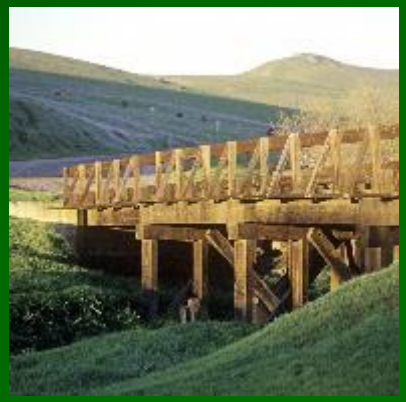
TREATED WOOD COUNCIL

Specifying Treated Wood for Bridges and Structures

TWC Presentation to the Northeast Bridge Preservation Partnership


Chip Bremer
Kris Owen
Kim Merritt
Treated Wood Council
1/6/2026

TREATED WOOD COUNCIL

Agenda

- Introductions
- Treated Wood Council overview
- Wood treatment purpose and process
- Preservative and treatment standards
  - Standardizing bodies (AWPA and AASHTO)
  - Approved preservatives
  - AWPA use category (UC) guidelines
  - Typical applications
  - Quality assurance (QA) standards
- Q&A

Introductions

Attending from the Treated Wood Council:

- Chip Bremer, TWC Specification Comms Manager (Austin, TX)
- Kris Owen, TWC Consultant (Westfield, IN)
- Kim Merritt, Southern Pine Inspection Bureau (Pensacola, FL)
- Todd Schoffstoll, Viance (Santa Maria, CA)
- Dan Kane, BB&S Treated Lumber (Manchester, NH)
- Ed LoBello, Wheeler (Midlothian, VA)
- David Clemens, Wheeler (Midlothian, VA)
- Aaron Demundo, 84 Lumber (Eighty Four, PA)

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TWC Overview

- Monitors and responds to legislative and regulatory activities related to the treated wood industry
- Ensures standards and specifications used by state and federal offices of parks and transportation are updated to the most recent national standards while serving the best interest of that particular state or federal entity
- **Provides educational presentations and resources for government entities working with treated wood**
- More than 500 members in North America
  - Wood preservers / Treating companies; ~36%
  - Wood product / Lumber producers; ~25%
  - Preservative suppliers; ~2%
  - Affiliated organizations; ~37%
- www.treated-wood.org

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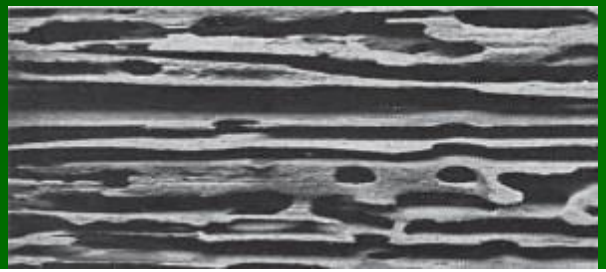
Why Wood is Treated

- Under proper conditions, non-preserved and untreated wood can give centuries of good service
  - Interior, protected
- Under unfavorable conditions, untreated wood can be damaged readily and destroyed by fungi, insects and marine borers
  - Exterior, exposed
- Destroying agents can attack in many ways, so wood must be protected to ensure maximum service life when used in unfavorable conditions



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Wood Treatment Process

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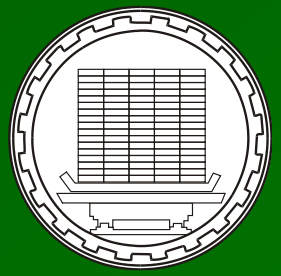
Wood Treatment Process

