

INTERNATIONAL WILDLAND-URBAN INTERFACE CODE

WUIC1-09/10

403.4.1

Proposed Change as Submitted

Proponent: Lawrence Brown, CBO, National Association of Home Builders

Revise as follows:

403.4.1 Sign construction. All road identification signs and supports shall be of noncombustible materials. Signs shall be 6 inch (152 mm) minimum in height. ~~have minimum 4-inch-high (102 mm) reflective~~ Letters shall be 4 inch (102 mm) minimum in height with a 1/2 inch (13 mm) minimum stroke. ~~Letters shall be of the reflecting type and be on a contrasting background color. 6-inch-high (152 mm) sign.~~ Road identification signage shall be mounted at a height of 7 feet (2134 mm) in height measured from the road surface to the bottom of the sign.

Reason: This is an editorial change related to format of text, and to provide clarity as to the intent of the provision. The term "background color" adds clarity as to *contrasting* with the reflective letters. The term "minimum" is added to height for mounting the sign. Without the term "minimum" the height is absolute at 7 feet (cannot be more or less).

Cost Impact: The code change proposal will not increase the cost of construction

ICCFILENAME: BROWN-WUIC1-403.4.1.DOC

Public Hearing Results

Committee Action:

Disapproved

Committee Reason: The committee did not feel that the proposal accomplished its stated objectives, especially with respect to sign mounting height.

Assembly Action:

None

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Lawrence Brown, CBO, representing National Association of Home Builders (NAHB), requests Approval as Modified by this Public Comment.

Modify the proposal as follows:

403.4.1 Sign construction. All road identification signs and supports shall be of noncombustible materials. Sign faces shall be 6 inch (152 mm) minimum in height. Letters on the signs shall be 4 inch (102 mm) minimum in height with a 1/2 inch (13 mm) minimum stroke. Letters shall be of the reflecting type and be on a contrasting background color. Road identification signage shall be mounted 7 feet (2134 mm) minimum in height measured vertically from the bottom of the sign to the elevation of the near edge of the road surface ~~to the bottom of the sign.~~

Commenter's Reason: The original proposal was mostly an editorial/correlation change dealing with the use of the terms "height", "width", and "depth" throughout all I-Codes. The terms "high", "long" and "deep" are not terms used to describe dimensions and measurements. This correlation is in the process of being made in all I-Codes. The other proposed modifications to the text were to provide clarity as to the intent of the provision. In addition to having over 20 years experience in code enforcement, I also have a background of over 35 years of experience in the sign business. The original proposal added the term "background color" to add clarity as to the need for the sign face background color to be *contrasting* with the reflective letters. The term "minimum" is added to height for the letters mounting the sign. Without the term "minimum" the height is absolute at 7 feet (cannot be more or less). Adding the term "minimum" also correlates this provision with the federal **Manual on Uniform Traffic Control Devices:** MUTCD-2003 (The Federal Highway Administration, Office of Transportation Operations, Room 3408, 400 7th Street, S.W., Washington, DC 20590). This is shown below from a part of the MUTCD requirements:

Section 2A.18 Mounting Height

2010 ICC FINAL ACTION AGENDA

813

The *minimum* height, measured vertically from the bottom of the sign to the top of the curb, or in the absence of curb, measured vertically from the bottom of the sign to the elevation of the near edge of the traveled way, of signs installed at the side of the road in business, commercial, or residential areas where parking or pedestrian movements are likely to occur, or where the view of the sign might be obstructed, shall be 7 feet (see Figure 2A-2).

Final Action: AS AM AMPC___ D

WUIC3-09/10

503.2, Chapter 7

Proposed Change as Submitted

Proponent: John Scott, Roxul, Inc.

