

---

---

# INTERNATIONAL WILDLAND-URBAN INTERFACE CODE

---

---

## WUIC10-07/08

503.1, 503.2, 503.2.1 through 503.3.3, 503.3 through 503.3.2 (New), 504.12 (New), 505.12 (New), 506.1

*Proposed Change as Submitted:*

**Proponent:** Marcelo M. Hirschler, GBH International, representing American Fire Safety Council

1. Revise as follows:

### SECTION 503 IGNITION RESISTANT CONSTRUCTION AND MATERIAL

**503.1 (Supp) General.** Buildings and structures hereafter constructed, modified or relocated into or within wildland-urban interface areas shall meet the construction requirements in accordance with Table 503.1. Class 1, Class 2 or Class 3, ignition resistant construction shall be in accordance with Sections 504, 505 and 506, respectively. ~~Materials prescribed herein as ignition-resistant building material shall be determined in accordance with~~ required to be ignition-resistant materials shall comply with the requirements of Section 503.2.

#### TABLE 503.1 IGNITION-RESISTANT CONSTRUCTION<sup>a</sup>

(No change to table text or footnotes)

**503.2 (Supp) Ignition-resistant building materials.** ~~Ignition-resistant building material shall be determined in accordance with the test procedures set forth in ASTM E 84 or as listed in Section 503.3~~ one of the following types of materials:

1. Noncombustible materials;
2. Fire-retardant-treated wood materials, identified for exterior use and meeting the requirements of Section 503.3 and Section 2303.2 of the *International Building Code*;
3. Ignition-resistant building materials used in roofing containing fire-retardant treated wood shingles and shakes if the shingles and shakes comply with Section 1505.6 of the *International Building Code* and the assembly has been classified as a Class A roof assembly in accordance with Section 1505.2 (Supp) of the *International Building Code*.

2. Delete without substitution:

~~**503.2.1 (Supp) Flame spread.** Flame spread index shall not exceed 25 and show no evidence of progressive combustion after 30 minutes.~~

~~**503.2.2 (Supp) Flame front.** Flame front shall not progress more than 10 1/2 feet (3200 mm) beyond the centerline of the burner at any time during the test.~~

~~**503.2.3 (Supp) Weathering.** Ignition-resistant building materials shall maintain their performance in accordance with this section under conditions of use. Materials consisting of wood shall pass the accelerated weathering test and be identified as Exterior type, in accordance with ASTM D 2898 and ASTM D 3201. All materials shall bear identification showing the fire performance rating thereof.~~

~~**503.3 (Supp) Alternative methods for determining ignition-resistant material.** Any one of the following shall be considered an ignition-resistant material:~~

~~**503.3.1 (Supp) Noncombustible material.** Material that is in accordance with Section 202.~~

~~**503.3.2 (Supp) Fire retardant treated wood roof coverings.** Fire retardant treated wood shingles and shakes as prescribed in Section 1505.6 and tested in accordance with Class A roof assemblies as required in Section 1505 of the *International Building Code*.~~

~~**503.3.3 (Supp) 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*.~~

### 3. Add new text as follows:

**503.3 Fire testing and weathering requirements.** The ignition-resistant building material shall comply with the requirements of 503.3.1 and 503.3.2.

**503.3.1 Fire testing.** The ignition-resistant building material shall be tested in accordance with ASTM E 84 or UL 723 for an extended period of 30 minutes and shall comply with the following:

1. The flame spread index shall not exceed 25.
2. There shall be no evidence of progressive combustion after 30 minutes.
3. The flame front shall not progress more than 10 1/2 feet (3200 mm) beyond the centerline of the burner at any time during the test.

**503.3.2 Weathering.** The ignition-resistant building material shall maintain its fire performance in accordance with Section 503.3.1 after an accelerated weathering test in accordance with ASTM D 2898 and shall have a moisture content of not over 28 percent when tested in accordance with ASTM D 3201 procedures at 92-percent relative humidity.

**504.1 General.** Class 1 ignition-resistant construction shall be in accordance with Sections 504.2 through ~~504.11~~ 504.12.

**504.12 Decks and roof coverings.** Decks and roof coverings shall be permitted to be constructed of ignition-resistant building materials in accordance with Section 503.2.

**505.1 General.** Class 2 ignition-resistant construction shall be in accordance with Sections 505.2 through ~~505.11~~ 505.12.

**505.12 Decks and roof coverings.** Decks and roof coverings shall be permitted to be constructed of ignition-resistant building materials in accordance with Section 503.2.

### 4. Revise as follows:

**506.1 General.** Class 3 ignition-resistant construction shall be in accordance with Sections 506.2 through 506.4 or shall be constructed using ignition-resistant building materials in accordance with Section 503.2.

**Reason:** As contained in the 2007 IWUIC code supplement the only material that is able to be used as ignition-resistant material is fire-retardant-treated wood. Moreover, the tie-in between the definition of ignition-resistant building material, shown below, and the requirements for ignition resistant materials is confusing. Finally, there is nowhere in sections 504, 505 or 506 that permits or requires the use of ignition-resistant building materials. Therefore, section 503.2 cannot be used.