Inside the Treating Cylinder

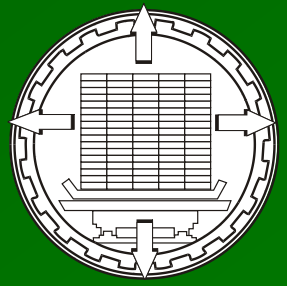
Step 1

Dry wood is loaded into cylinder



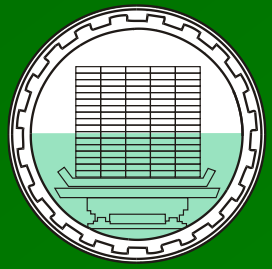
Step 2

Initial vacuum pulls out air



Step 3

Liquid preservative fills cylinder



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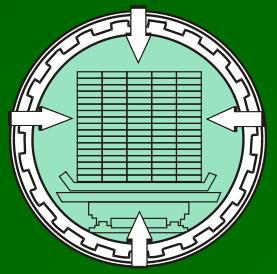
Wood Treatment Process

Inside the Treating Cylinder

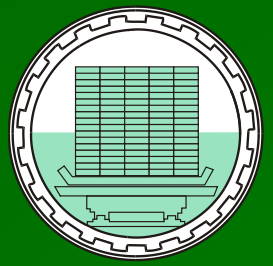
Step 4

Pressure forces preservative into wood



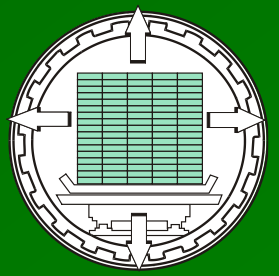
Step 5

Remaining liquid emptied for later use



Step 6

Final vacuum removes excess chemical



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Standardizing Bodies

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American Wood Protection Association

- Non-profit organization that establishes wood preservation standards through an ANSI-accredited, consensus-based process and promulgates them for use within the treated wood industry
- The principal standards-writing body for treated wood products recognized by most specifiers of treated wood in the U.S. for use in electrical utility, marine, road and building construction, and government agencies

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American Wood Protection Association

- AWPA technical committees, comprised of industry experts (including consumers, end-users, government officials, academia, specifiers, and producers) meet on a regular basis to develop and maintain standards for treated wood products
- These standards include the approval of wood preservative systems, minimum penetration and retention levels, testing methods, quality control, and inspection procedures
- **Standards are reviewed annually and must be reaffirmed at least every five (5) years**

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AWPA Use Category System

- Introduced in 1999 to replace “C” commodity system
- Provides a simple way of specifying treated wood products
- Use categories define application, decay hazard and expected product performance to assist specifiers in the appropriate use of treated wood products