1. Revise as follows:

503.2 Ignition-resistant building material. Ignition-resistant building materials shall comply with any one of the following:

1. Extended ASTM E 84 testing. Materials that, when tested in accordance with the test procedures set forth in ASTM E 84 or UL 723, for a test period of 30 minutes, comply with the following:
 - 1.1. Flame spread. Material shall exhibit a flame spread index not exceeding 25 and shall show no evidence of progressive combustion following the extended 30 minute test.
 - 1.2. Flame front. Material shall exhibit a flame front that does not progress more than 10½ feet (3200 mm) beyond the centerline of the burner at any time during the extended 30 minute test.
 - 1.3. Weathering. Ignition-resistant building materials shall maintain their performance in accordance with this section under conditions of use. Materials shall meet the performance requirements for weathering (including exposure to temperature, moisture and ultraviolet radiation) contained in the following standards, as applicable to the materials and the conditions of use:
 - 1.3.1. Method A "Test Method for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing" in ASTM D 2898, for fire-retardant-treated wood, wood-plastic composite and plastic lumber materials.
 - 1.3.2. ASTM D7032 for wood-plastic composite materials.
 - 1.3.3. ASTM D 6662 for plastic lumber materials.
 - 1.4. Identification. All materials shall bear identification showing the fire test results.
2. Noncombustible material. Material that complies with the requirements for *noncombustible* materials in Section 202.
3. Fire-retardant-treated wood. Fire-retardant-treated wood identified for exterior use and meeting the requirements of Section 2303.2 of the *International Building Code*.
4. Fire-retardant-treated wood roof coverings. Roof assemblies containing fire-retardant-treated wood shingles and shakes which comply with the requirements of Section 1505.6 of the *International Building Code* and classified as Class A roof assemblies as required in Section 1505.2 of the *International Building Code*.
5. Roof Insulation. Roof insulations that comply with the requirements for Class NC (noncombustible core) in accordance with the requirements of FM 4470.

2. Add new standard to Chapter 7 as follows:

FM Factory Mutual Global Research
Standards Laboratories Department
1301 Atwood Avenue, P.O. Box 7500
Johnston, RI 02919

4470 (2009) Approval Standard for Class 1 Roof Covers .

Reason: To introduce a new type of Ignition-resistant building material into the IWUIC, based upon testing and conformance with the newest edition (2009) of FM 4470 Approval Standard for Single-Ply, Polymer-Modified Bitumen Sheet, Built-Up Roof (BUR) and Liquid Applied Roof Assemblies.

The 2009 edition of FM Approval Standard 4470 has introduced a new category of roofing insulation defined as Class "NC" non-combustible core.

In order for a roof insulation material to be classified as "NC", the roof insulation must meet the following stringent criterion:

1. ASTM D482, Standard Test Method for Ash from Petroleum Products

2. ASTM E2058, Standard Test Methods for Measurement of Synthetic Polymer Material Flammability Using a Fire Propagation Apparatus (FPA)
3. ISO 1716:2002 Reaction to Fire Tests for Building Products - Determination of the Heat of Combustion

The first test acceptance criteria used by FM for these materials is very stringent, and includes a minimum total solids content of 90% per ASTM D 482.

In addition, during the ASTM E2058 test, no visible flaming of the insulation is permitted for the full 15 minute duration, and the test is extended beyond 15 minutes in duration if there is any evidence of the sample still exhibiting mass loss and/or visible vapors being emitted. The test is continued until the mass loss and/or visible vapors have also ceased.

The third test method is ISO Standard 1716 which is used for determination of the Heat of Combustion of building materials. The insulation core must have a maximum heat of combustion of 2.0 kJ/g (860 BTU/lb).

Cost Impact: The code change proposal will not increase the cost of construction.

Analysis: FM 4470 (1992) is currently referenced in the IBC.

ICCFILENAME: SCOTT-WUIC1-503.2.DOC

Public Hearing Results

Note: The following analysis was not in the Code Change monograph but was published on the ICC website at <http://www.iccsafe.org/cs/codes/Documents/2009-10cycle/ProposedChanges/Standards-Analysis.pdf> :

Analysis: Review of the proposed new standard FM 4470 (1986) indicated that it is currently referenced in the IBC.

Committee Action:

Disapproved

Committee Reason: The committee did not feel that there is sufficient loss history to justify the proposal and felt that it would be inappropriate to approve a change that would eliminate a wide variety of products that are currently acceptable.

