



## Listing and Technical Evaluation Report™

Report No: 1510-01



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### TechWood 4400 Wood Protection Treatment

Trade Secret Report Holder:  
Chemical Technologies Holding Corporation

20533 Biscayne Blvd Ste 4-629  
Aventura, FL 33180-1529  
Phone: 772-242-8939  
Website: [www.chemtechholding.com](http://www.chemtechholding.com)  
Email: [info@chemtechholding.com](mailto:info@chemtechholding.com)

#### Additional Listees:

**Chemical Technologies Holding Inc**  
7397 Commercial Cir Ste 1  
Fort Pierce, FL 34951-4119

**K-Line Prefinishing**  
A Division of K&K Industries Inc  
12496 E US Hwy 50  
Loogootee, IN 47553  
Website: [www.kktruss.com/k-line](http://www.kktruss.com/k-line)

**Wood Treatment Services of Virginia LLC**  
17320 Washington Hwy  
Doswell, VA 23047

**Rehkemper & Son Inc**  
17817 St Rose Rd  
Breese, IL 62230

**Turnkey Lumber Inc**  
179 NH Route 12N  
Fitzwilliam, NH 03447

**Empire Building Materials Inc**  
608 E Main St  
Bozeman, MT 59715

**US Lumber Group LLC**  
1735 James Pkwy  
Heath, OH 43045  
Website: [www.uslumber.com](http://www.uslumber.com)

### CSI Designations:

DIVISION: 06 00 00 - WOOD, PLASTICS AND COMPOSITES

Section: 06 05 83 - Shop-Applied Wood Coating

Section: 06 11 00 - Wood Framing

Section: 06 17 00 - Shop-Fabricated Structural Wood

### 1 Innovative Product Evaluated<sup>1</sup>

#### 1.1 TechWood 4400 (TW4400)

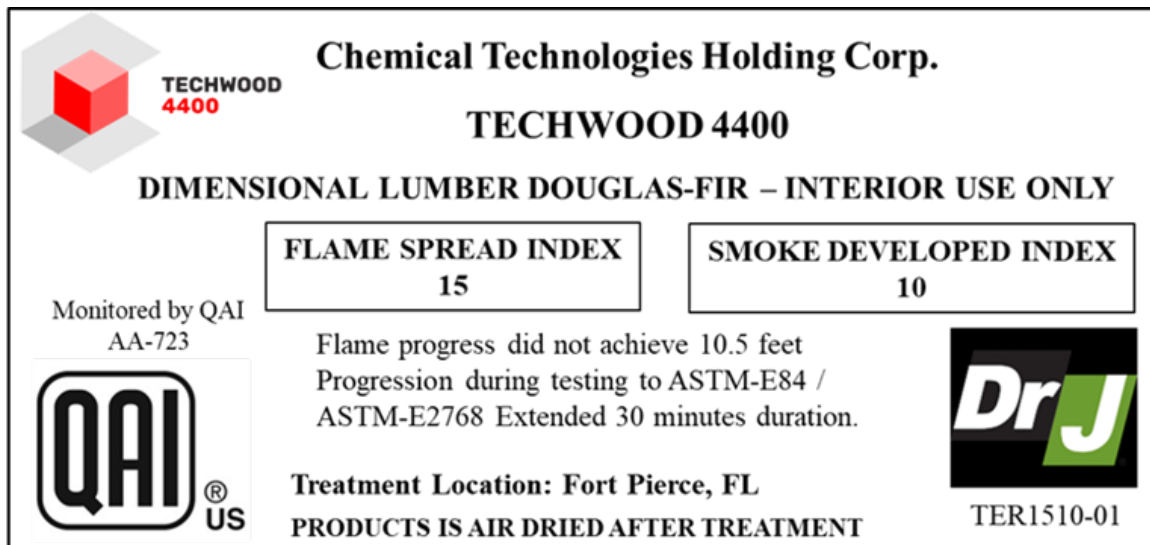
- 1.1.1 This product is formerly known as WoodProTech 8000TM. References to TechWood 4400 or TW4400 in this report apply equally to WoodProTech 8000TM. This product is intended for use when fire retardant treated lumber is required by the applicable code.

## 2 Product Description and Materials

2.1 The innovative product evaluated in this report is shown in **Figure 1** and **Figure 2**.



**Figure 1.** TechWood 4400 (TW4400) Product



**Figure 2.** Example of Acceptable TechWood 4400 (TW4400) Product Stamp

2.2 TechWood 4400 is a factory applied wood protection treatment that uses Disodium Octaborate Tetrahydrate (DOT) and fire-retardant additives to coat wood members.



2.3 The wood products covered in this report include:

- 2.3.1 Kiln Dried or Green dimensional lumber and timber species up to thirty percent (30%) moisture content, including:
  - 2.3.1.1 Spruce-Pine-Fir (SPF)
  - 2.3.1.2 Hem-Fir (HF)
  - 2.3.1.3 Douglas Fir (DF)
  - 2.3.1.4 Southern Pine (SP)
  - 2.3.1.5 Glued Laminated Beams (GLB) manufactured from Douglas Fir
  - 2.3.1.6 Southern Pine (SP) Plywood
- 2.4 For SPF, HF and DF species, TechWood 4400 provides a minimum DOT loading of 0.00975 g/in<sup>2</sup> (minimum application rate) and a minimum total treatment coverage of 11.5 g/ft<sup>2</sup>. For SP species, TechWood 4400 provides a minimum absorption rate of 28.8 g/ft<sup>2</sup> during soaking process and a minimum coverage of 11.5 g/ft<sup>2</sup> during treatment process. For SP Plywood, TechWood 4400 provides a minimum absorption rate of 57.6 g/ft<sup>2</sup> during soaking process and a minimum coverage of 11.5 g/ft<sup>2</sup> during treatment process.
- 2.5 TechWood 4400 protected products are acceptable for use in the following AWPA Use Categories:
  - 2.5.1 UC1 – Interior/Dry – millwork and finishing
  - 2.5.2 UC2 – Interior/Damp – interior beams, timbers, flooring, framing, millwork and sill plates
  - 2.5.3 UC3A – Above Ground (Exterior) Protected – coated millwork, siding and trim
- 2.6 TechWood 4400 wood protection treatment is supplied by Chemical Technologies Holding Corporation and is used by the additional listees above to treat wood members in accordance with the manufacturer requirements.
- 2.7 As needed, review material properties for design in **Section 6** and to regulatory evaluation in **Section 8**.

