm) metal rods spanning the width of the tunnel shall be used. Rods shall be placed approximately 2 in. (51 mm) from each end of each panel, and additional rods shall be placed approximately at 2-ft (0.61-m) intervals, starting with the first rod at the fire end of each panel.

6.3 Whenever wood is specified in this chapter, the wood shall be untreated plywood, with a face veneer of Douglas fir. The plywood shall comply with NIST Voluntary Product Standard PS 1-95, Construction and Industrial Plywood.

6.4 Acoustical and Other Similar Panel Products of Less Than 20 in. (508 mm).

6.4.1 For acoustical materials and other similar panel products with a maximum dimension of less than 20 in. (508 mm), use metal splines or wood furring strips and metal fasteners.

6.4.2 Steel tee splines for mounting kerfed-acoustical tile shall be nominal 1/2 in. (12.7 mm) web 3/4 in. (19 mm) flange, formed No. 24 MS gauge sheet metal.

6.4.3 Wood furring frames for mounting acoustical materials and other similar panel products of less than 20 in. (508 mm) shall be nominal 1 in. 2 in. (25.4 mm 51 mm) wood furring joined with corrugated metal fasteners. Two frames shall be used, as shown in Figure B-2.3.

Figure 6.4.3 Wood frame for acoustical materials and other similar panel products of less than 20 in. (508 mm). *Use present figure B2.3*

6.5 Adhesives. To determine the surface burning characteristics of adhesives, they shall be mixed as specified in the manufacturer's instructions and applied to reinforced cement board in the thickness or at the coverage rate recommended by the manufacturer. The adhesive application shall be cured prior to testing.

6.6 Batt- or Blanket-Type Insulating Materials. Batt or blanket materials that do not have sufficient rigidity or strength to support themselves shall be supported by metal rods inserted through the material and positioned so that the bottom of the rod is approximately 1/4 in. (6.3 mm) from the surface to be exposed to the flame. This mounting method is not suitable for batt or blanket materials less than 1 in. (25.4 mm) thick.

6.7 Pipe and Duct Insulation Materials or Systems

6.7.1 Pipe and duct insulation materials or systems shall be tested in accordance with ASTM E 2231, Standard Practice for Specimen Preparation and Mounting of Pipe and Duct Insulation Materials to Assess Surface Burning Characteristics.

A6.1 Some building materials are not discussed in this chapter. Therefore, none of the mounting methods described in this chapter may be applicable. In such cases, other means of support may need to be devised.

~~B-2 Acoustical and Other Similar Panel Products of Less Than 20 in. (508 mm).~~

~~B-2.1 For acoustical materials and other similar panel products with a maximum dimension of less than 20 in. (508 mm), metal splines or wood furring strips and metal fasteners should be used.~~

~~B-2.2 Steel tee splines for mounting kerfed-acoustical tile should be nominal 1/2 in. (12.7 mm) web 3/4 in. (19 mm) flange, formed No. 24 MS gauge sheet metal.~~

~~B-2.3 Wood furring frames for mounting acoustical materials and other similar panel products of less than 20 in. (508 mm) should be nominal 1 in. 2~~

~~in. (25.4 mm 51 mm) wood furring joined with corrugated metal fasteners. Two frames should be used, as shown in Figure B-2.3.~~
~~Figure B-2.3 Wood frame for acoustical materials and other similar panel products of less than 20 in. (508 mm).~~
~~B-3 Adhesives. To determine the surface burning characteristics of adhesives, they are to be mixed as specified in the manufacturer's instructions and applied to inorganic-reinforced cement board in the thickness or at the coverage rate recommended by the manufacturer. The adhesive application should be cured prior to testing.~~
~~B-4 Batt- or Blanket-Type Insulating Materials.~~
~~Batt or blanket materials that do not have sufficient rigidity or strength to support themselves should be supported by metal rods inserted through the material and positioned so that the bottom of the rod is approximately 1/4 in. (6.3 mm) from the surface to be exposed to the flame. It is recommended that batt or blanket materials less than 1 in. (25.4 mm) thick not be mounted for testing in this manner.~~

Also, add a reference to a new NIST Standard: Voluntary Product Standard PS 1-95 - Construction and Industrial Plywood, as well as ASTM C 1186, ASTM E 136 and ASTM E 2231 to the list of referenced standards in the new Chapter 2.

SUBSTANTIATION: The mounting methods for the Steiner tunnel need to be standardized. If they are not each lab will conduct its own way of running tests, with results that are not comparable to one another. Since the Annexes of NFPA standards are not mandatory this comment creates a new chapter on mounting methods a new chapter, at the end of the standard (following Chapter 1, Administration; Chapter 2 References, Chapter 3, Definitions, Chapter 4, Test Equipment and Specimens and Chapter 5, Conduct of Test). This chapter will include those building materials for which clear mounting methods exist. This is the first of several comments adding each individual material that is suitable for standardization. This comment also addresses and fixes two issues brought up during the voting: (a) the non mandatory aspects of the introduction in 6.1 and (b) a clearer description of the wood to be used.

ASTM E 2231 has already been issued as a standard practice for mounting some types of materials (pipe and duct insulation materials and systems), and a copy of this standard is being attached for information purposes. Pipe and duct insulation materials are building materials and have been tested in this test method for many years.

COMMITTEE MEETING ACTION: Reject

COMMITTEE STATEMENT: See Committee Action and Statement for Comment 255-17 (Log #3). In addition, the committee notes that a test method for pipe insulation, NFPA 274, Standard Test Method to Evaluate Fire Performance Characteristics of Pipe Insulation, currently exists and that the inclusion of mounting methods for pipe and duct insulation in NFPA 255 is not necessary.

NUMBER ELIGIBLE TO VOTE: 24

BALLOT RESULTS: Affirmative: 22 Negative: 1

BALLOT NOT RETURNED: 1 LAWSON

EXPLANATION OF NEGATIVE:

HIRSCHLER: See my Explanation of Negative on 255-23.

255-20 Log #6 **Final Action: Reject**
(Chapter 6 (new))

SUBMITTER: Marcelo M. Hirschler, GBH International

COMMENT ON PROPOSAL NO: 255-17

RECOMMENDATION: Accept this proposal in part in principle and make the following changes:

Chapter 6. Mounting methods for selected test materials

6.1* This chapter contains methods for mounting selected building materials in the fire test chamber. These mounting methods are required for test method uniformity and convenience.

6.2 Wherever reinforced cement board is specified as a backing in subsequent paragraphs, the material shall be nominal 1/4 in. (6.3 mm) thick, complying with ASTM C 1186 and passing ASTM E 136, and uncoated. Where metal rods are specified as supports, 1/4-in. (6.3-mm) metal rods spanning the width of the tunnel shall be used. Rods shall be placed approximately 2 in. (51 mm) from each end of each panel, and additional rods shall be placed approximately at 2-ft (0.61-m) intervals, starting with the first rod at the fire end of each panel.

