

# Code Section Guide

This guide aims to assist customers in navigating the building code to assess Perma-Tread as a suitable material for constructing interior or exterior stairs across various building types.

The International Building Code addresses the applicability and usability of building materials such as Noncombustible, Wood, Composite, Plastic, and Polymer. The following information summarizes relevant sections of the 2021 International Building Code (IBC). Please note that the language used is not a direct quote from the code, and this document serves as summary notes; for detailed information, refer to the actual IBC.

## REQUIREMENT FOR PLASTIC COMPOSITE DECK BOARD, STAIR TREADS, HANDRAILS AND GUARDS:

### 2612.1 General.

Plastic composites shall consist of either wood/plastic composites or plastic lumber. Plastic composites shall comply with the provisions of this code and with the additional requirements of Section 2612.

### 2612.2 Labeling.

Plastic composite deck boards and stair treads, or their packaging, shall bear a label that indicates compliance with ASTM D7032 and includes the allowable load and maximum allowable span determined in accordance with ASTM D7032. Plastic composite handrails and guards, or their packaging, shall bear a label that indicates compliance with ASTM D7032 and includes the maximum allowable span determined in accordance with ASTM D7032.

### 2612.3 Flame spread index.

Plastic composite deck boards, stair treads, handrails and guards shall exhibit a flame spread index not exceeding 200 when tested in accordance with ASTM E84 or UL 723 with the test specimen remaining in place during the test. Exception: Materials determined to be noncombustible in accordance with Section 703.3.

### 2612.4 Termite and decay resistance.

Where required by Section 2304.12, plastic composite deck boards, stair treads, handrails and guards

containing wood, cellulosic or any other biodegradable materials shall be termite and decay resistant as determined in accordance with ASTM D7032.

**2612.5 Construction requirements.**

Plastic composites meeting the requirements of Section 2612 shall be permitted to be used as exterior deck boards, stair treads, handrails and guards where combustible construction is permitted.

**2612.5.1 Span rating.**

Plastic composites used as exterior deck boards shall have a span rating determined in accordance with ASTM D7032.

**2612.6 Plastic composite deck boards, stair treads, handrails and guards.**

Plastic composite deck boards, stair treads, handrails, and guards shall be installed in accordance with this code and the manufacturer's instructions.

**REVIEW OF CONSTRUCTION TYPES FOR PERMA-TREAD  
AS AN ACCEPTABLE BUILDING MATERIAL:****Construction Types: 602.2**

Type I and II - Building elements are of noncombustible materials except as permitted in Section 603.

**602.3**

Type III - Construction in which the exterior walls are of noncombustible materials and the interior building elements are of any material permitted by the code.

**602.4**

Type IV - Building elements are mass timber or noncombustible materials and have fire-resistance ratings.

**602.4.1.3**

(Type IV-A) Floor assembly shall contain a noncombustible material not less than 1 inch in thickness above the mass timber. Floor finishes in accordance with Section 804 shall be permitted on top of the noncombustible material. The underside of floor assemblies shall be protected in accordance with Section 602.4.1.2.

**602.4.2.2**

(Type IV-B) Interior protection - materials complying with Section 707.3 (non-combustible)

**602.4.2.3**

Floors - The floor assembly shall contain a noncombustible material not less than 1 inch in thickness above the mass timber. Floor finishes in accordance with Section 804 shall be permitted on top of the noncombustible material. The underside of floor assemblies shall be protected in accordance with Section 602.4.1.2.

**602.4.3.3**

(Type IV-C) Floors - Floor finishes in accordance with Section 804 shall be permitted on top of the floor construction.

**602.5**

Type V - Construction is the type of construction in which the structural elements, exterior walls and interior walls are of any materials permitted by the code containing wood, cellulosic or any other biodegradable materials shall be termite and decay resistant as determined in accordance with ASTM D7032.

**THE EXCEPTIONS FOR TYPE I AND II CONSTRUCTION:****603.1**

Allowable Combustible Materials in Type I or II Interior Floor Finish and floor covering material installed in accordance with Section 804 or Finish flooring installed in accordance with Section 805.

**804.2**

Classification - Interior floor finish and floor covering materials required by Section 804.4.2 to be of Class I or II material shall be classified in accordance with ASTM E648 or NFPA 253. The classification referred to herein corresponds to the classifications determined by ASTM E648 or NFPA 253 as follows: Class I, 0.45 watts/cm<sup>2</sup> or greater, Class II, 0.22 watts/cm<sup>2</sup> or greater.