The proposal makes the following basic changes:

- It recommends four types of ignition-resistant building materials: noncombustible materials, fire-retardant-treated wood, other decking materials and fire-retarded roofing materials.
- There is no need to explain further what noncombustible materials are, as they are required often in the code.
- The requirements for fire-retardant-treated wood contained in the 2007 IWUIC code supplement include the requirements for both exterior and interior fire-retardant treated wood (sections 2303.2.3 and 2303.2.4 of the IBC) and that has been retained.
- The requirements for fire retarded roofing materials have been made clearer as section 1505 is very general and the apparent intent of the code is to refer to Class A roof assemblies. Therefore the section has been amended to refer to section 1505.2, which addresses Class A roof assemblies.
- In contrast to the alternate proposal, this proposal does not propose the addition of other decking materials, namely wood-plastic composites and composite lumber decking materials.
- A tie in has been developed between the requirements for ignition-resistant building materials, in section 503.2 and the requirements for ignition-resistant construction, in sections 504, 505 and 506.
- The requirements for Class 1 and Class 2 Ignition-Resistant Construction are only for decks and roofs, as they are the ones for which specific requirements exist in section 503.2.

*Definition of Ignition-resistant building material in the IWUIC, 2007 supplement:*

*IGNITION-RESISTANT BUILDING MATERIAL. A type of building material that resists ignition or sustained flaming combustion sufficiently so as to reduce losses from wildland-urban interface conflagrations under worst-case weather and fuel conditions with wildfire exposure of burning embers and small flames, as prescribed in Section 503.*

An alternate proposal is being made, with the added use of plastic-composite deck materials for decks, so the code development committee has a larger set of options. The present proposal contains fewer changes.

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

**Analysis:** Review of proposed new standards ASTM D6662-06 and ASTM D7032-07 indicated that, in the opinion of ICC Staff, the standards did comply with ICC standards criteria.

**Committee Action:**

**Disapproved**

**Committee Reason:** The committee generally agreed that the idea of the proposal and the expanded materials list in Section 503.2 has merit but felt that other portions of the proposal need more work. Points of concern included: the possibility that referencing both fire and weathering tests for FRTW could result in additional testing that may not be needed; it was unclear as to why the deck and roof provisions in proposed Sections 504.12 and 505.12 are not better correlated with Sections 504.7 and 504.2, respectively; it was felt that in order to use FRTW properly, a minimum thickness should be specified in Section 503.2, #2; the provisions need better correlation with the definition of noncombustible material; in Section 503.3.2, reference to ASTM D3201 is inappropriate since it applies only to interior materials.

**Assembly Action:**

**None**

### *Individual Consideration Agenda*

**This item is on the agenda for individual consideration because public comments were submitted.**

*Public Comment 1:*

**Marcelo M. Hirschler, GBH International, representing American Fire Safety Council, requests Approval as Modified by this public comment.**

Replace proposal as follows:

#### **SECTION 503 IGNITION RESISTANT CONSTRUCTION AND MATERIAL**

**503.1 (Supp) General.** Buildings and structures hereafter constructed, modified or relocated into or within wildland-urban interface areas shall meet the construction requirements in accordance with Table 503.1. Class 1, Class 2 or Class 3, ignition resistant construction shall be in accordance with Sections 504, 505 and 506, respectively. Materials required to be ignition-resistant materials shall comply with the requirements of prescribed herein as Ignition-resistant building material shall be determined in accordance with Section 503.2.

#### **TABLE 503.1 IGNITION RESISTANT CONSTRUCTION**

(No change proposed for Table 503.1 or footnotes)

**503.2 (Supp) Ignition-resistant building material.** Ignition-resistant building materials shall comply with any one of the requirements in 503.2.1 through 503.2.4 ~~material shall be determined in accordance with the test procedures set forth in ASTM E 84 or as listed in Section 503.3.~~

**503.2.1 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:

- |                       |           |  |
|-----------------------|-----------|--|
| <b>503.2.1 (Supp)</b> | <b>1.</b> | <b>Flame spread.</b> <del>Flame</del> <u>Material shall exhibit a flame spread index shall not exceed not exceeding</u> 25 and shall show no evidence of progressive combustion <del>after following the extended 30 minute test.</del>  |
| <b>503.2.2 (Supp)</b> | <b>2.</b> | <b>Flame front.</b> <u>Material shall exhibit a flame</u> <del>Flame front that does shall</del> not progress more than 10 1/2 feet (3200 mm) beyond the centerline of the burner at any time during the <u>extended 30 minute test.</u>   |
| <b>503.2.3 (Supp)</b> | <b>3.</b> | <b>Weathering.</b> Ignition-resistant building materials shall maintain their performance in accordance with this section under conditions of use. Materials consisting of wood shall pass the accelerated weathering test and be identified as Exterior type, in accordance with ASTM D 2898 and ASTM D 3201. |
|                       | <b>4.</b> | <b>Identification.</b> <u>All materials shall bear identification showing the fire performance rating thereof test results.</u>  |

**503.3 (Supp) Alternative methods for determining Ignition-resistant material.** ~~Any one of the following shall be considered an ignition-resistant material.~~

**503.3.1 (Supp) 503.2.2 Noncombustible material.** ~~Material that is in accordance with~~ complies with the requirements for noncombustible materials in Section 202.

**503.3.2 (Supp) Fire-retardant-treated wood roof coverings.** ~~Fire-retardant-treated wood shingles and shakes as prescribed in Section 1505.6 and tested in accordance with Class A roof assemblies as required in Section 1505 of the International Building Code.~~

**503.3.3 (Supp) 503.2.3 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.~~

**503.2.4 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.

**Commenter's Reason:** As explained in the proposal, the 2006 IWUIC code, with the 2007 IWUIC code supplement, lacks a proper tie-in between the definition of an ignition-resistant material and the requirements for ignition resistant materials in section 503.2.