6.3 Whenever wood is specified in this chapter, the wood shall be untreated plywood, with a face veneer of Douglas fir. The plywood shall comply with NIST Voluntary Product Standard PS 1-95, Construction and Industrial Plywood.

6.4 Acoustical and Other Similar Panel Products of Less Than 20 in. (508 mm).

6.4.1 For acoustical materials and other similar panel products with a maximum dimension of less than 20 in. (508 mm), use metal splines or wood furring strips and metal fasteners.

6.4.2 Steel tee splines for mounting kerfed-acoustical tile shall be nominal 1/2 in. (12.7 mm) web 3/4 in. (19 mm) flange, formed No. 24 MS gauge sheet metal.

6.4.3 Wood furring frames for mounting acoustical materials and other similar panel products of less than 20 in. (508 mm) shall be nominal 1 in. 2 in. (25.4 mm 51 mm) wood furring joined with corrugated metal fasteners. Two frames shall be used, as shown in Figure B-2.3.

Figure 6.4.3 Wood frame for acoustical materials and other similar panel products of less than 20 in. (508 mm). *Use present figure B2.3*

6.5 Adhesives. To determine the surface burning characteristics of adhesives, they shall be mixed as specified in the manufacturer's instructions and applied to reinforced cement board in the thickness or at the coverage rate recommended by the manufacturer. The adhesive application shall be cured prior to testing.

6.6 Batt- or Blanket-Type Insulating Materials. Batt or blanket materials that do not have sufficient rigidity or strength to be made into self supporting specimens shall be supported by metal rods inserted through the material and positioned so that the bottom of the rod is approximately 1/4 in. (6.3 mm) from the surface to be exposed to the flame. This mounting method is not suitable for batt or blanket materials less than 1 in. (25.4 mm) thick.

6.7 Thin Membranes. Single-layer membranes of thin laminates that cannot be made into self supporting specimens and that consist of a limited number of similar or dissimilar layers shall be permitted to be supported on poultry netting placed on metal rods inserted through the material and positioned so that the bottom of the rod is approximately 6.3 mm (1/4 in.) from the surface to be exposed to the flame. Netting shall be 20-gauge (51-mm) hexagonal galvanized steel poultry netting conforming to ASTM A 390, Standard Specification for Zinc-Coated (Galvanized) Steel Poultry Fence Fabric (Hexagonal and Straight Line). The specimen shall be tested while bonded to a substrate representative of a field installation.

6.8 Pipe and Duct Insulation Materials or Systems

6.8.1 Pipe and duct insulation materials or systems shall be tested in accordance with ASTM E 2231, Standard Practice for Specimen Preparation and Mounting of Pipe and Duct Insulation Materials to Assess Surface Burning Characteristics.

A6.1 Some building materials are not discussed in this chapter. Therefore, none of the mounting methods described in this chapter may be applicable. In such cases, other means of support may need to be devised.

~~B-2 Acoustical and Other Similar Panel Products of Less Than 20 in. (508 mm).~~
~~B-2.1 For acoustical materials and other similar panel products with a maximum dimension of less than 20 in. (508 mm), metal splines or wood furring strips and metal fasteners should be used.~~
~~B-2.2 Steel tee splines for mounting kerfed-acoustical tile should be nominal 1/2 in. (12.7 mm) web 3/4 in. (19 mm) flange, formed No. 24 MS gauge sheet metal.~~
~~B-2.3 Wood furring frames for mounting acoustical materials and other similar panel products of less than 20 in. (508 mm) should be nominal 1 in. 2 in. (25.4 mm 51 mm) wood furring joined with corrugated metal fasteners. Two frames should be used, as shown in Figure B-2.3.~~
~~Figure B-2.3 Wood frame for acoustical materials and other similar panel products of less than 20 in. (508 mm).~~
~~B-3 Adhesives. To determine the surface burning characteristics of adhesives, they are to be mixed as specified in the manufacturer's instructions and applied to inorganic-reinforced cement board in the thickness or at the coverage rate recommended by the manufacturer. The adhesive application should be cured prior to testing.~~
~~B-4 Batt- or Blanket-Type Insulating Materials.~~
~~Batt or blanket materials that do not have sufficient rigidity or strength to support themselves should be supported by metal rods inserted through the material and positioned so that the bottom of the rod is approximately 1/4 in. (6.3 mm) from the surface to be exposed to the flame. It is recommended that batt or blanket materials less than 1 in. (25.4 mm) thick not be mounted for testing in this manner.~~
~~B-8 Thin Membranes. Single-layer membranes of thin laminates consisting of a limited number of similar or dissimilar layers can be supported on poultry netting placed on metal rods as provided in Section B-4. Netting should be 20-gauge (51-mm) hexagonal galvanized steel poultry netting conforming to ASTM A 390, Standard Specification for Zinc-Coated (Galvanized) Steel Poultry Fence Fabric (Hexagonal and Straight Line). The specimen should be tested while bonded to a substrate representative of a field installation.~~

Also, add a reference to a new NIST Standard: Voluntary Product Standard PS 1-95 - Construction and Industrial Plywood, as well as ASTM A 390, ASTM C 1186, ASTM E 136 and ASTM E 2231 to the list of referenced standards in the new Chapter 2.

SUBSTANTIATION: The mounting methods for the Steiner tunnel need to be standardized. If they are not each lab will conduct its own way of running tests, with results that are not comparable to one another. Since the Annexes of NFPA standards are not mandatory this comment creates a new chapter on mounting methods a new chapter, at the end of the standard (following Chapter 1, Administration; Chapter 2 References, Chapter 3, Definitions, Chapter 4, Test Equipment and Specimens and Chapter 5, Conduct of Test). This chapter will include those building materials for which clear mounting methods exist. This is the first of several comments adding each individual material that is suitable for standardization. This comment also addresses and fixes two issues brought up during the voting: (a) the non mandatory aspects of the introduction in 6.1 and (b) a clearer description of the wood to be used.

ASTM E 2231 has already been issued as a standard practice for mounting some types of materials (pipe and duct insulation materials and systems), and a copy of this standard is being attached for information purposes. Pipe and duct insulation materials are building materials and have been tested in this test

method for many years.
COMMITTEE MEETING ACTION: Reject
COMMITTEE STATEMENT: See Committee Action and Statement to Comment 255-17 (Log #3) and comment 255-19 (Log #5).
NUMBER ELIGIBLE TO VOTE: 24
BALLOT RESULTS: Affirmative: 22 Negative: 1
BALLOT NOT RETURNED: 1 LAWSON
EXPLANATION OF NEGATIVE:
HIRSCHLER: See my Explanation of Negative on 255-23.