### 3 Definitions

- 3.1 New Materials<sup>2</sup> are defined as building materials, equipment, appliances, systems or methods of construction not provided for by prescriptive and/or legislatively adopted regulations, known as alternative materials.<sup>3</sup> The design strengths and permissible stresses shall be established by tests<sup>4</sup> and/or engineering analysis.<sup>5</sup>
- 3.2 Duly authenticated reports<sup>6</sup> and research reports<sup>7</sup> are test reports and related engineering evaluations, which are written by an approved agency<sup>8</sup> and/or an approved source.<sup>9</sup>
  - 3.2.1 These reports contain intellectual property and/or trade secrets, which are protected by the Defend Trade Secrets Act (DTSA).<sup>10</sup>
- 3.3 An approved agency is “approved” when it is ANAB ISO/IEC 17065 accredited. DrJ Engineering, LLC (DrJ) is listed in the ANAB directory.
- 3.4 An approved source is “approved” when a professional engineer (i.e., Registered Design Professional) is properly licensed to transact engineering commerce. The regulatory authority governing approved sources is the state legislature via its professional engineering regulations.<sup>11</sup>
- 3.5 Testing and/or inspections conducted for this duly authenticated report were performed by an ISO/IEC 17025 accredited testing laboratory, an ISO/IEC 17020 accredited inspection body and/or a licensed Registered Design Professional (RDP).
  - 3.5.1 The Center for Building Innovation (CBI) is ANAB<sup>12</sup> ISO/IEC 17025 and ISO/IEC 17020 accredited.
- 3.6 The regulatory authority shall enforce<sup>13</sup> the specific provisions of each legislatively adopted regulation. If there is a non-conformance, the specific regulatory section and language of the non-conformance shall be provided in writing<sup>14</sup> stating the nonconformance and the path to its cure.



- 3.7 The regulatory authority shall accept duly authenticated reports from an approved agency and/or an approved source with respect to the quality and manner of use of new materials or assemblies as provided for in regulations regarding the use of alternative materials, designs, or methods of construction.<sup>15</sup>
- 3.8 ANAB is an International Accreditation Forum (IAF) Multilateral Recognition Arrangement (MLA) signatory where recognition of certificates, validation and verification statements issued by conformity assessment bodies accredited by all other signatories of the IAF MLA with the appropriate scope, shall be approved.<sup>16</sup> Therefore, all ANAB ISO/IEC 17065 duly authenticated reports are approval equivalent.<sup>17</sup>
- 3.9 Approval equity is a fundamental commercial and legal principle.<sup>18</sup>

#### **4 Applicable Standards for the Listing; Regulations for the Regulatory Evaluation<sup>19</sup>**

##### **4.1 Standards**

- 4.1.1 *ANSI/AWC NDS: National Design Specification (NDS) for Wood Construction*
- 4.1.2 *ASTM D198: Standard Test Methods of Static Tests of Lumber in Structural Sizes*
- 4.1.3 *ASTM D3273: Standard Test Method For Resistance To Growth Of Mold On The Surface Of Interior Coatings In An Environmental Chamber*
- 4.1.4 *ASTM D4587: Standard Practice For Fluorescent UV-Condensation Exposures Of Paint And Related Coatings*
- 4.1.5 *ASTM D5116: Standard Guide for Small-Scale Environmental Chamber Determinations of Organic Emissions from Indoor Materials/Products*
- 4.1.6 *ASTM D5197: Standard Test Method for Determination of Formaldehyde and Other Carbonyl Compounds in Air (Active Sampler Methodology)*
- 4.1.7 *ASTM D5590: Standard Test Method For Determining The Resistance Of Paint Films And Related Coatings To Fungal Defacement By Accelerated Four-Week Agar Plate Assay*
- 4.1.8 *ASTM E84: Standard Test Method for Surface Burning Characteristics of Building Materials*
- 4.1.9 *ASTM E2768: Standard Test Method for Extended Duration Surface Burning Characteristics of Building Materials (30 min Tunnel Test)*
- 4.1.10 *AWPA E1: Laboratory Methods for Evaluating the Termite Resistance of Wood-based Materials: Choice and No-choice Tests*
- 4.1.11 *AWPA E10: Laboratory Method for Evaluating the Decay Resistance of Wood-Based Materials Against Pure Basidiomycete Cultures: Soil/Block Test*
- 4.1.12 *AWPA E12: Standard Method of Determining Corrosion of Metal in Contact with Treated Wood*
- 4.1.13 *AWPA E21: Standard Field Test Method for the Evaluation of Wood Preservatives to be Used for Interior Applications (UC1 and UC2); Full-size Commodity Termite Test*
- 4.1.14 *AWPA M4: Standard for the Care of Preservative-Treated Wood Products*
- 4.1.15 *AWPA U1: Use Category System: User Specification for Treated Wood*
- 4.1.16 *DOC PS 1: Structural Plywood*
- 4.1.17 *DOC PS 2: Performance Standard for Wood-Based Structural-Use Panels*
- 4.1.18 *NFPA 255: Standard Method of Test of Surface Burning Characteristics of Building Materials*
- 4.1.19 *UBC 8-1: Surface Burning Characteristics of Building Materials*
- 4.1.20 *UL 723: Test for Surface Burning Characteristics of Building Materials*
- 4.1.21 *UL 2818: GREENGUARD Certification Program For Chemical Emissions For Building Materials, Finishes And Furnishings*



## 4.2 Regulations

- 4.2.1 IBC – 15, 18, 21: International Building Code®
- 4.2.2 IRC – 15, 18, 21: International Residential Code®
- 4.2.3 IECC – 15, 18, 21: International Energy Conservation Code®

## 5 Listed<sup>20</sup>

- 5.1 Equipment, materials, products or services included in a List published by a nationally recognized testing laboratory (i.e., CBI), approved agency (i.e., CBI and DrJ), and/or approved source (i.e., DrJ) or other organization concerned with product evaluation (i.e., DrJ) that maintains periodic inspection (i.e., CBI) of production of listed equipment or materials, and whose listing states either that the equipment or material meets nationally recognized standards or has been tested and found suitable for use in a specified manner.