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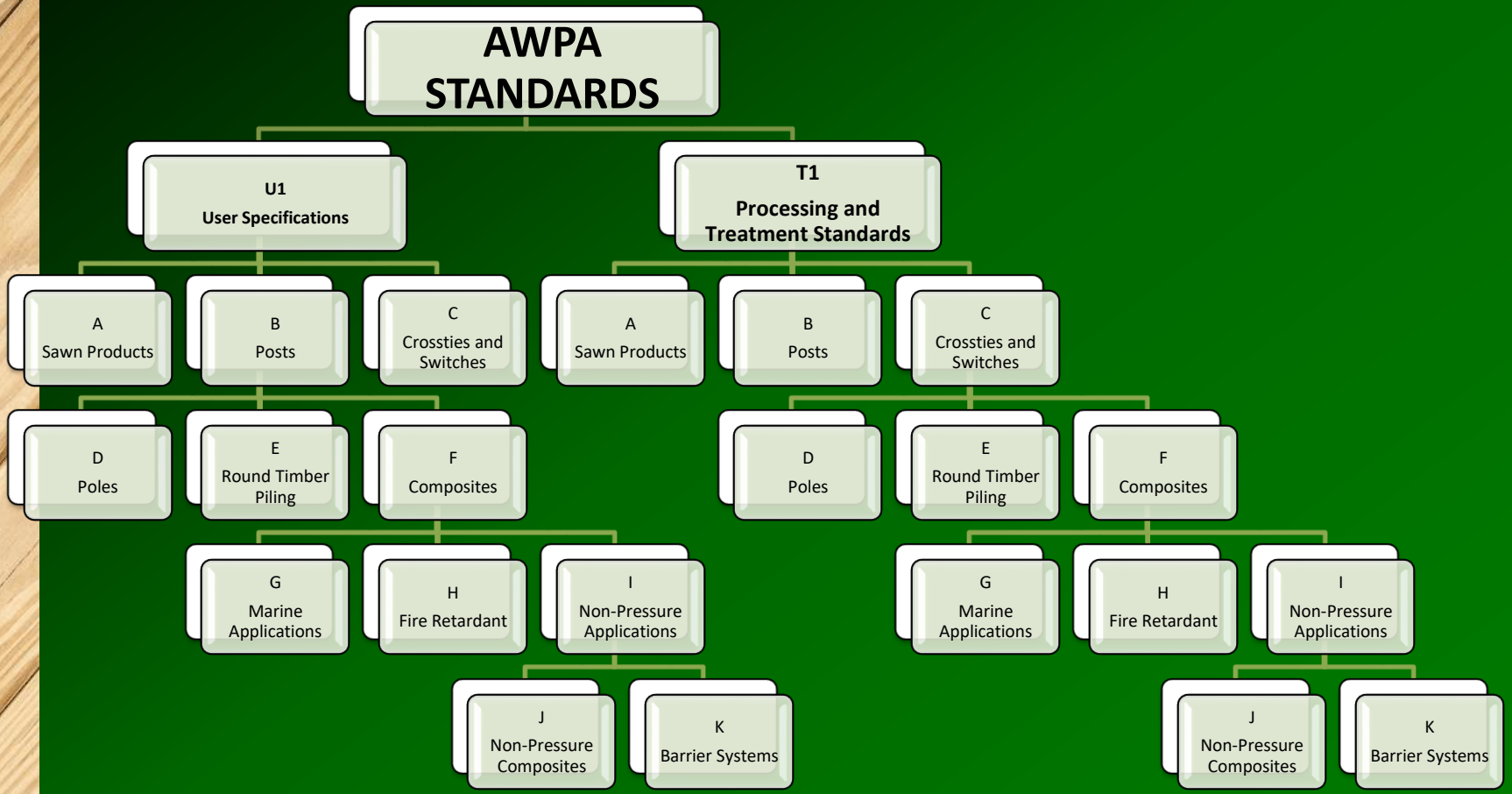
AWPA Standards Organization



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AWPA Use Category System

- There are five use categories based on hazard level and expected product performance
- Users should determine their specific service condition then the Use Category serves as the guide to locate the type of product needed, preservative, and retention level most appropriate for the application
- www.awpa.com

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AWPA UC Table

Category	Description	Examples
UC1	Interior, not in contact with ground or foundation	Interior furniture, millwork
UC2	Interior, subject to dampness	Interior beams, flooring, sill plate
UC3A	Exterior, above ground, coated	Plywood siding
UC3B	Exterior, above ground, may be finished	Decking and railings
UC4A	Exterior, ground or freshwater contact in areas with low risk	Fence posts, deck posts, poles
UC4B	Exterior, ground or freshwater contact, severe environments, high potential for deterioration	Utility poles, building poles, Permanent Wood Foundations
UC4C	Exterior, ground or freshwater contact, very severe conditions or very critical structural components	Freshwater piling, foundation piling, utility poles in semi-tropical or tropical environments
UC5A	Saltwater exposure – north of San Francisco and New Jersey	Piling, bulkheads
UC5B	Saltwater exposure – south of San Francisco on West coast, New Jersey through Georgia on East coast	Piling, bulkheads
UC5C	Saltwater exposure – south of Georgia, Gulf Coast	Piling, bulkheads
UCFA	Fire protection, weather-shielded	Framing
UCFB	Fire protection, exterior	Siding, shakes, stairways

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American Association of State Highway and Transportation Officials

AASHTO

- Reviewed annually
- M-168 Wood
- M-133 Preservative Treatments – allows both AWPA and ICC-ES

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Approved Preservatives for Wood Treatment

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Oil Borne-Type Preservatives

- Creosote
- Pentachlorophenol*
- Copper Naphthenate
- DCOI (4,5-dichloro-2-n-octyl-4-isothiazolin-3-1)