255-21 Log #7 **Final Action: Reject**
(Chapter 6 (new))

SUBMITTER: Marcelo M. Hirschler, GBH International
COMMENT ON PROPOSAL NO: 255-17
RECOMMENDATION: Accept this proposal in part in principle and make the following changes:
Chapter 6. Mounting methods for selected test materials
6.1* This chapter contains methods for mounting selected building materials in the fire test chamber. These mounting methods are required for test method uniformity and convenience.
6.2 Wherever reinforced cement board is specified as a backing in subsequent paragraphs, the material shall be nominal 1/4 in. (6.3 mm) thick, complying with ASTM C 1186 and passing ASTM E 136, and uncoated. Where metal rods are specified as supports, 1/4-in. (6.3-mm) metal rods spanning the width of the tunnel shall be used. Rods shall be placed approximately 2 in. (51 mm) from each end of each panel, and additional rods shall be placed approximately at 2-ft (0.61-m) intervals, starting with the first rod at the fire end of each panel.
6.3 Whenever wood is specified in this chapter, the wood shall be untreated plywood, with a face veneer of Douglas fir. The plywood shall comply with NIST Voluntary Product Standard PS 1-95, Construction and Industrial Plywood.
6.4 Acoustical and Other Similar Panel Products of Less Than 20 in. (508 mm).
6.4.1 For acoustical materials and other similar panel products with a maximum dimension of less than 20 in. (508 mm), use metal splines or wood furring strips and metal fasteners.
6.4.2 Steel tee splines for mounting kerfed-acoustical tile shall be nominal 1/2 in. (12.7 mm) web 3/4 in. (19 mm) flange, formed No. 24 MS gauge sheet metal.
6.4.3 Wood furring frames for mounting acoustical materials and other similar panel products of less than 20 in. (508 mm) shall be nominal 1 in. 2 in. (25.4 mm 51 mm) wood furring joined with corrugated metal fasteners. Two frames shall be used, as shown in Figure B-2.3.
Figure 6.4.3 Wood frame for acoustical materials and other similar panel products of less than 20 in. (508 mm). *Use present figure B2.3*
6.5 Adhesives. To determine the surface burning characteristics of adhesives, they shall be mixed as specified in the manufacturer's instructions and applied to reinforced cement board in the thickness or at the coverage rate recommended by the manufacturer. The adhesive application shall be cured prior to testing.
6.6 Batt- or Blanket-Type Insulating Materials. Batt or blanket materials that do not have sufficient rigidity or strength to be made into self supporting specimens shall be supported by metal rods inserted through the material and positioned so that the bottom of the rod is approximately 1/4 in. (6.3 mm) from the surface to be exposed to the flame. This mounting method is not suitable for batt or blanket materials less than 1 in. (25.4 mm) thick.
6.7 Thin Membranes. Single-layer membranes of thin laminates that cannot be made into self supporting specimens and that consist of a limited number of similar or dissimilar layers shall be permitted to be supported on poultry netting placed on metal rods inserted through the material and positioned so that the bottom of the rod is approximately 6.3 mm (1/4 in.) from the surface to be exposed to the flame. Netting shall be 20-gauge (51-mm) hexagonal galvanized steel poultry netting conforming to ASTM A 390, Standard Specification for Zinc-Coated (Galvanized) Steel Poultry Fence Fabric (Hexagonal and Straight Line). The specimen shall be tested while bonded to a substrate representative of a field installation.
6.8 Loose fill insulation that will not penetrate through a 3/64 in. (1.2 mm) mesh. Loose fill insulation that will not penetrate through a 3/64 in. (1.2 mm) mesh shall be placed on galvanized steel screening with openings of approximately 3/64 in. (1.2 mm) supported on a test frame 20 in. (508 mm) wide 2 in. (51 mm) deep, made from steel angles of 2 in. x 3 in. x 3/16 in. (51 mm x 76 mm x 4.8 mm). Three frames are needed (as shown in Figure 6.8). The insulation shall be packed to the density specified by the manufacturer. *Use present figure B6.* Figure 6.8.1 Steel frame for loose fill materials.
6.9 Pipe and Duct Insulation Materials or Systems
6.9.1 Pipe and duct insulation materials or systems shall be tested in accordance with ASTM E 2231, Standard Practice for Specimen Preparation and Mounting of Pipe and Duct Insulation Materials to Assess Surface Burning Characteristics.
A6.1 Some building materials are not discussed in this chapter. Therefore, none of the mounting methods described in this chapter may be applicable. In such cases, other means of support may need to be devised.
~~B-2 Acoustical and Other Similar Panel Products of Less Than 20 in. (508 mm).~~
~~B-2.1 For acoustical materials and other similar panel products with a maximum dimension of less than 20 in. (508 mm), metal splines or wood furring strips and metal fasteners should be used.~~
~~B-2.2 Steel tee splines for mounting kerfed-acoustical tile should be nominal 1/2 in. (12.7 mm) web 3/4 in. (19 mm) flange, formed No. 24 MS gauge sheet metal.~~
~~B-2.3 Wood furring frames for mounting acoustical materials and other similar panel products of less than 20 in. (508 mm) should be nominal 1 in. 2 in. (25.4 mm 51 mm) wood furring joined with corrugated metal fasteners. Two frames should be used, as shown in Figure B-2.3.~~
~~Figure B-2.3 Wood frame for acoustical materials and other similar panel products of less than 20 in. (508 mm).~~
~~B-3 Adhesives. To determine the surface burning characteristics of adhesives, they are to be mixed as specified in the manufacturer's instructions and applied to inorganic-reinforced cement board in the thickness or at the coverage rate recommended by the manufacturer. The adhesive application should be cured prior to testing.~~
~~B-4 Batt- or Blanket-Type Insulating Materials.~~
~~Batt or blanket materials that do not have sufficient rigidity or strength to support themselves should be supported by metal rods inserted through the material and positioned so that the bottom of the rod is approximately 1/4 in. (6.3 mm) from the surface to be exposed to the flame. It is recommended that batt or blanket materials less than 1 in. (25.4 mm) thick not be mounted for testing in this manner.~~
~~B-6 Loose Fill Insulation. Loose fill insulation should be placed on galvanized steel screening with openings of approximately 3/64 in. (1.2 mm) supported on a test frame 20 in. (508 mm) wide 2 in. (51 mm) deep, made from steel angles of 2 in. 3 in. 3/16 in. (51 mm 76 mm 4.8 mm). Three frames are needed (see Figure B-6). The insulation should be packed to the density specified by the manufacturer.~~
~~Figure B-6 Steel frame for loose fill materials.~~
~~B-8 Thin Membranes.~~
~~Single-layer membranes of thin laminates consisting of a limited number of similar or dissimilar layers can be supported on poultry netting placed on metal rods as provided in Section B-4. Netting should be 20-gauge (51-mm) hexagonal galvanized steel poultry netting conforming to ASTM A 390, Standard Specification for Zinc-Coated (Galvanized) Steel Poultry Fence Fabric (Hexagonal and Straight Line). The specimen should be tested while bonded to a substrate representative of a field installation.~~
Also, add a reference to a new NIST Standard: Voluntary Product Standard PS 1-95 - Construction and Industrial Plywood, as well as ASTM A 390, ASTM C 1186, ASTM E 136 and ASTM E 2231 to the list of referenced standards in the new Chapter 2.
SUBSTANTIATION: The mounting methods for the Steiner tunnel need to be standardized. If they are not each lab will conduct its own way of running tests, with results that are not comparable to one another. Since the Annexes of NFPA standards are not mandatory this comment creates a new chapter on mounting methods a new chapter, at the end of the standard (following Chapter 1, Administration; Chapter 2 References, Chapter 3, Definitions, Chapter 4, Test Equipment and Specimens and Chapter 5, Conduct of Test). This chapter will include those building materials for which clear mounting methods exist. This is the first of several comments adding each individual material that is suitable for standardization. This comment also addresses and fixes two issues brought up during the voting: (a) the non mandatory aspects of the introduction in 6.1 and (b) a clearer description of the wood to be used.
ASTM E 2231 has already been issued as a standard practice for mounting some types of materials (pipe and duct insulation materials and systems), and a copy of this standard is being attached for information purposes. Pipe and duct insulation materials are building materials and have been tested in this test method for many years.
COMMITTEE MEETING ACTION: Reject
COMMITTEE STATEMENT: See Committee Action and Statement to Comment 255-17 (Log #3) and comment 255-19 (Log #5).
NUMBER ELIGIBLE TO VOTE: 24
BALLOT RESULTS: Affirmative: 22 Negative: 1
BALLOT NOT RETURNED: 1 LAWSON
EXPLANATION OF NEGATIVE:
HIRSCHLER: See my Explanation of Negative on 255-23.