## 6 Tabulated Properties Generated from Nationally Recognized Standards

- 6.1 TechWood 4400 is a protective treatment for solid sawn SPF, HF, DF and SP lumbers, DF GLB, SP Plywood or any other species as delineated by the QAI listing used as floor, roof, and wall structural members.
  - 6.1.1 Structural applications include, but are not limited to, use as beams, columns, headers, joists, rafters, wall studs, chords and webs of trusses.
  - 6.1.2 Use as sill plates in direct contact with concrete or masonry is approved.
- 6.2 TechWood 4400 protected wood products are suitable for above ground applications not subject to contact with liquid water.
  - 6.2.1 When used in exterior applications, products treated with TW4400 must be protected from direct wetting. A minimum of one coat of primer and two coats of finish paint, or equivalent, shall be used.
- 6.3 Products protected by TechWood 4400 meet the requirements of IBC Section 2304.12 and IRC Section R317, where protection against decay is required.
- 6.4 Products protected by TechWood 4400 meet the requirements of IBC Section 2304.12 and IRC Section R318, where protection against termite attack is required.
- 6.5 Products protected by TechWood 4400 meet the requirements where surface burning and smoke developed index values are required to be tested by IBC Section 2303.2, IRC Section R302.9 and IRC Section R802.1.5, in accordance with ASTM E84 extended 20 minutes, UL 723 extended 20 minutes, NFPA 255 extended 20 minutes, UBC 8-1 extended 20 minutes and ASTM E2768 as follows for SPF, HF, DF and SP lumber products. **Table 1** identifies the flame spread of smoke developed indexes for these lumber species.

**Table 1. Surface Burn Characteristics<sup>1</sup>**

Lumber Species	Flame Spread Index	Smoke Developed Index
SPF	≤25	≤450
HF	≤25	≤450
DF	≤25	≤450
DF GLB	≤25	≤450
DF LVL	≤25	≤450
SP	≤25	≤450
SP Plywood	≤25	≤450
1. TechWood 4400 applied at minimum 11.5 g/ft <sup>2</sup>		





- 6.6 Field cuts, notches or bored holes must be site treated in accordance with the manufacturer instructions and AWP M4 in accordance with [IRC Section R317.1.1](#) and [IRC Section R318.1.2](#).
- 6.7 *Design*
- 6.7.1 Allowable design stresses for TechWood 4400 protected products for dry conditions of use, are the same as the wood product before treatment.
- 6.7.2 Since TechWood 4400 is a topically applied treatment and not a pressure treatment, the wood is not incised, therefore, the NDS Incising Factor, NDS Section 4.3.8 is not applicable.
- 6.7.3 Maximum duration of load design stress increase shall not exceed 1.6. The duration of load design stress increase equal to or less than 1.6 shall be in accordance with NDS Section 2.3.4.
- 6.7.4 The design provisions for wood construction noted in [IBC Section 2302.1](#) and [IRC Section R301.1.3](#) apply to TechWood 4400 protected products unless otherwise noted in this report.
- 6.7.5 *Connections:*
- 6.7.5.1 Lateral loads for nails, screws and bolts and withdrawal loads for nails and screws installed in TW4400 protected products shall be in accordance with NDS using the species specific gravity.
- 6.7.6 *Fasteners:*
- 6.7.6.1 Fasteners used with TechWood 4400 protected products shall be in accordance with [IBC Section 2304.10.5](#) and [IRC Section R317.3](#), except that aluminum fasteners are permitted when the products are used in interior applications.
- 6.8 The exception noted in [IBC Section 2304.10.6.1](#) allows plain carbon steel fasteners, including nuts and washers, in SBX/DOT and zinc borate preservative-treated wood in an interior, dry environment.
- 6.9 Where the application falls outside of the performance evaluation, conditions of use and/or installation requirements set forth herein, alternative techniques shall be permitted in accordance with accepted engineering practice and experience. This includes but is not limited to the following areas of engineering: mechanics or materials, structural, building science and fire science.

## 7 Certified Performance<sup>21</sup>

- 7.1 All construction methods shall conform to accepted engineering practices to ensure durable, livable, and safe construction and shall demonstrate acceptable workmanship reflecting journeyman quality of work of the various trades.<sup>22</sup>
- 7.2 The strength and rigidity of the component parts and/or the integrated structure shall be determined by engineering analysis or by suitable load tests to simulate the actual loads and conditions of application that occur.<sup>23</sup>

## 8 Regulatory Evaluation and Accepted Engineering Practice

- 8.1 TechWood 4400 has been evaluated to determine its suitability to treat structural wood products used in above ground applications where they are required by code to provide the following:
- 8.1.1 Preservative-treated wood as required by [IBC Section 2303.1.9](#), [IRC Section R317](#) and [IRC Section R318](#).
- 8.1.2 Fungal decay resistance where required by [IBC Section 2304.12](#) and [IRC Section R317](#).
- 8.1.3 Mold growth inhibition in accordance with ASTM D5590 and ASTM D3273.
- 8.1.4 Protection from subterranean termites (including Formosan) where required by [IBC Section 2304.12](#) and [IRC Section R318](#).
- 8.1.5 Flame spread index and smoke developed index properties where required by [IBC Section 2303.2](#), [IRC Section R302.9](#) and [IRC Section R802.1.5](#).



- 8.1.6 Flexure (MOR/MOE) of solid sawn and engineered lumber after treating in accordance with ASTM D198
- 8.1.7 Low emissions of Volatile Organic Compounds (VOCs) in compliance with UL 2818 for indoor commercial, educational, residential and healthcare environments. Tested in accordance to ASTM D5116 and ASTM D5197. Meets California 01350 limits for formaldehyde emissions.
- 8.2 Any building code, regulation and/or accepted engineering evaluations (i.e., research reports, duly authenticated reports, etc.) that are conducted for this Listing were performed by DrJ Engineering, LLC (DrJ), an ISO/IEC 17065 accredited certification body and a professional engineering company operated by RDP/approved sources. DrJ is qualified<sup>24</sup> to practice product and regulatory compliance services within its scope of accreditation and engineering expertise, respectively.
- 8.3 Engineering evaluations are conducted with DrJ's ANAB accredited ICS code scope of expertise, which are also its areas of professional engineering competence.
- 8.4 Any regulation specific issues not addressed in this section are outside the scope of this report.

## 9 Installation

- 9.1 Installation shall comply with the approved construction documents, the manufacturer installation instructions, this report and the applicable building code.
- 9.2 In the event of a conflict between the manufacturer installation instructions and this report, the more restrictive shall govern.
- 9.3 Products treated with TechWood 4400 shall be installed in accordance with the applicable code, the approved construction documents, this report, the manufacturer instructions and standard framing practice as applied to solid sawn SPF, HF, DF and SP lumber, DF GLB, SP Plywood or any other species as delineated by the QAI listing, as applicable.