This comment provides the tie-in between the definition and the requirements, without changing the intention of the 2007 IWUIC. The changes being proposed here are as follows:

1. Clear explanation that ignition-resistant materials that are classified by using ASTM E 84 (Steiner tunnel) must be tested for an extended 30 minute period. Unless this is stated explicitly, neither ASTM E 84 (nor UL 723) will be conducted for more than the standard 10 minute test period. The standards don't talk about a 30 minute test, and that is discussed only in section 2303.2 of the IBC or in the definition of "fire retardant-treated wood" in NFPA 703. I transcribe section 2303.2 of the IBC and the definition within NFPA 703 below. That change is in 503.2.1.
2. The requirements for the extended Steiner tunnel testing are in items 1 through 3 of 503.2.1, and are unchanged.
3. The requirement for identification is in item 4 of 503.2.1 and simply replaces the term "fire performance rating", which is undefined by "fire test results". The flame spread results from the ASTM E 84 are expressed as a flame spread index and not as a rating.
4. The section on weathering was not revised, but just renumbered.
5. Section 503.3.1 is renumbered as 503.2.2.
6. Section 503.3.3 is renumbered as 503.2.3.
7. Section 503.3.2 is renumbered as 503.2.4. It is placed after 503.2.3 because it is specific to a type of ignition resistant material (roofing) as opposed to be generic (as are 503.3.1, 503.3.2 and 503.3.3).

**IBC 2303.2 Fire-retardant-treated wood.** Fire-retardant-treated wood is any wood product which, when impregnated with chemicals by a pressure process or other means during manufacture, shall have, when tested in accordance with ASTM E 84, a listed flame spread index of 25 or less and show no evidence of significant progressive combustion when the test is continued for an additional 20-minute period. In addition, the flame front shall not progress more than 10.5 feet (3200 mm) beyond the centerline of the burners at any time during the test.

**NFPA 703: 3.3.2 Fire Retardant-Treated Wood.** A wood product impregnated with chemical by a pressure process or other means during manufacture, which is tested in accordance with NFPA 255, ASTM E 84, or UL 723, has a listed flame spread of 25 or less, and shows no evidence of significant progressive combustion when the test is continued for an additional 20-minute period; nor does the flame front progress more than 10.5 ft (3.2 m) beyond the centerline of the burners at any time during the test.

There is nowhere in sections 504, 505 or 506 that permits or requires the use of ignition-resistant building materials. Therefore, Section 503.2 cannot be used. Other public comments on this proposal will provide recommended tie-ins.

*Public Comment 2:*

**Marcelo M. Hirschler, GBH International, representing American Fire Safety Council, requests Approval as Modified by this public comment.**

Replace proposal as follows:

#### SECTION 503 IGNITION RESISTANT CONSTRUCTION AND MATERIAL

**503.1 (Supp) General.** Buildings and structures hereafter constructed, modified or relocated into or within wildland-urban interface areas shall meet the construction requirements in accordance with Table 503.1. Class 1, Class 2 or Class 3, ignition resistant construction shall be in accordance with Sections 504, 505 and 506, respectively. Materials required to be ignition-resistant materials shall comply with the requirements of prescribed herein as Ignition-resistant building material shall be determined in accordance with Section 503.2.

#### TABLE 503.1 IGNITION RESISTANT CONSTRUCTION

(No change proposed for Table 503.1 or footnotes)

**503.2 (Supp) Ignition-resistant building material.** Ignition-resistant building materials shall comply with any one of the requirements in Sections 503.2.1 through 503.2.4 material shall be determined in accordance with the test procedures set forth in ASTM E 84 or as listed in Section 503.3.

**503.2.1 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:

- 503.2.1 (Supp)** 1. Flame spread. ~~Flame~~ Material shall exhibit a flame spread index shall not exceed not exceeding 25 and shall show no evidence of progressive combustion after following the extended 30 minute test.
- 503.2.2 (Supp)** 2. Flame front. ~~Material shall exhibit a flame~~ Flame front that does shall not progress more than 10 1/2 feet (3200 mm) beyond the centerline of the burner at any time during the extended 30 minute test.
- 503.2.3 (Supp)** 3. Weathering. Ignition-resistant building materials shall maintain their performance in accordance with this section under conditions of use. Materials consisting of wood shall pass the accelerated weathering test and be identified as Exterior type, in accordance with ASTM D 2898 and ASTM D 3204. 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:
- 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.
  - 3.2. ASTM D 7032 for wood plastic composite materials.
  - 3.3. ASTM D 6662 for plastic lumber materials.
4. Identification. All materials shall bear identification showing the fire performance rating thereof test results.

**503.3 (Supp) Alternative methods for determining Ignition-resistant material.** Any one of the following shall be considered an ignition-resistant material.

**503.3.1 (Supp) 503.2.2 Noncombustible material.** Material that is in accordance with complies with the requirements for noncombustible materials in Section 202.

**503.3.2 (Supp) Fire retardant treated wood roof coverings.** Fire retardant treated wood shingles and shakes as prescribed in Section 1505.6 and tested in accordance with Class A roof assemblies as required in Section 1505 of the *International Building Code*.