255-22 Log #8 **Final Action: Reject**
(Chapter 6 (new))

SUBMITTER: Marcelo M. Hirschler, GBH International
COMMENT ON PROPOSAL NO: 255-17
RECOMMENDATION: Accept this proposal in part in principle and make the following changes:
Chapter 6. Mounting methods for selected test materials
6.1* This chapter contains methods for mounting selected building materials in the fire test chamber. These mounting methods are required for test method uniformity and convenience.
6.2 Wherever reinforced cement board is specified as a backing in subsequent paragraphs, the material shall be nominal 1/4 in. (6.3 mm) thick,

complying with ASTM C 1186 and passing ASTM E 136, and uncoated. Where metal rods are specified as supports, 1/4-in. (6.3-mm) metal rods spanning the width of the tunnel shall be used. Rods shall be placed approximately 2 in. (51 mm) from each end of each panel, and additional rods shall be placed approximately at 2-ft (0.61-m) intervals, starting with the first rod at the fire end of each panel.

6.3 Whenever wood is specified in this chapter, the wood shall be untreated plywood, with a face veneer of Douglas fir. The plywood shall comply with NIST Voluntary Product Standard PS 1-95, Construction and Industrial Plywood.

6.4 Acoustical and Other Similar Panel Products of Less Than 20 in. (508 mm).

6.4.1 For acoustical materials and other similar panel products with a maximum dimension of less than 20 in. (508 mm), use metal splines or wood furring strips and metal fasteners.

6.4.2 Steel tee splines for mounting kerfed-acoustical tile shall be nominal 1/2 in. (12.7 mm) web 3/4 in. (19 mm) flange, formed No. 24 MS gauge sheet metal.

6.4.3 Wood furring frames for mounting acoustical materials and other similar panel products of less than 20 in. (508 mm) shall be nominal 1 in. 2 in. (25.4 mm 51 mm) wood furring joined with corrugated metal fasteners. Two frames shall be used, as shown in Figure B-2.3.

Figure 6.4.3 Wood frame for acoustical materials and other similar panel products of less than 20 in. (508 mm). *Use present figure B2.3*

6.5 Adhesives. To determine the surface burning characteristics of adhesives, they shall be mixed as specified in the manufacturer's instructions and applied to reinforced cement board in the thickness or at the coverage rate recommended by the manufacturer. The adhesive application shall be cured prior to testing.

6.6 Batt- or Blanket-Type Insulating Materials. Batt or blanket materials that do not have sufficient rigidity or strength to support themselves shall be supported by metal rods inserted through the material and positioned so that the bottom of the rod is approximately 1/4 in. (6.3 mm) from the surface to be exposed to the flame. This mounting method is not suitable for batt or blanket materials less than 1 in. (25.4 mm) thick.

A6.1 Some building materials are not discussed in this chapter. Therefore, none of the mounting methods described in this chapter may be applicable. In such cases, other means of support may need to be devised.

Also, add a reference to a new NIST Standard: Voluntary Product Standard PS 1-95 - Construction and Industrial Plywood, as well as ASTM C 1186 and ASTM E 136 to the list of referenced standards in the new Chapter 2.

~~B-2 Acoustical and Other Similar Panel Products of Less Than 20 in. (508 mm).~~

~~B-2.1 For acoustical materials and other similar panel products with a maximum dimension of less than 20 in. (508 mm), metal splines or wood furring strips and metal fasteners should be used.~~

~~B-2.2 Steel tee splines for mounting kerfed-acoustical tile should be nominal 1/2 in. (12.7 mm) web 3/4 in. (19 mm) flange, formed No. 24 MS gauge sheet metal.~~

~~B-2.3 Wood furring frames for mounting acoustical materials and other similar panel products of less than 20 in. (508 mm) should be nominal 1 in. 2 in. (25.4 mm 51 mm) wood furring joined with corrugated metal fasteners. Two frames should be used, as shown in Figure B-2.3.~~

~~Figure B-2.3 Wood frame for acoustical materials and other similar panel products of less than 20 in. (508 mm).~~

~~B-3 Adhesives. To determine the surface burning characteristics of adhesives, they are to be mixed as specified in the manufacturer's instructions and applied to inorganic-reinforced cement board in the thickness or at the coverage rate recommended by the manufacturer. The adhesive application should be cured prior to testing.~~

SUBSTANTIATION: The mounting methods for the Steiner tunnel need to be standardized. If they are not each lab will conduct its own way of running tests, with results that are not comparable to one another. Since the Annexes of NFPA standards are not mandatory this comment creates a new chapter on mounting methods a new chapter, at the end of the standard (following Chapter 1, Administration; Chapter 2 References, Chapter 3, Definitions, Chapter 4, Test Equipment and Specimens and Chapter 5, Conduct of Test). This chapter will include those building materials for which clear mounting methods exist. This is the first of several comments adding each individual material that is suitable for standardization. This comment also addresses and fixes two issues brought up during the voting: (a) the non mandatory aspects of the introduction in 6.1 and (b) a clearer description of the wood to be used.

COMMITTEE MEETING ACTION: Reject

COMMITTEE STATEMENT: See Committee Action and Statement on Comment 255-17 (Log #3).

NUMBER ELIGIBLE TO VOTE: 24

BALLOT RESULTS: Affirmative: 22 Negative: 1

BALLOT NOT RETURNED: 1 LAWSON

EXPLANATION OF NEGATIVE:

HIRSCHLER: See my Explanation of Negative on 255-23.