## 10 Substantiating Data

- 10.1 Testing has been performed under the supervision of a professional engineer and/or under the requirements of ISO/IEC 17025 as follows:
  - 10.1.1 Flame spread index and smoke developed index testing in accordance with ASTM E84, UL 723, NFPA 255, UBC 8-1, and/or ASTM E2768
  - 10.1.2 Fungal decay testing in accordance with AWPA E10
  - 10.1.3 Mold growth inhibition testing in accordance with ASTM D5590 and ASTM D3273
  - 10.1.4 Termite resistance testing in accordance with AWPA E1
  - 10.1.5 Reaction with metals testing in accordance with AWPA E12
  - 10.1.6 Flexure (MOR/MOE) testing of LVL/EWP in accordance with ASTM D198
  - 10.1.7 VOCs emissions testing in accordance with ASTM D5116 and ASTM D5197
    - 10.1.7.1 Low emissions of VOCs in compliance with UL 2818 for indoor commercial, educational, residential and healthcare environments meets California 01350 limits for formaldehyde emissions.
- 10.2 Information contained herein may include the result of testing and/or data analysis by sources that are approved agencies, approved sources and/or RDPs. Accuracy of external test data and resulting analysis is relied upon.
- 10.3 Where applicable, testing and/or engineering analysis are based upon provisions that have been codified into law through state or local adoption of regulations and standards. The developers of these regulations and standards are responsible for the reliability of published content. DrJ's engineering practice may use a regulation-adopted provision as the control. A regulation-endorsed control versus a simulation of the conditions of application to occur establishes a new material as being equivalent to the regulatory provision in terms of quality, strength, effectiveness, fire resistance, durability and safety.



- 10.4 The accuracy of the provisions provided herein may be reliant upon the published properties of raw materials, which are defined by the grade mark, grade stamp, mill certificate or duly authenticated reports from approved agencies and/or approved sources provided by the supplier. These are presumed to be minimum properties and relied upon to be accurate. The reliability of DrJ's engineering practice, as contained in this duly authenticated report, may be dependent upon published design properties by others.
- 10.5 Testing and engineering analysis: The strength, rigidity, and/or general performance of component parts and/or the integrated structure are determined by suitable tests that simulate the actual conditions of application that occur and/or by accepted engineering practice and experience.<sup>25</sup>
- 10.6 Where additional condition of use and/or regulatory compliance information is required, please search for TechWood 4400 or TW4400 on the DrJ Certification website.

## 11 Findings

- 11.1 As outlined in **Section 6**, TechWood 4400 has performance characteristics that were tested and/or meet applicable regulations and is suitable for use pursuant to its specified purpose.
- 11.2 When used and installed in accordance with this duly authenticated report and the manufacturer installation instructions, TechWood 4400 shall be approved for the following applications:
- 11.2.1 TechWood 4400 protection does not affect the allowable design stresses allowed for untreated lumber as applied to solid sawn lumber.
  - 11.2.2 Use as sill plates in direct contact with concrete or masonry is approved.
  - 11.2.3 TechWood 4400 protected products are suitable for above ground applications not subject to continuous contact with liquid water.
  - 11.2.4 When used in exterior applications, products coated with TechWood 4400 must be protected from direct wetting. Flashing required for horizontal applications. A minimum of one coat of primer and two coats of finish paint or equivalent shall be used.
  - 11.2.5 Mold growth inhibition in accordance with ASTM D5590 and D3273 by Siva Microbiological Solutions.
  - 11.2.6 Products protected with TechWood 4400 meet the requirements of IBC Section 2304.12 and IRC Section R317, where protection against decay is required.
  - 11.2.7 Products protected with TechWood 4400 meet the requirements of IBC Section 2304.12 and IRC Section R318, where protection against termites is required.
  - 11.2.8 SPF, HF, DF and SP lumber products protected with TechWood 4400 meet the requirements where surface burning characteristics are required to be tested by IBC Section 2303.2, IRC Section R302.9 and IRC Section R802.1.5 in accordance with ASTM E84 extended 20 minutes, UL 723 extended 20 minutes, NFPA 255 extended 20 minutes, UBC 8-1 extended 20 minutes, and ASTM E2768 as noted in **Table 1**.
- 11.3 Any application specific issues not addressed herein can be engineered by an RDP. Assistance with engineering is available from Chemical Technologies Holding Corporation.
- 11.4 IBC Section 104.11 (IRC Section R104.11 and IFC Section 104.10<sup>26</sup> are similar) in pertinent part states:

**104.11 Alternative materials, design and methods of construction and equipment.** The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code. Where the alternative material, design or method of construction is not approved, the building official shall respond in writing, stating the reasons the alternative was not approved.





- 11.5 **Approved:**<sup>27</sup> Building regulations require that the building official shall accept duly authenticated reports.<sup>28</sup>
- 11.5.1 An approved agency is “approved” when it is ANAB ISO/IEC 17065 accredited.
- 11.5.2 An approved source is “approved” when an RDP is properly licensed to transact engineering commerce.
- 11.5.3 Federal law, Title 18 US Code Section 242, requires that where the alternative product, material, service, design, assembly and/or method of construction is not approved, the building official shall respond in writing, stating the reasons why the alternative was not approved. Denial without written reason deprives a protected right to free and fair competition in the marketplace.
- 11.6 DrJ is a licensed engineering company, employs licensed RDPs and is an ANAB-Accredited Product Certification Body – Accreditation #1131.
- 11.7 Through the IAF Multilateral Agreements (MLA), this duly authenticated report can be used to obtain product approval in any jurisdiction or country because all ANAB ISO/IEC 17065 duly authenticated reports are equivalent.<sup>29</sup>