**503.3.3 (Supp) 503.2.3 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*.

**503.2.4 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*.

Add referenced standards to Chapter 7 as follows:

**ASTM**

<u>D 6662-06</u>	<u>Standard Specification for Polyolefin-Based Plastic Lumber Decking Boards</u>
<u>D 7032 -07</u>	<u>Standard Specification for Establishing Performance Ratings for Wood-Plastic Composite Deck Boards and Guardrail Systems (Guards or Handrails)</u>

**Commenter's Reason:** As explained in the proposal, the 2006 IWUIC code, with the 2007 IWUIC code supplement, lacks a proper tie-in between the definition of an ignition-resistant material and the requirements for ignition resistant materials in section 503.2.

This comment provides the tie-in between the definition and the requirements, without changing the intention of the 2007 IWUIC. The changes being proposed here are as follows:

1. Clear explanation that ignition-resistant materials that are classified by using ASTM E 84 (Steiner tunnel) must be tested for an extended 30 minute period. Unless this is stated explicitly, neither ASTM E 84 (nor UL 723) will be conducted for more than the standard 10 minute test period. The standards don't talk about a 30 minute test, and that is discussed only in section 2303.2 of the IBC or in the definition of "fire retardant-treated wood" in NFPA 703. I transcribe section 2303.2 of the IBC and the definition within NFPA 703 below. That change is in 503.2.1.
2. The requirements for the extended Steiner tunnel testing are in items 1 through 3 of 503.2.1, and are unchanged.
3. The requirement for identification is in item 4 of 503.2.1 and simply replaces the term "fire performance rating", which is undefined by "fire test results". The flame spread results from the ASTM E 84 are expressed as a flame spread index and not as a rating.
4. The section on weathering was revised to make it more generic, so as to include also wood plastic composites and plastic lumber and the relevant specifications, namely ASTM D 7032 and ASTM D 6662.
5. Section 503.3.1 is renumbered as 503.2.2.
6. Section 503.3.3 is renumbered as 503.2.3.
7. Section 503.3.2 is renumbered as 503.2.4. It is placed after 503.2.3 because it is specific to a type of ignition resistant material (roofing) as opposed to be generic (as are 503.3.1, 503.3.2 and 503.3.3).

**IBC 2303.2 Fire-retardant-treated wood.** Fire-retardant-treated wood is any wood product which, when impregnated with chemicals by a pressure process or other means during manufacture, shall have, when tested in accordance with ASTM E 84, a listed flame spread index of 25 or less and show no evidence of significant progressive combustion when the test is continued for an additional 20-minute period. In addition, the flame front shall not progress more than 10.5 feet (3200 mm) beyond the centerline of the burners at any time during the test.

**NFPA 703: 3.3.2 Fire Retardant-Treated Wood.** A wood product impregnated with chemical by a pressure process or other means during manufacture, which is tested in accordance with NFPA 255, ASTM E 84, or UL 723, has a listed flame spread of 25 or less, and shows no evidence of significant progressive combustion when the test is continued for an additional 20-minute period; nor does the flame front progress more than 10.5 ft (3.2 m) beyond the centerline of the burners at any time during the test.

There is nowhere in sections 504, 505 or 506 that permits or requires the use of ignition-resistant building materials. Therefore, section 503.2 cannot be used. Other public comments on this proposal will provide recommended tie-ins.

*Public Comment 3:*

**Marcelo M. Hirschler, GBH International, representing American Fire Safety Council, requests Approval as Modified by this public comment.**

Replace proposal as follows:

**SECTION 503  
IGNITION RESISTANT CONSTRUCTION AND MATERIAL**

**503.1 (Supp) General.** Buildings and structures hereafter constructed, modified or relocated into or within wildland-urban interface areas shall meet the construction requirements in accordance with Table 503.1. Class 1, Class 2 or Class 3, ignition resistant construction shall be in accordance with Sections 504, 505 and 506, respectively. Materials required to be ignition-resistant materials shall comply with the requirements of prescribed herein as ignition resistant building material shall be determined in accordance with Section 503.2.

**TABLE 503.1  
IGNITION RESISTANT CONSTRUCTION**

(No change proposed for Table 503.1 or footnotes)

**503.2 (Supp) Ignition-resistant building material.** Ignition-resistant building materials shall comply with any one of the requirements in 503.2.1 through 503.2.4 ~~material shall be determined in accordance with the test procedures set forth in ASTM E 84 or as listed in Section 503.3.~~

**503.2.1 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:

- |                       |           |  |
|-----------------------|-----------|--|
| <b>503.2.1 (Supp)</b> | <b>1.</b> | <b>Flame spread.</b> <u>Material shall exhibit a flame spread index shall not exceed not exceeding 25 and shall show no evidence of progressive combustion after following the extended 30 minute test.</u>  |
| <b>503.2.2 (Supp)</b> | <b>2.</b> | <b>Flame front.</b> <u>Material shall exhibit a flame Flame front that does shall not progress more than 10 1/2 feet (3200 mm) beyond the centerline of the burner at any time during the extended 30 minute test.</u>   |
| <b>503.2.3 (Supp)</b> | <b>3.</b> | <b>Weathering.</b> <u>Ignition-resistant building materials shall maintain their performance in accordance with this section under conditions of use. Materials consisting of wood shall pass the accelerated weathering test and be identified as Exterior type, in accordance with ASTM D 2898 and ASTM D 3204. 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:</u> |

- 3.1. Method A “Test Method for Accelerated Weathering of Fire-Retardant Treated Wood for Fire Testing” in ASTM D 2898 for both fire-retardant treated wood and wood-plastic composite materials.
- 3.2. ASTM D 7032 for wood-plastic composite materials.
4. Identification. All materials shall bear identification showing the fire performance rating thereof test results.