255-23 Log #9 **Final Action: Reject**
(Chapter 6 (new))

SUBMITTER: Marcelo M. Hirschler, GBH International

COMMENT ON PROPOSAL NO: 255-17

RECOMMENDATION: Accept this proposal in part in principle and make the following changes:

Chapter 6. Mounting methods for selected test materials

6.1* This chapter contains methods for mounting selected building materials in the fire test chamber. These mounting methods are required for test method uniformity and convenience.

6.2 Wherever reinforced cement board is specified as a backing in subsequent paragraphs, the material shall be nominal 1/4 in. (6.3 mm) thick, complying with ASTM C 1186 and passing ASTM E 136, and uncoated. Where metal rods are specified as supports, 1/4-in. (6.3-mm) metal rods spanning the width of the tunnel shall be used. Rods shall be placed approximately 2 in. (51 mm) from each end of each panel, and additional rods shall be placed approximately at 2-ft (0.61-m) intervals, starting with the first rod at the fire end of each panel.

6.3 Whenever wood is specified in this chapter, the wood shall be untreated plywood, with a face veneer of Douglas fir. The plywood shall comply with NIST Voluntary Product Standard PS 1-95, Construction and Industrial Plywood.

6.4 Acoustical and Other Similar Panel Products of Less Than 20 in. (508 mm).

6.4.1 For acoustical materials and other similar panel products with a maximum dimension of less than 20 in. (508 mm), use metal splines or wood furring strips and metal fasteners.

6.4.2 Steel tee splines for mounting kerfed-acoustical tile shall be nominal 1/2 in. (12.7 mm) web 3/4 in. (19 mm) flange, formed No. 24 MS gauge sheet metal.

6.4.3 Wood furring frames for mounting acoustical materials and other similar panel products of less than 20 in. (508 mm) shall be nominal 1 in. 2 in. (25.4 mm 51 mm) wood furring joined with corrugated metal fasteners. Two frames shall be used, as shown in Figure B-2.3.

Figure 6.4.3 Wood frame for acoustical materials and other similar panel products of less than 20 in. (508 mm). *Use present figure B2.3*

6.5 Adhesives. To determine the surface burning characteristics of adhesives, they shall be mixed as specified in the manufacturer's instructions and applied to reinforced cement board in the thickness or at the coverage rate recommended by the manufacturer. The adhesive application shall be cured prior to testing.

6.6 Batt- or Blanket-Type Insulating Materials. Batt or blanket materials that do not have sufficient rigidity or strength to be made into self supporting specimens shall be supported by metal rods inserted through the material and positioned so that the bottom of the rod is approximately 1/4 in. (6.3 mm) from the surface to be exposed to the flame. This mounting method is not suitable for batt or blanket materials less than 1 in. (25.4 mm) thick.

6.7 Thin Membranes. Single-layer membranes of thin laminates that cannot be made into self supporting specimens and that consist of a limited number of similar or dissimilar layers shall be permitted to be supported on poultry netting placed on metal rods inserted through the material and positioned so that the bottom of the rod is approximately 6.3 mm (1/4 in.) from the surface to be exposed to the flame. Netting shall be 20-gauge (51-mm) hexagonal galvanized steel poultry netting conforming to ASTM A 390, Standard Specification for Zinc-Coated (Galvanized) Steel Poultry Fence Fabric (Hexagonal and Straight Line). The specimen shall be tested while bonded to a substrate representative of a field installation.

6.8 Loose fill insulation

6.8.1 Loose fill insulation that will not penetrate through a 3/64 in. (1.2 mm) supported on a test frame 20 in. (508 mm) wide 2 in. (51 mm) deep, made from steel angles of 2 in. x 3 in. x 3/16 in. (51 mm x 76 mm x 4.8 mm). Three frames are needed (as shown in Figure 6.8.1). The insulation shall be packed to the density specified by the manufacturer.

Use present Figure B.6. Figure 6.8.1 Steel frame for loose fill materials.

6.8.2 Loose fill insulation that will penetrate through a 3/64 in. (1.2 mm) mesh. Loose fill insulation that will penetrate through a 3/64 in. (1.2 mm) mesh shall be tested in accordance with ULC S1012.2. The insulation shall be packed to the density specified by the manufacturer.

6.9 Pipe and Duct Insulation Materials or Systems

6.9.1 Pipe and duct insulation materials or systems shall be tested in accordance with ASTM E 2231, Standard Practice for Specimen Preparation and Mounting of Pipe and Duct Insulation Materials to Assess Surface Burning Characteristics.

A6.1 Some building materials are not discussed in this chapter. Therefore, none of the mounting methods described in this chapter may be applicable. In such cases, other means of support may need to be devised.

~~B-2 Acoustical and Other Similar Panel Products of Less Than 20 in. (508 mm).~~

~~B-2.1 For acoustical materials and other similar panel products with a maximum dimension of less than 20 in. (508 mm), metal splines or wood furring strips and metal fasteners should be used.~~

~~B-2.2 Steel tee splines for mounting kerfed-acoustical tile should be nominal~~

~~1/2 in. (12.7 mm) web 3/4 in. (19 mm) flange, formed No. 24 MS gauge sheet metal.~~

~~B-2.3 Wood furring frames for mounting acoustical materials and other similar panel products of less than 20 in. (508 mm) should be nominal 1 in. 2 in. (25.4 mm 51 mm) wood furring joined with corrugated metal fasteners. Two frames should be used, as shown in Figure B-2.3.~~

~~Figure B-2.3 Wood frame for acoustical materials and other similar panel products of less than 20 in. (508 mm).~~

~~B-3 Adhesives. To determine the surface burning characteristics of adhesives, they are to be mixed as specified in the manufacturer's instructions and applied to inorganic-reinforced cement board in the thickness or at the coverage rate recommended by the manufacturer. The adhesive application should be cured prior to testing.~~

~~B-4 Batt- or Blanket-Type Insulating Materials. Batt or blanket materials that do not have sufficient rigidity or strength to support themselves should be supported by metal rods inserted through the material and positioned so that the bottom of the rod is approximately 1/4 in. (6.3 mm) from the surface to be exposed to the flame. It is recommended that batt or blanket materials less than 1 in. (25.4 mm) thick not be mounted for testing in this manner.~~

~~B-6 Loose Fill Insulation.~~

~~Loose fill insulation should be placed on galvanized steel screening with openings of approximately 3/64 in. (1.2 mm) supported on a test frame 20 in. (508 mm) wide 2 in. (51 mm) deep, made from steel angles of 2 in. 3 in. 3/16 in. (51 m 76 mm 4.8 mm). Three frames are needed (see Figure B-6). The insulation should be packed to the density specified by the manufacturer.~~

~~Figure B-6 Steel frame for loose fill materials.~~

~~B-8 Thin Membranes. Single-layer membranes of thin laminates consisting of a limited number of similar or dissimilar layers can be supported on poultry netting placed on metal rods as provided in Section B-4. Netting should be 20-gauge (51-mm) hexagonal galvanized steel poultry netting conforming to ASTM A 390, Standard Specification for Zinc-Coated (Galvanized) Steel Poultry Fence Fabric (Hexagonal and Straight Line). The specimen should be tested while bonded to a substrate representative of a field installation.~~

Also, add a reference to a new NIST Standard: Voluntary Product Standard PS 1-95 - Construction and Industrial Plywood, as well as ASTM A 390, ASTM C 1186, ASTM E 136 and ASTM E 2231 to the list of referenced standards in the new Chapter 2.