## 12 Conditions of Use

- 12.1 Material properties shall not fall outside the boundaries defined in **Section 6**.
- 12.2 As defined in **Section 6**, where material and/or engineering mechanics properties are created for load resisting design purposes, the resistance to the applied load shall not exceed the ability of the defined properties to resist those loads using the principles of accepted engineering practice.
- 12.3 Cutting and notching of products coated with TechWood 4400 is permitted where allowed by the applicable building code, the manufacturer recommendations, this report or where the effects of such alterations are specifically considered in the design of the member by an RDP.
- 12.3.1 Field cuts, notches or bored holes must be site treated in accordance with the manufacturer instructions and AWPMA M4 in accordance with IRC Section R317.1.1 and IRC Section R318.1.2.
- 12.3.2 The service conditions for TW4400 are any above ground application not subject to exposure to liquid water, unless painted in accordance with **Section 6.2.1** of this report.
- 12.3.3 Fastener design values shall be determined using the specific gravity of the lumber species used in the coated product.
- 12.3.4 Duration of load increases shall be in accordance with the limitations of the applicable building code for sawn lumber, but not greater than 1.6.
- 12.4 When required by adopted legislation and enforced by the building official, also known as the authority having jurisdiction (AHJ) in which the project is to be constructed:
- 12.4.1 Any calculations incorporated into the construction documents shall conform to accepted engineering practice and, when prepared by an approved source, shall be approved when signed and sealed.
- 12.4.2 This report and the installation instructions shall be submitted at the time of permit application.
- 12.4.3 This innovative product has an internal quality control program and a third-party quality assurance program.
- 12.4.4 At a minimum, this innovative product shall be installed per **Section 9** of this report.
- 12.4.5 The review of this report by the AHJ shall comply with IBC Section 104 and IBC Section 105.4.



- 12.4.6 This innovative product has an internal quality control program and a third party quality assurance program in accordance with IBC Section 104.4, IBC Section 110.4, IBC Section 1703, IRC Section R104.4 and IRC Section R109.2.
- 12.4.7 The application of this innovative product in the context of this report is dependent upon the accuracy of the construction documents, implementation of installation instructions, inspection as required by IBC Section 110.3, IRC Section R109.2 and any other regulatory requirements that may apply.
- 12.5 The approval of this report by the AHJ shall comply with IBC Section 1707.1, where legislation states in part, *"the building official shall accept duly authenticated reports from approved agencies in respect to the quality and manner of use of new material or assemblies as provided for in Section 104.11,"* all of IBC Section 104, and IBC Section 105.4.
- 12.6 Design loads shall be determined in accordance with the regulations adopted by the jurisdiction in which the project is to be constructed and/or by the building designer (i.e., owner or RDP).
- 12.7 The actual design, suitability, and use of this report for any particular building, is the responsibility of the owner or the authorized agent of the owner.

### 13 Identification

- 13.1 The innovative product listed in **Section 1.1** is identified by a label on the board or packaging material bearing the manufacturer name, product name, this report number and other information to confirm code compliance.
- 13.2 Additional technical information can be found at [www.chemtechholding.com](http://www.chemtechholding.com).

### 14 Review Schedule

- 14.1 This report is subject to periodic review and revision. For the latest version, visit [drjcertification.org](http://drjcertification.org).
- 14.2 For information on the status of this report, please contact [DrJ Certification](#).

### 15 Approved for Use Pursuant to U.S. and International Legislation Defined in Appendix A

- 15.1 TechWood 4400 (TW4400) is included in this report published by an approved agency that is concerned with evaluation of products or services, maintains periodic inspection of the production of listed materials or periodic evaluation of services. This report states either that the material, product or service meets recognized standards or has been tested and found suitable for a specified purpose. This report meets the legislative intent and definition of being acceptable to the AHJ.



## Appendix A

### 1 Legislation that Authorizes AHJ Approval

- 1.1 **Fair Competition:** State legislatures have adopted Federal regulations for the examination and approval of building code referenced and alternative products, materials, designs, services, assemblies and/or methods of construction that:
  - 1.1.1 Advance innovation
  - 1.1.2 Promote competition so all businesses have the opportunity to compete on price and quality in an open market on a level playing field unhampered by anticompetitive constraints
  - 1.1.3 Benefit consumers through lower prices, better quality, and greater choice
- 1.2 **Adopted Legislation:** The following local, state and federal regulations affirmatively authorize this innovative product to be approved by AHJs, delegates of building departments and/or delegates of an agency of the federal government:
  - 1.2.1 Interstate commerce is governed by the Federal Department of Justice to encourage the use of innovative products, materials, designs, services, assemblies, and/or methods of construction. The goal is to “*protect economic freedom and opportunity by promoting free and fair competition in the marketplace.*”
  - 1.2.2 Title 18 US Code Section 242 affirms and regulates the right of individuals and businesses to freely and fairly have new products, materials, designs, services, assemblies and/or methods of construction approved for use in commerce. Disapproval of alternatives shall be based upon non-conformance with respect to specific provisions of adopted legislation and shall be provided in writing stating the reasons why the alternative was not approved, with reference to the specific legislation violated.
  - 1.2.3 The federal government and each state have a public records act. In addition, each state also has legislation that mimics the federal Defend Trade Secrets Act 2016 (DTSA),<sup>30</sup> where providing test reports, engineering analysis and/or other related IP/TS is subject to prison of not more than ten years<sup>31</sup> and/or a \$5,000,000 fine or 3 times the value of<sup>32</sup> the Intellectual Property (IP) and Trade Secrets (TS).
    - 1.2.3.1 Compliance with public records and trade secret legislation requires approval through the use of Listings, certified reports, Technical Evaluation Reports, duly authenticated reports and/or research reports prepared by approved agencies and/or approved sources.
  - 1.2.4 For new materials<sup>33</sup> that are not specifically provided for in any regulation, the design strengths and permissible stresses shall be established by tests, where suitable load tests simulate the actual loads and conditions of application that occur.
  - 1.2.5 The design strengths and permissible stresses of any structural material shall conform to the specifications and methods of design using accepted engineering practice.<sup>34</sup>
  - 1.2.6 The commerce of approved sources (i.e., registered PEs) is regulated by professional engineering legislation. Professional engineering commerce shall always be approved by AHJs, except where there is evidence provided in writing, that specific legislation have been violated by an individual registered PE.
  - 1.2.7 The AHJ shall accept duly authenticated reports from approved agencies in respect to the quality and manner of use of new materials or assemblies as provided for in IBC Section 104.11.<sup>35</sup>