Assembly Action:

None

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

John Scott, representing Roxul Inc, requests Approval as Modified by this Public Comment.

Modify the proposal as follows:

503.2 Ignition-resistant building material. Ignition-resistant building materials shall comply with any one of the following:

1 through 4 (*No change to text*)

5. Noncombustible Roof Insulation. Noncombustible roof insulations shall ~~that~~ comply with the requirements for Class NC (noncombustible core) in accordance with the requirements of FM 4470.

(Portions of proposal not shown, remain unchanged)

Commenter's Reason: This revised proposal introduces a new type of Ignition-resistant building material into the IWUIC, based upon testing and conformance with the newest edition (2009) of FM 4470 Approval Standard for Single-Ply, Polymer-Modified Bitumen Sheet,Built-Up Roof (BUR) and Liquid Applied Roof Assemblies. It does not preclude the use of other roof insulation materials.

The report on the Baltimore hearings indicated that the committee did not feel that there is sufficient loss history to justify the proposal and felt that it would be inappropriate to approve a change that would eliminate a wide variety of products that are currently in use. We believe that this proposal does not does not preclude the use of other roof insulation materials. It merely recognizes that in order for a roof insulation to be considered non-combustible, it needs to comply with the new FM 4470 standard.

There is a long history of losses connected with fires in roofing materials and roof coverings. According to NFPA statistics, an average of 4,200 fires starting with exterior roof coverings, surfaces or finishes made of sawn wood occurred per year during the five year period from 1994 through 1998. These fires caused an average of five civilian deaths, 23 civilian injuries and an estimated \$7.0 million in direct property damage per year. During this time period, these fires accounted for 0.7% of the 567,100 total reported structure fires, 0.1% of the 3,744 civilian structure fire deaths, 0.1% of the 21,293 civilian structure fire injuries, and 1.1% of the \$7.2 billion in direct property damage. These totals exclude from the analysis fires where the roof covering was recorded as composed of hardboard, plywood, fiberboard or wood pulp, as these products are considered more likely to refer to decking or framing, rather than to shingles and covering. Also excluded are fires where the roof covering was recorded as growing wood, felled but unsawn wood, wood shavings, or unclassified or unknown-type wood. More importantly, this analysis excludes fires that begin with some other fuel but grow and spread primarily through secondary involvement of wooden roof coverings. Such fires cannot be identified in existing national databases.¹

The IWUIC is designed to go beyond the local Building and Fire Codes to provide minimum regulations intended to mitigate the risk to life and structures from intrusion of fire from wildland fire exposures and fire exposures from adjacent structures, and mitigate structure fires from spreading

to wildlands. The extent of this regulation is intended to be tiered commensurate with the relative level of hazard present, which differs from the convention Urban or Rural building environments.

During a wildland/urban interface fire, the roof is the most vulnerable part of a building. One of the biggest dangers lies in the sparks or firebrands such a fire produces, which often blow onto the roof and set it ablaze before the fire itself even approaches the building. Over the years, roof coverings such as wood shingle and wood shake have contributed to some major fire losses. In 1991, for example, a conflagration near Oakland and Berkeley, California, resulted in a major wildland/urban interface fire that killed 25 people, injured 150, and destroyed nearly 2,450 single family dwellings and 437 apartment and condominium units. The fire burned more than 1,600 acres and did an estimated \$1.5 billion in damage.²

Still another more recent incident occurred on the afternoon of November 1, 2006, at Eastern Guilford High School in Gibsonville, North Carolina. Students had to be evacuated as a fire spread through the building's roof, causing ceilings to collapse into the rooms below. Thick smoke churned ominously into the sky as the fire grew. The fire department in the neighboring community of Whitsett was located just five miles (eight kilometers) away and arrived in minutes, but the speed of the fire and the manner in which it spread made saving the school impossible. All students and staff safely escaped and much of the school's contents were salvageable, but the school, which Alan Purdue, Guilford County Emergency Services chief, says was valued at \$41 million, was a total loss. Guilford County Schools administrators say they recovered \$17 million in insurance payments³

In part, the Objective of the IWUIC is Section 101.3 states: "This code shall supplement the jurisdiction's building and fire codes, if such codes have been adopted, to provide for special regulations to mitigate the fire- and life-safety hazards of the wildland-urban interface areas."