**503.3 (Supp) Alternative methods for determining ignition-resistant material.** Any one of the following shall be considered an ignition-resistant material.

**503.3.1 (Supp) 503.2.2 Noncombustible material.** Material that is in accordance with complies with the requirements for noncombustible materials in Section 202.

**503.3.2 (Supp) Fire-retardant-treated wood roof coverings.** ~~Fire retardant treated wood shingles and shakes as prescribed in Section 1505.6 and tested in accordance with Class A roof assemblies as required in Section 1505 of the *International Building Code*.~~

**503.3.3 (Supp) 503.2.3 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*.

**503.2.4 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*.

Add referenced standard to Chapter 7 as follows:

#### ASTM

D 7032 -07 Standard Specification for Establishing Performance Ratings for Wood-Plastic Composite Deck Boards and Guardrail systems (Guards or Handrails)

**Commenter's Reason:** As explained in the proposal, the 2006 IWUIC code, with the 2007 IWUIC code supplement, lacks a proper tie-in between the definition of an ignition-resistant material and the requirements for ignition resistant materials in section 503.2.

This comment provides the tie-in between the definition and the requirements, without changing the intention of the 2007 IWUIC. The changes being proposed here are as follows:

1. Clear explanation that ignition-resistant materials that are classified by using ASTM E 84 (Steiner tunnel) must be tested for an extended 30 minute period. Unless this is stated explicitly, neither ASTM E 84 (nor UL 723) will be conducted for more than the standard 10 minute test period. The standards don't talk about a 30 minute test, and that is discussed only in section 2303.2 of the IBC or in the definition of "fire retardant-treated wood" in NFPA 703. I transcribe section 2303.2 of the IBC and the definition within NFPA 703 below. That change is in 503.2.1.
2. The requirements for the extended Steiner tunnel testing are in items 1 through 3 of 503.2.1, and are unchanged.
3. The requirement for identification is in item 4 of 503.2.1 and simply replaces the term "fire performance rating", which is undefined by "fire test results". The flame spread results from the ASTM E 84 are expressed as a flame spread index and not as a rating.
4. The section on weathering was revised to make it more generic, so as to include also wood plastic composites and the relevant specification, namely ASTM D 7032.
5. Section 503.3.1 is renumbered as 503.2.2.
6. Section 503.3.3 is renumbered as 503.2.3.
7. Section 503.3.2 is renumbered as 503.2.4. It is placed after 503.2.3 because it is specific to a type of ignition resistant material (roofing) as opposed to be generic (as are 503.3.1, 503.3.2 and 503.3.3).

**IBC 2303.2 Fire-retardant-treated wood.** Fire-retardant-treated wood is any wood product which, when impregnated with chemicals by a pressure process or other means during manufacture, shall have, when tested in accordance with ASTM E 84, a listed flame spread index of 25 or less and show no evidence of significant progressive combustion when the test is continued for an additional 20-minute period. In addition, the flame front shall not progress more than 10.5 feet (3200 mm) beyond the centerline of the burners at any time during the test.

**NFPA 703: 3.3.2 Fire Retardant-Treated Wood.** A wood product impregnated with chemical by a pressure process or other means during manufacture, which is tested in accordance with NFPA 255, ASTM E 84, or UL 723, has a listed flame spread of 25 or less, and shows no evidence of significant progressive combustion when the test is continued for an additional 20-minute period; nor does the flame front progress more than 10.5 ft (3.2 m) beyond the centerline of the burners at any time during the test.

There is nowhere in sections 504, 505 or 506 that permits or requires the use of ignition-resistant building materials. Therefore, section 503.2 cannot be used. Other public comments on this proposal will provide recommended tie-ins.

*Public Comment 4:*

**Marcelo M. Hirschler, GBH International, representing American Fire Safety Council, requests Approval as Modified by this public comment.**

Replace proposal as follows:

**504.1 General.** Class 1 ignition-resistant construction shall be in accordance with Sections 504.2 through ~~504.14~~ 504.12.

**504.2 through 504.11** (No change proposed)

**504.12 Decks.** Deck boards shall be permitted to be constructed of ignition-resistant building materials in accordance with Section 503.2.

**Commenter's Reason:** There is nowhere in section 504 that permits or requires the use of ignition-resistant building materials. Therefore, section 503.2 cannot be used. This public comment provides a tie-in so ignition-resistant materials can be used in decks for Class 1 ignition-resistant construction.

*Public Comment 5:*

**Marcelo M. Hirschler, GBH International, representing American Fire Safety Council, requests Approval as Modified by this public comment.**

Replace proposal as follows:

**504.7 Appendages and projections.** Unenclosed accessory structures attached to buildings with habitable spaces and projections, such as decks, shall be a minimum of 1-hour fire resistance- rated construction, heavy timber construction or constructed of one of the following:

1. Approved noncombustible materials, ~~or~~
2. Fire retardant-treated wood identified for exterior use and meeting the requirements of Section 2303.2 of the *International Building Code* ~~or~~
3. Ignition-resistant building materials in accordance with 503.2 (Supp).

When the attached structure is located and constructed so that the structure or any portion thereof projects over a descending slope surface greater than 10 percent, the area below the structure shall have all underfloor areas enclosed to within 6 inches (152 mm) of the ground, with exterior wall construction in accordance with Section 504.5.