- 1.3 **Approved<sup>36</sup> by Los Angeles:** The Los Angeles Municipal Code (LAMC) states in pertinent part that the provisions of LAMC are not intended to prevent the use of any material, device or method of construction not specifically prescribed by LAMC. The Department shall use Part III, Recognized Standards in addition to Part II, Uniform Building Code Standards of Division 35, Article 1, Chapter IX of the LAMC in evaluation of products for approval where such standard exists for the product or the material and may use other approved standards that apply. Whenever tests or certificates of any material or fabricated assembly are required by Chapter IX of the LAMC, such tests or certification shall be made by a testing agency approved by the Superintendent of Building to conduct such tests or provide such certifications. The testing agency shall publish the scope and limitation(s) of the listed material or fabricated assembly.<sup>37</sup> The Superintendent of Building Approved Testing Agency Roster is provided by the Los Angeles Department of Building and Safety (LADBS). The Center for Building Innovation (CBI) Certificate of Approval License is TA24945. Tests and certifications found in a DrJ Listing are LAMC approved. In addition, the Superintendent of Building shall accept duly authenticated reports from approved agencies in respect to the quality and manner of use of new materials or assemblies as provided for in the California Building Code (CBC) Section 1707.1.<sup>38</sup>
- 1.4 **Approved by Chicago:** The Municipal Code of Chicago (MCC) states in pertinent part that an Approved Agency is a Nationally Recognized Testing Laboratory (NRTL) acting within its recognized scope and/or a certification body accredited by the American National Standards Institute (ANSI) acting within its accredited scope. Construction materials and test procedures shall conform to the applicable standards listed in the MCC. Sufficient technical data shall be submitted to the building official to substantiate the proposed use of any product, material, service, design, assembly and/or method of construction not specifically provided for in the MCC. This technical data shall consist of research reports from approved sources (i.e., MCC defined Approved Agencies).
- 1.5 **Approved by New York City:** The 2022 NYC Building Code (NYCBC) states in part that an approved agency shall be deemed<sup>39</sup> an approved testing agency via ISO/IEC 17025 accreditation, an approved inspection agency via ISO/IEC 17020 accreditation, and an approved product evaluation agency via ISO/IEC 17065 accreditation. Accrediting agencies, other than federal agencies, must be members of an internationally recognized cooperation of laboratory and inspection accreditation bodies subject to a mutual recognition agreement<sup>40</sup> (i.e., ANAB, International Accreditation Forum also known as IAF, etc.).
- 1.6 **Approved by Florida:** Statewide approval of products, methods or systems of construction shall be approved, without further evaluation by:
- 1.6.1 A certification mark or listing of an approved certification agency,
  - 1.6.2 A test report from an approved testing laboratory,
  - 1.6.3 A product evaluation report based upon testing or comparative or rational analysis, or a combination thereof, from an approved product evaluation entity, or
  - 1.6.4 A product evaluation report based upon testing, comparative or rational analysis, or a combination thereof, developed, signed and sealed by a professional engineer or architect, licensed in Florida.
  - 1.6.5 For local product approval, products or systems of construction shall demonstrate compliance with the structural wind load requirements of the Florida Building Code (FBC) through one of the following methods:
    - 1.6.5.1 A certification mark, listing or label from a commission-approved certification agency indicating that the product complies with the code,
    - 1.6.5.2 A test report from a commission-approved testing laboratory indicating that the product tested complies with the code,
    - 1.6.5.3 A product-evaluation report based upon testing, comparative or rational analysis, or a combination thereof, from a commission-approved product evaluation entity which indicates that the product evaluated complies with the code,



- 1.6.5.4 A product-evaluation report or certification based upon testing or comparative or rational analysis, or a combination thereof, developed and signed and sealed by a Florida professional engineer or Florida registered architect, which indicates that the product complies with the code, or
- 1.6.5.5 A statewide product approval issued by the Florida Building Commission.
- 1.6.6 The [Florida Department of Business and Professional Regulation](#) (DBPR) website provides a listing of companies certified as a [Product Evaluation Agency](#) (i.e., EVLMiami 13692), a [Product Certification Agency](#) (i.e., CER10642), and as a [Florida Registered Engineer](#) (i.e., ANE13741).
- 1.7 **Approved by Miami-Dade County (i.e., Notice of Acceptance [NOA]):** A Florida statewide approval is an NOA. An NOA is a Florida local product approval. By Florida law, Miami-Dade County shall accept the statewide and local Florida Product Approval as provided for in Florida legislation [553.842](#) and [553.8425](#).
- 1.8 **Approved by New Jersey:** Pursuant to the 2018 Building Code of New Jersey in [IBC Section 1707.1 General](#),<sup>41</sup> it states: “*In the absence of approved rules or other approved standards, the building official shall accept duly authenticated reports from [approved agencies](#) in respect to the quality and manner of use of new materials or assemblies as provided for in the administrative provisions of the Uniform Construction Code (N.J.A.C. 5:23)*”.<sup>42</sup> Furthermore N.J.A.C 5:23-3.7 states: “*Municipal approvals of alternative materials, equipment, or methods of construction.*”
  - 1.8.1 **Approvals:** Alternative materials, equipment or methods of construction shall be approved by the appropriate subcode official provided the proposed design is satisfactory and that the materials, equipment or methods of construction are suitable for the intended use and are at least the equivalent in quality, strength, effectiveness, fire resistance, durability and safety of those conforming with the requirements of the regulations.
    - 1.8.1.1 A field evaluation label and report or letter issued by a nationally recognized testing laboratory verifying that the specific material, equipment or method of construction meets the identified standards or has been tested and found to be suitable for the intended use, shall be accepted by the appropriate subcode official as meeting the requirements of the above.
    - 1.8.1.2 Reports of engineering findings issued by nationally recognized evaluation service programs such as but not limited to, the Building Officials and Code Administrators (BOCA), the International Conference of Building Officials (ICBO), the Southern Building Code Congress International (SBCCI), the International Code Council (ICC), and the National Evaluation Service, Inc., shall be accepted by the appropriate subcode official as meeting the requirements of the above.
  - 1.8.2 The [New Jersey Department of Community Affairs](#) has confirmed that technical evaluation reports, from any accredited entity listed by [ANAB](#), meets the requirements of item the previous paragraph, given that the listed entities are no longer in existence and/or do not provide “*reports of engineering findings.*”
- 1.9 **Approved by the Code of Federal Regulations Manufactured Home Construction and Safety Standards:** Pursuant to Title 24, Subtitle B, Chapter XX, [Part 3282.14](#)<sup>43</sup> and [Part 3280](#),<sup>44</sup> the Department encourages innovation and the use of new technology in manufactured homes. The design and construction of a manufactured home shall conform to the provisions of Part 3282 and Part 3280 where key approval provisions in mandatory language follow:
  - 1.9.1 “*All construction methods shall be in conformance with accepted engineering practices.*”
  - 1.9.2 “*The strength and rigidity of the component parts and/or the integrated structure shall be determined by engineering analysis or by suitable load tests to simulate the actual loads and conditions of application that occur.*”
  - 1.9.3 “*The design stresses of all materials shall conform to accepted engineering practice.*”