SUBSTANTIATION: The mounting methods for the Steiner tunnel need to be standardized. If they are not each lab will conduct its own way of running tests, with results that are not comparable to one another. Since the Annexes of NFPA standards are not mandatory this comment creates a new chapter on mounting methods a new chapter, at the end of the standard (following Chapter 1, Administration; Chapter 2 References, Chapter 3, Definitions, Chapter 4, Test Equipment and Specimens and Chapter 5, Conduct of Test). This chapter will include those building materials for which clear mounting methods exist. This is the first of several comments adding each individual material that is suitable for standardization. This comment also addresses and fixes two issues brought up during the voting: (a) the non mandatory aspects of the introduction in 6.1 and (b) a clearer description of the wood to be used.

ASTM E 2231 has already been issued as a standard practice for mounting some types of materials (pipe and duct insulation materials and systems), and a copy of this standard is being attached for information purposes. Pipe and duct insulation materials are building materials and have been tested in this test method for many years.

COMMITTEE MEETING ACTION: Reject

COMMITTEE STATEMENT: See Committee Action and Statement to Comment 255-17 (Log #3) and comment 255-19 (Log #5).

NUMBER ELIGIBLE TO VOTE: 24

BALLOT RESULTS: Affirmative: 22 Negative: 1

BALLOT NOT RETURNED: 1 LAWSON

EXPLANATION OF NEGATIVE:

HIRSCHLER: The results of tests conducted in accordance with the Steiner tunnel test (NFPA 255) are heavily dependent on the mounting methods. Therefore, standardization of mounting methods is essential, and the Annex B information is for information only and nonmandatory. The Committee Statement that it "does not believe that the mounting methods" and the "proposed text, which would become mandatory, might not be appropriate for all types of materials currently tested in accordance with NFPA 255" is incorrect as the various comments both gave the Committee the option of choosing mandatory mounting methods for those materials for which they are appropriate and rejecting mounting methods for any others (see proposed 6.1 and A.6.1). Furthermore, even if the Committee accepted all comments, the mounting methods have already been developed and consensus has been obtained. Finally, the statement that NFPA 274 is an alternate acceptable method for testing pipe insulation materials is interesting but irrelevant, as the testing method used for pipe insulation materials in NFPA 5000-2003, NFPA 90A-2002, NFPA 90A ROC 2005, and so on is the Steiner tunnel test and not NFPA 274. Thus, the rejection of the use of ASTM E 2231 for pipe and duct insulation materials is especially inappropriate, as it has been shown that without that mounting method, pipe and duct insulation materials are being tested inappropriately.

255-24 Log #24 **Final Action: Accept in Part**
(Annex B)

SUBMITTER: Bob Eugene, Underwriters Laboratories Inc.

COMMENT ON PROPOSAL NO: 255-18

RECOMMENDATION: Revise Annex B as follows:

Proposed Revision to NFPA 255 Mounting Methods

B-1.4 Wherever inorganic-reinforced cement board is specified as a backing in subsequent paragraphs, the material should be nominal 1/4 in. (6.3 mm) thick, high density [~~110~~ 90 lb/ft^3 ± ~~5~~ 10 lb/ft^3 (~~1762~~ 1445 kg/m^3 ± ~~80~~ 160 kg/m^3)], and uncoated. Where metal rods are specified as supports, 1.4 in. (6.3 mm) diameter metal rods spanning the width of the tunnel should be used. Rods should be placed approximately 2 in. ± 0.5 in . (51 mm ± 12 mm) from each end of each panel, and additional rods should be placed approximately at 2 ft ± 2 in . (610 mm ± 51 mm) intervals, starting with the first rod at the fire end of each panel. Where poultry netting is specified as support in conjunction with metal rods, the netting should be 20-gauge (51-mm ± 3 mm) hexagonal galvanized steel poultry netting conforming to ASTM A390, Standard Specification for Zinc-Coated (Galvanized) Steel Poultry Fence Fabric (Hexagonal and Straight Line).

B-8 Thin Membranes. Single-layer membranes of thin laminates consisting of a limited number of similar or dissimilar layers can be supported on poultry netting placed on metal rods as provided in paragraph B-1.4 ~~in Section B.4. Netting should be 20 gauge (51 mm) hexagonal galvanized steel poultry netting conforming to ASTM A390, Standard Specification for Zinc Coated (Galvanized) Steel Poultry Fence Fabric (Hexagonal and Straight Line).~~ For specimens intended for field application to substrates, the specimen should be tested while bonded to a substrate representative of a field installation.

B-11 Wires and Cables. Wire and cable specimens should consist of 24 ft ± 6 in. (732 mm ± 152 mm) lengths of cables installed in a single layer supported by galvanized hexagonal wire mesh and metal rods, spaced approximately at 1-ft ± 2 in. (305 mm ± 5 mm) intervals. The number of cable specimens should equal 20 in. (508 mm) divided by the cable diameter, in. (mm) as determined using a diameter tape or equivalent. The result of the division shall be rounded off to the nearest lower whole number of specimens. The specimens shall be laid across the support rods in parallel, adjacent, straight rows as uniformly as possible such that any space between adjacent specimens is kept to a minimum and 1 in. ± 0.25 in. (25 mm ± 6 mm) of the overall specimen width rests on the support ledge on both sides.

SUBSTANTIATION: The density of the inorganic board is changed to be in harmony with the deliberations of the ASTM Tunnel Operators group. The description of the poultry netting is removed from Section B-8 and added to introductory paragraph B-1.4 to avoid duplication in multiple sections.

A new Section B-11 is added for mounting wires and cables based upon research conducted by Fire Protection Research Foundation (Fredric B. Clarke and Richard G. Gewain, **"International Limited Combustible Plenum Cable Fire Test Project"** , The Fire Protection Research Foundation, March 2001). Underwriters Laboratories Inc. has successfully used this method since 2002 to certify wires and cables in accordance with NFPA 255. Currently nine wire and cable manufacturers are certified by UL using this method.

COMMITTEE MEETING ACTION: Accept in Part

1. Accept the submitter's proposed changes to sections B-1.4 and B-8 as indicated.

2. Hold for further study the submitter's proposed new section B-11.

COMMITTEE STATEMENT: 1. Proposed changes to sections B-1.4 and B-8 were accepted.