**Commenter's Reason:** There is nowhere in section 504 that permits or requires the use of ignition-resistant building materials. Therefore, section 503.2 cannot be used. This public comment provides a tie-in so ignition-resistant materials can be used in decks for Class 1 ignition-resistant construction. This also ties the use of ignition-resistant materials to the other materials permitted for use on decks, in section 504.7.

*Public Comment 6:*

**Marcelo M. Hirschler, GBH International, representing American Fire Safety Council, requests Approval as Modified by this public comment.**

Replace proposal as follows:

**505.1 General.** Class 2 ignition-resistant construction shall be in accordance with Sections 505.2 through ~~505.11~~ 505.12.

**505.2 through 505.11:** (No change proposed)

**505.12 Decks.** Deck boards shall be permitted to be constructed of ignition-resistant building materials in accordance with Section 503.2.

**Commenter's Reason:** There is nowhere in section 505 that permits or requires the use of ignition-resistant building materials. Therefore, section 503.2 cannot be used. This public comment provides a tie-in so ignition-resistant materials can be used in decks for Class 2 ignition-resistant construction.

*Public Comment 7:*

**Marcelo M. Hirschler, GBH International, representing American Fire Safety Council, requests Approval as Modified by this public comment.**

Replace proposal as follows:

**505.7 Appendages and projections.** Unenclosed accessory structures attached to buildings with habitable spaces and projections, such as decks, shall be a minimum of 1-hour fire resistance-rated construction, heavy timber construction or constructed of one of the following:

1. Approved noncombustible materials, ~~or~~
2. Fire retardant-treated wood identified for exterior use and meeting the requirements of Section 2303.2 of the *International Building Code* ~~or~~
3. Ignition-resistant building materials in accordance with Section 503.2.

When the attached structure is located and constructed so that the structure or any portion thereof projects over a descending slope surface greater than 10 percent, the area below the structure shall have all underfloor areas enclosed to within 6 inches (152 mm) of the ground, with exterior wall construction in accordance with Section 505.5.

**Commenter's Reason:** There is nowhere in section 505 that permits or requires the use of ignition-resistant building materials. Therefore, section 503.2 cannot be used. This public comment provides a tie-in so ignition-resistant materials can be used in decks for Class 2 ignition-resistant construction. This also ties the use of ignition-resistant materials to the other materials permitted for use on decks, in section 505.7.

*Public Comment 8:*

**Marcelo M. Hirschler, GBH International, representing American Fire Safety Council, requests Approval as Modified by this public comment.**

Replace proposal as follows:

**506.1 General.** Class 3 ignition-resistant construction shall be in accordance with Sections 506.2 through ~~506.4~~ 506.5.

**506.2 through 506.4:** (No change proposed)

**506.5 Decks.** Deck boards shall be constructed of ignition-resistant building materials in accordance with Section 503.2.

**Commenter's Reason:** It is critical that deck boards exhibit appropriate fire performance, even in Class 3 ignition-resistant construction, since all this construction is contained within the Urban Wildlife Interface area and the potential is significant for the deck boards being exposed to ignition. There is nowhere in section 506 that permits or requires the use of ignition-resistant building materials. Therefore, section 503.2 cannot be used. This public comment provides a tie-in so ignition-resistant materials can be used in decks for Class 3 ignition-resistant construction.

Final Action: AS AM AMPC\_\_\_\_\_ D

---

## WUIC11-07/08

**503.1, 503.2, 503.2.1 through 503.3.3, 503.3 through 503.4 (New), 504.12 (New), 505.12 (New), 506.1, Chapter 45 (New)**

*Proposed Change as Submitted:*

**Proponent:** Marcelo M. Hirschler, GBH International, representing American Fire Safety Council

**1. Revise as follows:**

### SECTION 503 IGNITION RESISTANT CONSTRUCTION AND MATERIAL

**503.1 (Supp) General.** Buildings and structures hereafter constructed, modified or relocated into or within wildland-urban interface areas shall meet the construction requirements in accordance with Table 503.1. Class 1, Class 2 or Class 3, ignition resistant construction shall be in accordance with Sections 504, 505 and 506, respectively. ~~Materials prescribed herein as ignition-resistant building material shall be determined in accordance with~~ required to be ignition-resistant materials shall comply with the requirements of Section 503.2.

#### TABLE 503.1 IGNITION-RESISTANT CONSTRUCTION<sup>a</sup>

(No change to table text or footnotes)

**503.2 (Supp) Ignition-resistant building materials.** ~~Ignition-resistant building material shall be determined in accordance with the test procedures set forth in ASTM E 84 or as listed in Section 503.3~~ one of the following types of materials:

1. Noncombustible materials;
2. Fire-retardant-treated wood materials, identified for exterior use and meeting the requirements of Section 503.3 and Section 2303.2 of the *International Building Code*.
3. Ignition-resisting building materials used in decking complying with Sections 503.3 and 503.4.
4. Ignition-resistant building materials used in roofing containing fire-retardant treated wood shingles and shakes if the shingles and shakes comply with Section 1505.6 of the *International Building Code* and the assembly has been classified as a Class A roof assembly in accordance with Section 1505.2 (Supp) of the *International Building Code*.