The current requirements for roof insulation in the IWUIC are based on typical IBC and IFC requirements. While the IWUIC has very stringent expectations for Class 1 Ignition Resistant Construction, the definitions in Section 202 of "Noncombustible Roof Coverings" really only applies to the weathering membrane on the exterior surface of the roof (i.e. such as shingles, sheets, and tiles), rather than the potentially high fuel loads coming from the combustible insulation materials beneath them. Consequently, there is a need to further strengthen the requirements for roof insulations in the IWUIC to recognize the fire- and life-safety hazards of the wildland-urban interface areas.

¹ Marty Ahrens, NFPA Report, Wood Shingle or Wood Shake Roof Fires, Statistical Analysis, July 2001

² Jenna Padula, NFPA Journal®. Copyright National Fire Protection Association Mar/Apr 1999.

³ Lisa Nadile, NFPA Journal®, Copyright National Fire Protection Association September/October 2009

Final Action: AS AM AMPC_____ D

WUIC5-09/10

504.2.1 (New), Chapter 7

Proposed Change as Submitted

Proponent: John Scott, Roxul, Inc.

1. Revise as follows:

504.2.1 Roof insulation. Roof insulations that comply with the requirements for Class NC (noncombustible core) in accordance with the requirements of FM 4470.

(Renumber subsequent section)

2. Add new standard to Chapter 7 as follows:

FM Factory Mutual Global Research
Standards Laboratories Department
1301 Atwood Avenue, P.O. Box 7500
Johnston, RI 02919

4470 (2009) Approval Standard for Class 1 Roof Covers .

Reason: To introduce a new Class of Ignition-resistant building material into the IWUIC, based upon testing and conformance with the newest edition (2009) of FM 4470 Approval Standard for Single-Ply, Polymer-Modified Bitumen Sheet, Built-Up Roof (BUR) and Liquid Applied Roof Assemblies.

The IWUIC has very stringent expectations for Class 1 Ignition Resistant Construction. While the definitions in Section 202 addresses "Noncombustible Roof Coverings", this really only applies to the weathering membrane on the exterior surface of the roof (i.e. such as shingles, sheets, and tiles), rather than the potentially high fuel loads coming from some combustible insulation materials beneath them. Consequently, there is a need to further restrict the use of combustible roof insulations where required.

The 2009 edition of FM Approval Standard 4470 has introduced a new category of roofing insulation defined as Class "NC" non-combustible core.

In order for a roof insulation material to be classified as "NC", the roof insulation must meet the following stringent criterion:

1. ASTM D482, Standard Test Method for Ash from Petroleum Products
2. ASTM E2058, Standard Test Methods for Measurement of Synthetic Polymer Material Flammability Using a Fire Propagation Apparatus (FPA)
3. ISO 1716:2002 Reaction to Fire Tests for Building Products - Determination of the Heat of Combustion

The first test acceptance criteria used by FM for these materials is very stringent, and includes a minimum total solids content of 90% per ASTM D 482.

In addition, during the ASTM E2058 test, no visible flaming of the insulation is permitted for the full 15 minute duration, and the test is extended beyond 15 minutes in duration if there is any evidence of the sample still exhibiting mass loss and/or visible vapors being emitted. The test is continued until the mass loss and/or visible vapors have also ceased.

The third test method is ISO Standard 1716 which is used for determination of the Heat of Combustion of building materials. The insulation core must have a maximum heat of combustion of 2.0 kJ/g (860 BTU/lb).

Cost Impact: The code change proposal will not increase the cost of construction.

Analysis: FM 4470 (1992) is currently referenced in the IBC.

ICCFILENAME: SCOTT-WUIC2-504.2.1.DOC

Public Hearing Results

Note: This code change was contained in the errata posted on the ICC website on October 19, 2009. Please go to <http://www.iccsafe.org/cs/codes/Pages/09-10ProposedChanges.aspx>.