2. See Committee Action and Statement on Comment 255-8 (Log #29).

NUMBER ELIGIBLE TO VOTE: 24

BALLOT RESULTS: Affirmative: 20 Negative: 1 Abstain: 2

BALLOT NOT RETURNED: 1 LAWSON

EXPLANATION OF NEGATIVE:

BILL: See my Explanation of Negative on 255-6 (Log #22).

EXPLANATION OF ABSTENTION:

HIRSCHLER: See my Explanation of Abstention on 255-1.

KOFFEL: See my reason for abstaining on Comment 255-6 (Log #22).

255-25 Log #11 **Final Action: Hold**
(B.11 (new))

SUBMITTER: Marcelo M. Hirschler, GBH International

COMMENT ON PROPOSAL NO: 255-19

RECOMMENDATION: Reject this proposal.

SUBSTANTIATION: The technical committee on fire tests developed NFPA 262 in order to test wires and cables in the Steiner tunnel. This was developed (in 1985) because (as stated in the Origin and Development Section of NFPA 262): "The test procedure covered by this standard was originally developed by Underwriters Laboratories Inc. and published as UL 910, Standard for Safety Test for Flame-Propagation and Smoke-Density Values for Electrical and Optical-Fiber Cables Used in Spaces Transporting Environmental Air. It is an adaptation of the Steiner tunnel test (NFPA 255, Standard Method of Test of Surface Burning Characteristics of Building Materials; ASTM E 84, Standard Test Method for Surface Burning Characteristics of Building Materials; UL

723, Tests for Surface Burning Characteristics of Building Materials), which was designed to provide information for evaluating the potential for fire spread along cables and wires housed in a plenum or other environmental space." NFPA 262 was most recently revised in 2002. The technical committee on fire tests has never discussed the use of NFPA 255 for testing wires and cables. In fact, both the ASTM E05 and ASTM D09 committees discussed the use of the Steiner tunnel test for wires and cables, always with the understanding that this would address a standard modification of the tunnel test apparatus for testing wires and cables for use in plenums 9 such as NFPA 262) and not an application of ASTM E 84 or of NFPA 255.

COMMITTEE MEETING ACTION: Hold

COMMITTEE STATEMENT: See Committee Action and Statement on Comment 255-8 (Log #29).

NUMBER ELIGIBLE TO VOTE: 24

BALLOT RESULTS: Affirmative: 20 Negative: 1 Abstain: 2

BALLOT NOT RETURNED: 1 LAWSON

EXPLANATION OF NEGATIVE:

BILL: See my Explanation of Negative on 255-6 (Log #22).

EXPLANATION OF ABSTENTION:

HIRSCHLER: See my Explanation of Abstention on 255-1.

KOFFEL: See my reason for abstaining on Comment 255-6 (Log #22).

255-26 Log #12 **Final Action: Accept**
(D.7)

SUBMITTER: Marcelo M. Hirschler, GBH International

COMMENT ON PROPOSAL NO: 255-20

RECOMMENDATION: Continue accepting this proposal in principle in part but use the following language (legislative language is based on NFPA 255-2000). Amendments are proposed only for D7.2, D7.9 and D7.10.

D.7 Uses and Limitations.

D.7.1 No change from existing text in NFPA 255-2000.

D.7.2 Through adaptation (see Annex ~~Appendix~~ B), the test procedure was expanded to include the evaluation of composites and assemblies. Annex B contains mounting method recommendations for a number of categories of materials. Special mounting methods should be used for any materials for which no recommendations are presented; the mounting methods used should represent a reasonable representation of the field use of the material to be tested.

~~Appendix B contains mounting recommendations for a number of individual categories of product classification, including acoustical and similar panel products; composite building units; adhesive; batt and blanket insulation; fire retardant and general-purpose coatings; loose-fill thermal insulation's; treated and untreated plywoods; lumber and wood composition boards; foamed, molded, reinforced, and laminated plastics; and sheet-type wall coverings.~~

D.7.1 through D.7.8 No change from existing text in NFPA 255-2000.

D.7.9 To provide needed technical data, flammability evaluations of cellular plastics for building construction using the Steiner Tunnel began with the testing and classification of a flame-retardant formulation of polystyrene foam board in 1960, with subsequent evaluation of polyurethane-type boards incorporating flame-retardant resin systems (first generation) beginning in 1964, polymerically and chemically modified ~~flame-retardant~~ flame retarded polyurethane-type formulations (second generation) in 1965, polyisocyanurate-type foams initiated in 1968, and, most recently, urea-formaldehyde-type, cavity-fill foams. Spray-applied and poured-in-place cellular foam systems were first subjected to the test in 1968 and 1972, respectively.

D.7.10 From 1960 through 1973, over 2000 tunnel tests have been conducted on ~~flame-retardant~~ flame retarded and general-purpose polystyrene, polyurethane, polyisocyanurate and urea-formaldehyde cellular plastics, in board-stock, spray-applied or poured-in-place forms, yielding ~~flame-spread~~ flame spread index values ranging from less than 5 to over 2000. (Reference 7)

D.7.11 No change from existing text in NFPA 255-2000.

SUBSTANTIATION: There is a disconnect between what the committee approved and what it rejected. If this comment is accepted, Annex D will:

(1) discuss the issue of mounting methods (in D.7.2) in generic terms, and explain that not all materials are described in any detail. This wording is a function of creating a Chapter 6 containing prescriptive information on mounting methods, and retaining Annex B for all of the mounting method guidance information.

(2) introduce correct terminology (in D7.9 and D7.10) of "flame retarded" rather than "flame retardant".

(3) introduce correct terminology in D7.10 when describing what is actually being reported, which is "flame spread index" values and not "flame spread values".

COMMITTEE MEETING ACTION: Accept

NUMBER ELIGIBLE TO VOTE: 24

BALLOT RESULTS: Affirmative: 23

BALLOT NOT RETURNED: 1 LAWSON

255-27 Log #19 **Final Action: Accept in Principle**
(D.7.2, D.7.9 and D.7.10)

SUBMITTER: Marcelo M. Hirschler, GBH International

COMMENT ON PROPOSAL NO: 255-20

RECOMMENDATION: Continue accepting this proposal in principle in part but use the following language (legislative language is based on NFPA 255-2000). Amendments are proposed only for D7.2, D7.9 and D7.10.

D.7 Uses and Limitations.

D.7.1 No change from existing text in NFPA 255-2000.

D.7.2 Through adaptation (see chapter 6 and Annex B ~~Appendix B~~), the test procedure was expanded to include the evaluation of composites and assemblies. Chapter 6 prescribes the mounting methods to be ued for some categories of materials and Annex B contains mounting method recommendations for a number of categories of materials. Special mounting methods should be used for any materials for which no recommendations are presented; the mounting methods used should represent a reasonable representation of the field use of the material to be tested.