**2. Delete without substitution:**

~~**503.2.1 (Supp) Flame spread.** Flame spread index shall not exceed 25 and show no evidence of progressive combustion after 30 minutes.~~

~~**503.2.2 (Supp) Flame front.** Flame front shall not progress more than 10 1/2 feet (3200 mm) beyond the centerline of the burner at any time during the test.~~

~~**503.2.3 (Supp) Weathering.** Ignition-resistant building materials shall maintain their performance in accordance with this section under conditions of use. Materials consisting of wood shall pass the accelerated weathering test and be identified as Exterior type, in accordance with ASTM D 2898 and ASTM D 3201. All materials shall bear identification showing the fire performance rating thereof.~~

~~**503.3 (Supp) Alternative methods for determining ignition-resistant material.** Any one of the following shall be considered an ignition-resistant material.~~

~~503.3.1 (Supp) Noncombustible material.~~ Material that is in accordance with Section 202.

~~503.3.2 (Supp) Fire-retardant-treated wood roof coverings.~~ Fire-retardant-treated wood shingles and shakes as prescribed in Section 1505.6 and tested in accordance with Class A roof assemblies as required in Section 1505 of the *International Building Code*.

~~503.3.3 (Supp) 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*.

### 3. Add new text as follows:

**503.3 Fire testing and weathering requirements.** The ignition-resistant building material shall comply with the requirements of 503.3.1 and 503.3.2.

**503.3.1 Fire testing.** The ignition-resistant building material shall be tested in accordance with ASTM E 84 or UL 723 for an extended period of 30 minutes and shall comply with the following:

1. The flame spread index shall not exceed 25.
2. There shall be no evidence of progressive combustion after 30 minutes.
3. The flame front shall not progress more than 10 1/2 feet (3200 mm) beyond the centerline of the burner at any time during the test.

**503.3.2 Weathering.** The ignition-resistant building material shall maintain its fire performance in accordance with Section 503.3.1 after an accelerated weathering test in accordance with ASTM D 2898 and shall have a moisture content of not over 28 percent when tested in accordance with ASTM D 3201 procedures at 92-percent relative humidity.

**503.4 Decking materials other than fire-retardant-treated wood.** The ignition-resistant building material shall comply with the requirements of Section 503.3 and with either ASTM D 7032 or ASTM D 6662, as applicable.

**504.12 Decks and roof coverings.** Decks and roof coverings shall be permitted to be constructed of ignition-resistant building materials in accordance with Section 503.2.

**505.12 Decks and roof coverings.** Decks and roof coverings shall be permitted to be constructed of ignition-resistant building materials in accordance with Section 503.2.

### 4. Revise as follows:

**506.1 General.** Class 3 ignition-resistant construction shall be in accordance with Sections 506.2 through 506.4 or shall be constructed using ignition-resistant building materials in accordance with Section 503.2.

### 5. Add standards to Chapter 45 as follows:

#### ASTM

D 7032-07 Standard Specification for Establishing Performance Ratings for Wood-Plastic Composite Deck Boards and Guardrail Systems (Guards or Handrails)

D 6662-06 Standard Specification for Polyolefin-Based Plastic Lumber Decking Boards

**Reason:** As contained in the 2007 IWUIC code supplement the only material that is able to be used as ignition-resistant material is fire-retardant-treated wood. Moreover, the tie-in between the definition of ignition-resistant building material, shown below, and the requirements for ignition resistant materials is confusing. Finally, there is nowhere in sections 504, 505 or 506 that permits or requires the use of ignition-resistant building materials. Therefore, section 503.2 cannot be used.

The proposal makes the following basic changes:

1. It recommends four types of ignition-resistant building materials: noncombustible materials, fire-retardant-treated wood, other decking materials and fire-retarded roofing materials.
2. There is no need to explain further what noncombustible materials are, as they are required often in the code.
3. The requirements for fire-retardant-treated wood contained in the 2007 IWUIC code supplement include the requirements for both exterior and interior fire-retardant-treated wood (sections 2303.2.3 and 2303.2.4 of the IBC) and that has been retained.
4. The requirements for fire-retarded roofing materials have been made clearer as section 1505 is very general and the apparent intent of the code is to refer to Class A roof assemblies. Therefore the section has been amended to refer to section 1505.2, which addresses Class A roof assemblies.
5. Other decking materials are proposed to be added, namely wood-plastic composites and composite lumber decking materials. As they contain some wood fractions, the proposal requires them to meet the same fire test, the same weathering test and the same maximum humidity content test as wood materials. The proposal requires that they also comply with all the physical property specifications of the corresponding decking materials, namely ASTM D 6662 and ASTM D 7032. These two standard specifications contain all needed requirements for the composite materials.

6. A tie in has been developed between the requirements for ignition-resistant building materials, in section 503.2 and the requirements for ignition-resistant construction, in Sections 504, 505 and 506.
7. The requirements for Class 1 and Class 2 Ignition-Resistant Construction apply only for decks and roofs, as they are the only ones for which specific requirements exist in section 503.2.

*Definition of Ignition-resistant building material in the IWUIC, 2007 supplement:*

*IGNITION-RESISTANT BUILDING MATERIAL. A type of building material that resists ignition or sustained flaming combustion sufficiently so as to reduce losses from wildland-urban interface conflagrations under worst-case weather and fuel conditions with wildfire exposure of burning embers and small flames, as prescribed in Section 503.*

An alternate proposal is being made, with fewer changes, so the code development committee has a larger set of options. The present proposal contains all the changes recommended.

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

**Committee Action:**

**Disapproved**

**Committee Reason:** For consistency with the action on code change WUIC10-07/08. The committee felt that ASTM E84 is not a good test for determining the real-world fire behavior of plastic materials. There is no substantiation that the materials listed in the proposal are, in fact, ignition resistant. The proposal could result in increased hazard.