Note: The following analysis was not in the Code Change monograph but was published on the ICC website at <http://www.iccsafe.org/cs/codes/Documents/2009-10cycle/ProposedChanges/Standards-Analysis.pdf> :

Analysis: Review of the proposed new standard FM 4470 (1986) indicated that it is currently referenced in the IBC.

Committee Action:

Disapproved

Committee Reason: The proposal is inconsistent with Section 504.2 which regulates roof assemblies, not the individual components of an assembly. The proposal could also exclude the use of other materials that are currently acceptable. Disapproval is also consistent with the action taken on code change WUIC3-09/10.

Assembly Action:

None

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

John Scott, representing Roxul Inc, requests Approval as Modified by this Public Comment.

Modify the proposal as follows:

504.3 504.2.4 Roof insulation. Roof insulations for Class 1 ignition-resistant construction shall ~~that~~ comply with the requirements for Class NC (noncombustible core) insulation in accordance with ~~the requirements of~~ FM 4470.

(Renumber subsequent sections)

(Portions of the proposal not shown remain unchanged.)

Commenter's Reason: In order to address the Committees concerns, the proposal has been revised to make it consistent with Section 504 of the IWUIC by adding a new article within 504. This revised proposal introduces a new type of Ignition-resistant building material into the IWUIC, based upon testing and conformance with the newest edition (2009) of FM 4470 Approval Standard for Single-Ply, Polymer-Modified Bitumen Sheet, Built-Up Roof (BUR) and Liquid Applied Roof Assemblies.

The IWUIC is designed to go beyond the local Building and Fire Codes to provide minimum regulations intended to mitigate the risk to life and structures from intrusion of fire from wildland fire exposures and fire exposures from adjacent structures, and mitigate structure fires from spreading to wildlands. The extent of this regulation is intended to be tiered commensurate with the relative level of hazard present, which differs from the convention Urban or Rural building environments.

In part, the Objective of the IWUIC is Section 101.3 states: "This code shall supplement the jurisdiction's building and fire codes, if such codes have been adopted, to provide for special regulations to mitigate the fire- and life-safety hazards of the wildland-urban interface areas."

The current requirements for roof insulation do not in the IWUIC are based on typical IBC and IFC requirements. While the IWUIC has very stringent expectations for Class 1 Ignition Resistant Construction, the definitions in Section 202 of "Noncombustible Roof Coverings" really only applies to the weathering membrane on the exterior surface of the roof (i.e. such as shingles, sheets, and tiles), rather than the potentially high fuel loads coming from the combustible insulation materials beneath them. Consequently, there is a need to further strengthen the requirements for roof insulations in the IWUIC to recognize the fire- and life-safety hazards of the wildland-urban interface areas."

Unfortunately, there is an abundance of loss history to justify the need to enhance the current IWUIC requirements for fire connected with roofing materials and roof coverings. According to NFPA statistics, an average of 4,200 fires starting with exterior roof coverings, surfaces or finishes made of sawn wood occurred per year during the five year period from 1994 through 1998. These fires caused an average of five civilian deaths, 23 civilian injuries and an estimated \$7.0 million in direct property damage per year. During this time period, these fires accounted for 0.7% of the 567,100 total reported structure fires, 0.1% of the 3,744 civilian structure fire deaths, 0.1% of the 21,293 civilian structure fire injuries, and 1.1% of the \$7.2 billion in direct property damage. These totals exclude from the analysis fires where the roof covering was recorded as composed of hardboard, plywood, fiberboard or wood pulp, as these products are considered more likely to refer to decking or framing, rather than to shingles and covering. Also excluded are fires where the roof covering was recorded as growing wood, felled but unsawn wood, wood shavings, or

unclassified or unknown-type wood. More importantly, this analysis excludes fires that begin with some other fuel but grow and spread primarily through secondary involvement of wooden roof coverings. Such fires cannot be identified in existing national databases.¹

¹ Marty Ahrens, NFPA Report, Wood Shingle or Wood Shake Roof Fires, Statistical Analysis, July 2001

Final Action: AS AM AMPC_____ D