**804.4.2**

Minimum Critical radiant flux - In all occupancies, interior floor finish and floor covering material in enclosures for stairways and ramps, exit passageways, corridors, and rooms or spaces not separated from corridors by partitions extending from the floor to the underside of the ceiling shall withstand a minimum critical radiant flux. The minimum critical radiant flux shall be not less than Class I in Groups I-1, I-2 and I-3 and not less than Class II in Groups A, B, E, H, I-4, M, R-1, R-2, and S.

## **805 COMBUSTIBLE MATERIALS IN TYPE I AND II CONSTRUCTION:**

### **805.1.1**

Subfloor Construction – floor sleepers, bucks, and nailing blocks shall not be constructed of combustible materials, unless the space between the fire-resistance-rated floor assembly and the flooring is either solidly filled with noncombustible materials or fire blocked in accordance with Section 718, and provided that such open spaces shall not extend under or through permanent partitions or walls.

### **805.1.2**

Wood Finish Flooring – is permitted to be attached directly to the embedded or fire blocked wood sleepers and shall be permitted where cemented directly to the top surface of fire-resistance-rated floor assemblies or directly to a wood subfloor attached to sleepers as provided for in Section 805.1.1

### **805.1.3**

Insulating Boards – Combustible insulating boards not more than ½ inch thick and covered with finish flooring are permitted where attached directly to a noncombustible floor assembly or to wood subflooring attached to sleepers as provided for in Section 805.1.1.

### **1011.7**

Stairway Construction – Stairways shall be built of materials consistent with the types permitted for the type of construction of the building. Exceptions: Interior exit stairwells in accordance with 510.2

### **1011.7.1**

The walking surface of treads and landings of a stairway shall not be sloped steeper than one unit vertical in 48 units horizontal in any direction. Stairway treads shall have a solid surface. Finish floor surfaces shall be securely attached.

### **510.2**

Horizontal Building Separation allowance – Shaft, stairway, ramp, and escalator enclosures through the horizontal assembly shall have not less than a 2-hour fire-resistance rating with opening protectives in accordance with Section 716. Interior exit stairways located within the Type IA building are permitted to be of combustible materials where the following requirements are met:

- The building above the Type IA building is of Type III, IV, or V construction.
- The stairway located in the Type IA building is enclosed by a 3-hour fire-resistance-rated construction with opening protectives in accordance with Section 716.

## Summary of combustible materials in Types I and II construction:

- Interior Floor Finish and Floor Covering Materials Installed in accordance with Section 804 Interior floor finish shall comply with 804.2 through 804.4.2
- ASTM E648 (Class I 0.5 watt/cm<sup>2</sup> or greater, Class II 0.22 watts/cm<sup>2</sup> or greater)
- CPSC 16 CFR Part 1630 (pill test) or ASTM D2859
- In all occupancies, interior floor finish and floor covering materials in enclosures for stairways and ramps, exit passageways, corridors, and rooms or spaces not separated from corridors by partitions extending from the floor to the underside of the ceiling shall withstand a minimum critical radiant flux. The minimum critical radiant flux shall be not less than Class I in Groups I-1, I-2, and I-3 and not less than Class II in Groups A, B, E, H, I-4, M, R-1, R-2 and S. Where the building is equipped throughout with an automatic sprinkler system Class II is permitted in any area where Class I materials are required.
- Finish flooring installed in accordance with Section 805
- Combustible materials installed on or embedded in floors of Buildings of Type I or II construction shall comply with Sections 805.1.1 through 805.1.3.
- 805.1.1 through 805.1.3 address subfloor construction, wood finish flooring, and insulating boards. Not applicable to Perma-Tread stairs.
- Stages and Platforms constructed in accordance with Sections 410.2 and 410.3
- Permanent platforms do not have many options. Temporary platforms (less than 30 days) allow any materials.

*Disclaimer: The provided information is for reference purposes only and should not be solely relied upon for professional consultation or services. The local authority having jurisdiction (AHJ) for the project holds the authority to determine acceptable building materials. Therefore, it is essential to consult with the AHJ for the review and approval of Perma-Tread as a suitable building material.*