~~Appendix B contains mounting recommendations for a number of individual categories of product classification, including acoustical and similar panel products; composite building units; adhesive; batt and blanket insulation; fire retardant and general-purpose coatings; loose-fill thermal insulations; treated and untreated plywoods; lumber and wood composition boards; foamed, molded, reinforced, and laminated plastics; and sheet-type wall coverings.~~

D.7.1 through D.7.8 No change from existing text in NFPA 255-2000.

D.7.9 To provide needed technical data, flammability evaluations of cellular plastics for building construction using the Steiner Tunnel began with the testing and classification of a flame-retardant formulation of polystyrene foam board in 1960, with subsequent evaluation of polyurethane-type boards incorporating flame-retardant resin systems (first generation) beginning in 1964, polymerically and chemically modified ~~flame-retardant~~ flame retarded polyurethane-type formulations (second generation) in 1965, polyisocyanurate-type foams initiated in 1968, and, most recently, urea-formaldehyde-type, cavity-fill foams. Spray-applied and poured-in-place cellular foam systems were first subjected to the test in 1968 and 1972, respectively.

D.7.10 From 1960 through 1973, over 2000 tunnel tests have been conducted on f ~~lame-retardant~~ flame retarded and general-purpose polystyrene, polyurethane, polyisocyanurate and urea-formaldehyde cellular plastics, in board-stock, spray-applied or poured-in-place forms, yielding ~~flame-spread~~ flame spread index values ranging from less than 5 to over 2000. (Reference 7)

D.7.11 No change from existing text in NFPA 255-2000.

SUBSTANTIATION: There is a disconnect between what the committee approved and what it rejected. If this comment is accepted, Annex D will:

(1) discuss the issue of mounting methods (in D.7.2) in generic terms, and explain that not all materials are described in any detail. This wording is a function of creating a Chapter 6 containing at least some prescriptive information on mounting methods, and retaining Annex B for additional information.

(2) introduce correct terminology (in D7.9 and D7.10) of "flame retarded" rather than "flame retardant".

(3) introduce correct terminology in D7.10 when describing what is actually being reported, which is "flame spread index" values and not "flame spread values".

COMMITTEE MEETING ACTION: Accept in Principle

See Committee Action and Statement on Comment 255-26 (Log #12).

COMMITTEE STATEMENT: The proposed changes with respect to chapter 6 were not accepted as mounting methods were not moved from Appendix B to chapter 6. See Committee Action and Statement to Comment 255-17 (Log #3) and Comment 255-19 (Log #5).

NUMBER ELIGIBLE TO VOTE: 24

BALLOT RESULTS: Affirmative: 22 Negative: 1

BALLOT NOT RETURNED: 1 LAWSON

EXPLANATION OF NEGATIVE:

HIRSCHLER: See my Explanation of Negative on 255-23. A mandatory chapter on mounting methods is necessary for NFPA 255.

255-28 Log #20 **Final Action: Accept in Principle**
(D.8)

SUBMITTER: Marcelo M. Hirschler, GBH International

COMMENT ON PROPOSAL NO: 255-21

RECOMMENDATION: Continue accepting this proposal in part in principle but modify the language as follows:

D.8 Correlation with Other Fire Conditions.

Several studies have examined the relationship of the flame spread index test results on materials to the performance of the same materials in large-scale fire growth experiments and in other laboratory test methods. Some comparisons with large-scale experiments are provided in the notes to this appendix. Comparisons also have been made between the NFPA 255/ASTM E 84/UL 723 test and other tests, including ASTM E 162, Standard Test Method for Surface Flammability of Materials Using a Radiant Heat Energy Source and some

discontinued tests. Results from this test method, particularly for very thin materials, do not always correlate with those of large-scale fire growth experiments, such as the room corner tests in NFPA 265, Standard Methods of Fire Tests for Evaluating Room Fire Growth Contribution of Textile Coverings on Full Height Panels and Walls, or NFPA 286, Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth [*Reference 8*]. However, it has been shown that the test is a suitable indicator of low tendencies in flame spread and smoke development for materials that are self-supporting or that can be adequately represented by test samples and that are not thermally thin *[Reference 9]* . The Life Safety Code, NFPA 101, explains also that the test results from this test method are, for many materials, suitable for classification purposes but should not be used as input into fire models, because they are not generated in units suitable for engineering calculations.

Add references 8 and 9:

8. Belles, D. W., Fisher, F.L. and Williamson, R. B., "How well does the ASTM E84 predict fire performance of textile wallcoverings?" Fire J., 82(1), pp. 24-30, 74 (1998)).

9. White, R.H., Dietenberger, M.A., Tran, H., Grexa, O., Richardson, L., Sumathipala, K. and Janssens, M.L., "Comparison of test protocols for the standard room/corner test", Fire and Materials vol. 23, pp. 139-146 (1999).

SUBSTANTIATION: The additional information is useful as an update on what the informational annex can present to the reader. All of the statements added contain an authoritative reference.

COMMITTEE MEETING ACTION: Accept in Principle

Accept the submitter's proposed changes with the following revisions:

D.8 Correlation with Other Fire Conditions.

Several studies have examined the relationship of the flame spread index test results on materials to the performance of the same materials in large-scale fire growth experiments and in other laboratory test methods. Some comparisons with large-scale experiments are provided in the notes to this appendix. Comparisons also have been made between the NFPA 255/ASTM E 84/UL 723 test and other tests, including ASTM E 162, Standard Test Method for Surface Flammability of Materials Using a Radiant Heat Energy Source and some discontinued tests. Results from this test method, particularly for very thin materials, do not always correlate with those of large-scale fire growth experiments, such as the room corner tests in NFPA 265, Standard Methods of Fire Tests for Evaluating Room Fire Growth Contribution of Textile Coverings on Full Height Panels and Walls, or NFPA 286, Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth [Reference 8]. However, it has been shown that ~~the test~~ NFPA 255 is a suitable indicator of low tendencies in flame spread and smoke development for materials that are self-supporting or that can be adequately represented by test samples and that are ~~not~~ thermally ~~thin~~ thick [Reference 9].

D.9 Engineering Calculations. The Life Safety Code, NFPA 101, explains also that the test results from this test method are, for many materials, suitable for classification purposes but should not be used as input into fire models, because they are not generated in units suitable for engineering calculations.

Add references 8 and 9:

8. Belles, D. W., Fisher, F.L. and Williamson, R. B., "How well does the ASTM E84 predict fire performance of textile wallcoverings?" Fire J., 82(1), pp. 24-30, 74 (1998)).

9. White, R.H., Dietenberger, M.A., Tran, H., Grexa, O., Richardson, L., Sumathipala, K. and Janssens, M.L., "Comparison of test protocols for the standard room/corner test", Fire and Materials vol. 23, pp. 139-146 (1999).

COMMITTEE STATEMENT: Editorial corrections.

NUMBER ELIGIBLE TO VOTE: 24

BALLOT RESULTS: Affirmative: 23

BALLOT NOT RETURNED: 1 LAWSON