- 1.10 **Approval by US, Local and State Jurisdictions in General:** In all other local and state jurisdictions, the adopted building code legislation states in pertinent part that:
- 1.10.1 For new materials that are not specifically provided for in this code, the design strengths and permissible stresses shall be established by tests.<sup>45</sup>
  - 1.10.2 For innovative alternatives and/or methods of construction, the building official shall accept duly authenticated reports from approved agencies with respect to the quality and manner of use of new materials or assemblies.<sup>46</sup>
    - 1.10.2.1 An approved agency is “approved” when it is ANAB ISO/IEC 17065 accredited. DrJ Engineering, LLC (DrJ) is in the ANAB directory.
    - 1.10.2.2 An approved source is “approved” when an RDP is properly licensed to transact engineering commerce. The regulatory authority governing approved sources is the state legislature via its professional engineering regulations.<sup>47</sup>
  - 1.10.3 The design strengths and permissible stresses of any structural material...shall conform to the specifications and methods of design of accepted engineering practice performed by an approved source.<sup>48</sup>
- 1.11 **Approval by International Jurisdictions:** The USMCA and GATT agreements provide for approval of innovative materials, designs, services, and/or methods of construction through the Agreement on Technical Barriers to Trade and the IAF Multilateral Recognition Arrangement (MLA), where these agreements:
- 1.11.1 State that conformity assessment procedures (i.e., ISO/IEC 17020, 17025, 17065, etc.) are prepared, adopted, and applied so as to grant access for suppliers of like products originating in the territories of other Members under conditions no less favourable than those accorded to suppliers of like products of national origin or originating in any other country, in a comparable situation.
  - 1.11.2 **Approved:** The purpose of the MLA is to ensure mutual recognition of accredited certification and validation/verification statements between signatories to the MLA and subsequently, acceptance of accredited certification and validation/verification statements in many markets based on one accreditation for the timely approval of innovative materials, designs, services, and/or methods of construction.
  - 1.11.3 ANAB is an IAF-MLA signatory where recognition of certificates, validation, and verification statements issued by conformity assessment bodies accredited by all other signatories of the IAF MLA, with the appropriate scope, shall be approved.<sup>49</sup>
  - 1.11.4 Therefore, all ANAB ISO/IEC 17065 duly authenticated reports are approval equivalent.<sup>50</sup>
- 1.12 Approval equity is a fundamental commercial and legal principle.<sup>51</sup>



Issue Date: November 19, 2020

Subject to Renewal: July 1, 2025

## CBC and CRC Supplement to Report Number 1510-01

REPORT HOLDER: Chemical Technologies Holding Corporation

### 1 Evaluation Subject

1.1 TechWood 4400 (TW4400)

### 2 Purpose and Scope

2.1 Purpose

2.1.1 The purpose of this Report Supplement is to show TechWood 4400, recognized in Report Number 1510-01 has also been evaluated for compliance with the codes listed below.

2.2 *Applicable Code Editions*

2.2.1 *CBC—19, 22: California Building Code (Title 24, Part 2)*

2.2.2 *CRC—19, 22: California Residential Code (Title 24, Part 2.5)*

2.2.3 *CEC —19, 22: California Energy Code (Title 24, Part 6)*

### 3 Conclusions

3.1 TechWood 4400, described in Report Number 1510-01, complies with the CBC and CRC and is subject to the conditions of use described in this supplement.

3.2 Where there are variations between the IBC and IRC and the CBC and CRC applicable to this report, they are listed here:

3.2.1 CBC Section 104.11 replaces IBC Section 104.11.

3.2.2 CBC Section 1707.1 replaces IBC Section 1707.1.

3.2.3 CRC Section R104.11 replaces IRC Section R104.11.

### 4 Conditions of Use

4.1 TechWood 4400, described in Report Number 1510-01, must comply with all of the following conditions:

4.1.1 All applicable sections in Report Number 1510-01.

4.1.2 The design, installation, and inspections are in accordance with additional requirements of CBC and CRC, as applicable.



For more information, visit [drjcertification.org](#) or call us at 608-310-6748.

<https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1702>

Alternative Materials, Design and Methods of Construction and Equipment: The provisions of any regulation code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by a regulation. Please review <https://www.justice.gov/atr/mission> and <https://up.codes/viewer/colorado/ibc-2021/chapter/1/scope-and-administration#104.11>

<https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1706>:~:text=the%20design%20strengths%20and%20permissible%20stresses%20shall%20be%20established%20by%20tests%20as

The design strengths and permissible stresses of any structural material shall conform to the specifications and methods of design of accepted engineering practice.

<https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1706>:~:text=shall%20conform%20to%20the%20specifications%20and%20methods%20of%20design%20of%20accepted%20engineering%20practice

<https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1707.1>:~:text=the%20building%20official%20shall%20accept%20duly%20authenticated%20reports%20from%20approved%20agencies

<https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1703.4.2>

[https://up.codes/viewer/wyoming/ibc-2021/chapter/2/definitions#approved\\_agency](https://up.codes/viewer/wyoming/ibc-2021/chapter/2/definitions#approved_agency)

[https://up.codes/viewer/wyoming/ibc-2021/chapter/2/definitions#approved\\_source](https://up.codes/viewer/wyoming/ibc-2021/chapter/2/definitions#approved_source)

<https://www.law.cornell.edu/uscode/text/18/1832> (b) Any organization that commits any offense described in subsection (a) shall be fined not more than the greater of \$5,000,000 or 3 times the value of the stolen trade secret to the organization, including expenses for research and design and other costs of reproducing the trade secret that the organization has thereby avoided. The federal government and each state have a public records act. To follow DTSA and comply state public records and trade secret legislation requires approval through ANAB ISO/IEC 17065 accredited certification bodies or approved sources. For more information, please review this website: Intellectual Property and Trade Secrets.