**Assembly Action:**

**None**

### *Individual Consideration Agenda*

**This item is on the agenda for individual consideration because public comments were submitted.**

*Public Comment 1:*

**Marcelo M. Hirschler, GBH International, representing American Fire Safety Council requests Approval as Modified by this public comment.**

**Replace proposal as follows:**

**505.1 General.** Class 2 ignition-resistant construction shall be in accordance with Sections 505.2 through ~~505.11~~ 505.12.

**505.2 through 505.11:** (No change to current text)

**505.12 Decks.** Deck boards shall be permitted to be constructed of ignition-resistant building materials in accordance with Section 503.2. Deck boards made of plastics and wood (or cellulose) shall comply with the requirements of ignition-resistant building materials in accordance with Section 503.2 and with the requirements of ASTM D 7032.

Add standard to Chapter 7 as follows:

#### **ASTM**

D 7032-07 Standard Specification for Establishing Performance Ratings for Wood-Plastic Composite Deck Boards and Guardrail Systems (Guards or Handrails) into Chapter 7 on referenced standards.

**Commenter's Reason:** There is nowhere in section 504 that permits or requires the use of ignition-resistant building materials. Therefore, section 503.2 cannot be used. This public comment provides a tie-in so ignition-resistant materials can be used in decks for Class 2 ignition-resistant construction. Moreover, the public comment permits the use of deck boards that are made of wood, of wood plastic composites and of plastic lumber.

Wood plastic composites are composites made of wood pulp (or cellulosic materials) and plastic, and so is plastic lumber. Both are recognized for use as decking materials by the ICC ES ACCEPTANCE CRITERIA FOR DECK BOARD SPAN RATINGS AND GUARDRAIL SYSTEMS (GUARDS AND HANDRAILS) AC174. Plastic lumber is generally rectangular in cross-section and is typically supplied in sizes that correspond to traditional lumber board and dimensional lumber sizes. Typically, the other principal difference between wood plastic composites and plastic lumber is the fraction of plastic material included, where plastic lumber usually contains a higher fraction of plastic. ASTM D 7032, Standard Specification for Establishing Performance Ratings For Wood-Plastic Composite Deck Boards and Guardrail Systems (Guards or Handrails), contains requirements for the following physical and mechanical properties, which have been assessed by ICC ES as important for use of the materials in decks: flexural performance (section 4.4), ultraviolet resistance (section 4.5), freeze-thaw resistance (section 4.6), termite and decay resistance (section 4.7), resistance to temperature and moisture (sections 5.4.1 and 5.4.2), deck board performance (section 5.2 through 5.6).

If composite materials meet the ASTM E 84 test with the extended time period they should be able to be used in decks in Class 2 and Class 3 ignition resistant construction.

*Public Comment 2:*

**Marcelo M. Hirschler, GBH International, representing American Fire Safety Council requests Approval as Modified by this public comment.**

**Replace proposal as follows:**

**506.1 General.** Class 3 ignition-resistant construction shall be in accordance with Sections 506.2 through ~~506.4~~ 506.5.

**506.2 through 506.4:** (No change to current text)

**506.5 Decks.** Deck boards shall be constructed of ignition-resistant building materials in accordance with Section 503.2. Deck boards made of plastics and wood (or cellulose) shall comply with the requirements of ignition-resistant building materials in accordance with Section 503.2 and with the requirements of ASTM D 7032.

Add standard to Chapter 7 as follows:

**ASTM**

D 7032-07     Standard Specification for Establishing Performance Ratings for Wood-Plastic Composite Deck Boards and Guardrail Systems (Guards or Handrails) into Chapter 7 on referenced standards.

**Commenter's Reason:** It is critical that deck boards exhibit appropriate fire performance, even in Class 3 ignition-resistant construction, since all this construction is contained within the Urban Wildlife Interface area and the potential is significant for the deck boards being exposed to ignition. There is nowhere in section 506 that permits or requires the use of ignition-resistant building materials. Therefore, section 503.2 cannot be used. This public comment provides a tie-in so ignition-resistant materials can be used in decks for Class 3 ignition-resistant construction. Moreover, the public comment permits the use of deck boards that are made of wood, of wood plastic composites and of plastic lumber.

Wood plastic composites are composites made of wood pulp (or cellulosic materials) and plastic, and so is plastic lumber. Both are recognized for use as decking materials by the ICC ES ACCEPTANCE CRITERIA FOR DECK BOARD SPAN RATINGS AND GUARDRAIL SYSTEMS (GUARDS AND HANDRAILS) AC174. Plastic lumber is generally rectangular in cross-section and is typically supplied in sizes that correspond to traditional lumber board and dimensional lumber sizes. Typically, the other principal difference between wood plastic composites and plastic lumber is the fraction of plastic material included, where plastic lumber usually contains a higher fraction of plastic. ASTM D 7032, Standard Specification for Establishing Performance Ratings For Wood-Plastic Composite Deck Boards and Guardrail Systems (Guards or Handrails), contains requirements for the following physical and mechanical properties, which have been assessed by ICC ES as important for use of the materials in decks: flexural performance (section 4.4), ultraviolet resistance (section 4.5), freeze-thaw resistance (section 4.6), termite and decay resistance (section 4.7), resistance to temperature and moisture (sections 5.4.1 and 5.4.2), deck board performance (section 5.2 through 5.6).

If composite materials meet the ASTM E 84 test with the extended time period they should be able to be used in decks in Class 2 and Class 3 ignition resistant construction.

Final Action:        AS            AM            AMPC\_\_\_\_        D

---