<https://www.nspe.org/resources/issues-and-advocacy/professional-policies-and-position-statements/regulation-professional> AND <https://apassociation.org/list-of-engineering-boards-in-each-state-archive/>

<https://www.cbiteest.com/accreditation/>

<https://up.codes/viewer/colorado/ibc-2021/chapter/1/scope-and-administration#104>:~:text=to%20enforce%20the%20provisions%20of%20this%20code

<https://up.codes/viewer/colorado/ibc-2021/chapter/1/scope-and-administration#104.11>:~:text=Where%20the%20alternative%20material%2C%20design%20or%20method%20of%20construction%20is%20not%20approved%2C%20the%20building%20official%20shall%20respond%20in%20writing%2C%20stating%20the%20reasons%20why%20the%20alternative%20was%20not%20approved AND

<https://up.codes/viewer/colorado/ibc-2021/chapter/1/scope-and-administration#105.3.1>:~:text=If%20the%20application%20or%20the%20construction%20documents%20do%20not%20conform%20to%20the%20requirements%20of%20pertinent%20laws%2C%20the%20building%20official%20shall%20reject%20such%20application%20in%20writing%2C%20stating%20the%20reasons%20therefore

<https://up.codes/viewer/colorado/ibc-2021/chapter/17/special-inspections-and-tests#1707.1>:~:text=the%20building%20official%20shall%20accept%20duly%20authenticated%20reports%20from%20approved%20agencies%20in%20respect%20to%20the%20quality%20and%20manner%20of%20use%20of%20new%20materials%20or%20assemblies%20as%20provided%20for%20in%20Section%20104.11

<https://iaf.nu/en/about-iaf-mla/#>:~:text=it%20is%20required%20to%20recognise%20certificates%20and%20validation%20and%20verification%20statements%20issued%20by%20conformity%20assessment%20bodies%20accredited%20by%20all%20other%20signatories%20of%20the%20IAF%20MLA%2C%20with%20the%20appropriate%20scope

True for all ANAB accredited product evaluation agencies and all International Trade Agreements.

<https://www.justice.gov/crt/deprivation-rights-under-color-law> AND <https://www.justice.gov/atr/mission>

Unless otherwise noted, all references in this Listing are from the 2021 version of the codes and the standards referenced therein. This material, product, design, service and/or method of construction also complies with the 2000-2021 versions of the referenced codes and the standards referenced therein.

<https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280#p-3280.2>(Listed%20or%20certified); <https://up.codes/viewer/colorado/ibc-2021/chapter/2/definitions#listed> AND <https://up.codes/viewer/colorado/ibc-2021/chapter/2/definitions#labeled>

<https://up.codes/viewer/colorado/ibc-2021/chapter/17/special-inspections-and-tests#1703.4>

<https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280#>:~:text=All%20construction%20methods%20shall%20be%20in%20conformance%20with%20accepted%20engineering%20practices%20to%20insure%20durable%2C%20livable%2C%20and%20safe%20housing%20and%20shall%20demonstrate%20acceptable%20workmanship%20reflecting%20journeyman%20quality%20of%20work%20of%20the%20various%20trades

<https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280#>:~:text=The%20strength%20and%20rigidity%20of%20the%20component%20parts%20and/or%20the%20integrated%20structure%20shall%20be%20determined%20by%20engineering%20analysis%20or%20by%20suitable%20load%20tests%20to%20simulate%20the%20actual%20loads%20and%20conditions%20of%20application%20that%20occur

Qualification is performed by a legislatively defined Accreditation Body. ANSI National Accreditation Board (ANAB) is the largest independent accreditation body in North America and provides services in more than 75 countries. DrJ is an ANAB accredited product certification body.

See Code of Federal Regulations (CFR) Title 24 Subtitle B Chapter XX Part 3280 for definition.

2018 IFC Section 104.9

Approved is an adjective that modifies the noun after it. For example, Approved Agency means that the Agency is accepted officially as being suitable in a particular situation. This example conforms to IBC/IRC/IFC Section 201.4 where the building code authorizes sentences to have an ordinarily accepted meaning such as the context implies.

<https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1707.1>

Multilateral approval is true for all ANAB accredited product evaluation agencies and all International Trade Agreements.



<http://www.drjengineering.org/AppendixC> AND <https://www.drjcertification.org/cornell-2016-protection-trade-secrets>  
<https://www.law.cornell.edu/uscode/text/18/1832#:~:text=imprisoned%20not%20more%20than%2010%20years>  
<https://www.law.cornell.edu/uscode/text/18/1832#:~:text=Any%20organization%20that,has%20thereby%20avoided>  
<https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1706.2>  
IBC 2021, Section 1706.1 Conformance to Standards  
IBC 2021, Section 1707 Alternative Test Procedure, 1707.1 General  
**See Section 11** for the distilled building code definition of **Approved**  
Los Angeles Municipal Code, SEC. 98.0503. TESTING AGENCIES  
<https://up.codes/viewer/california/ca-building-code-2022/chapter/17/special-inspections-and-tests#1707.1>  
New York City, The Rules of the City of New York, § 101-07 Approved Agencies  
New York City, The Rules of the City of New York, § 101-07 Approved Agencies  
<https://up.codes/viewer/new-jersey/ibc-2018/chapter/17/special-inspections-and-tests#1707.1>  
<https://www.nj.gov/dca/divisions/codes/codreg/ucc.html>  
<https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3282/subpart-A/section-3282.14>  
<https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280>  
IBC 2021, Section 1706 Design Strengths of Materials, 1706.2 New Materials. Adopted law pursuant to IBC model code language 1706.2.  
IBC 2021, Section 1707 Alternative Test Procedure, 1707.1 General. Adopted law pursuant to IBC model code language 1707.1.  
<https://www.nspe.org/resources/issues-and-advocacy/professional-policies-and-position-statements/regulation-professional-boards-in-each-state-archive/> AND <https://apassociation.org/list-of-engineering-boards-in-each-state-archive/>  
IBC 2021, Section 1706 Design Strengths of Materials, Section 1706.1 Conformance to Standards Adopted law pursuant to IBC model code language 1706.1.  
<https://iaf.nu/en/about-iaf-mla/#:~:text=it%20is%20required%20to%20recognise%20certificates%20and%20validation%20and%20verification%20statements%20issued%20by%20conformity%20assessment%20bodies%20accredited%20by%20all%20other%20signatories%20of%20the%20IAF%20MLA%2C%20with%20the%20appropriate%20scope>  
True for all ANAB accredited product evaluation agencies and all International Trade Agreements.  
<https://www.justice.gov/crt/deprivation-rights-under-color-law> AND <https://www.justice.gov/atr/mission>