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Waterborne Preservatives

- ACZA (Ammoniacal Copper Zinc Arsenate)
- CCA (Chromated Copper Arsenate)
- ACQ (Alkaline Copper Quat)
- CA (Copper Azole)
- MCA (Micronized Copper Azole)
- EL2 (Ecolife – DCOI Imidacloprid)

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Typical Applications and Approved Preservatives

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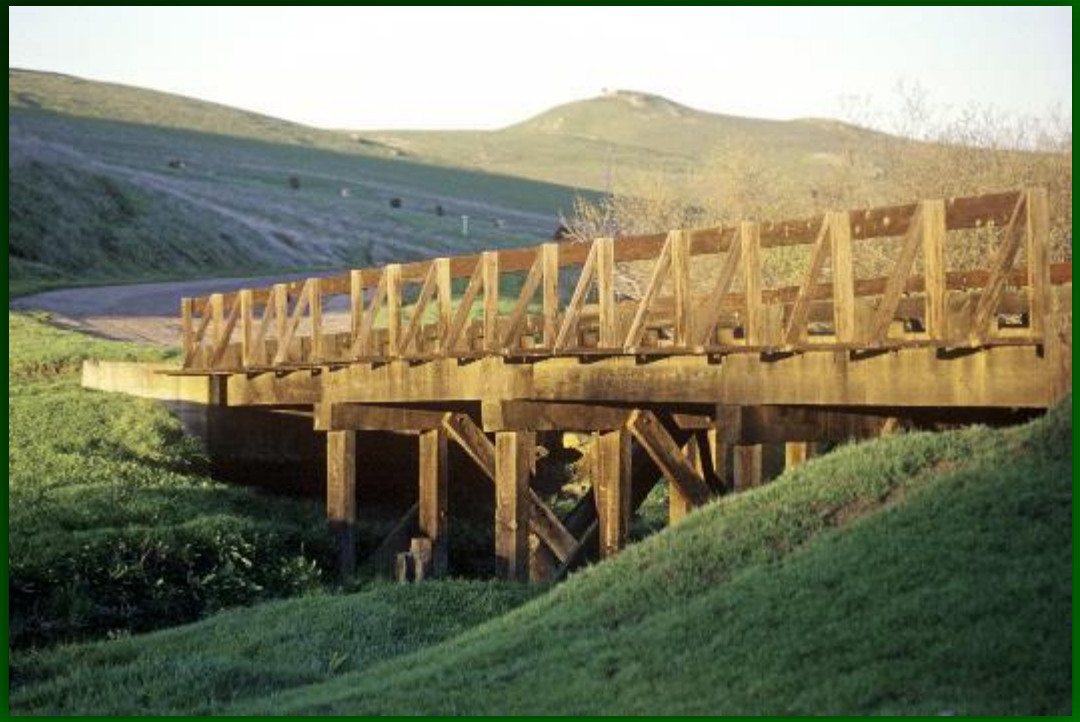
Treated Wood Uses: Lumber, Timbers and Decking for Bridges, Structural Members, Cribbing, and Culverts



- Use Category: UC4B (Built to Highway Standards)
- Commodity Specification A: Sawn Products
- Approved Preservatives: CR, CR-S, CR-PS, CuN, ACQ-D, ACZA, CA-C, CCA, MCA-C, DCOI

Treated Wood Uses: Round Piles and Sheeting for Marine Applications

- Use Category (Marine Applications): UC5A
- Commodity Specification G: Marine (**salt water**) applications
- Approved Preservatives: CR, CR-S, ACZA, CCA and dual treatments

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Treated Wood Uses: Round Piles and Sheeting For Ground and Freshwater Contact

- Use Category (Ground and Freshwater Contact): UC4B
- Commodity Specification E: Piles, Round
- Approved Preservatives: CR, CR-S, CR-PS, CuN, ACQ-C, ACZA, CA-C, CCA, MCA

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Quality Control and Inspection

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American Lumber Standard Committee (ALSC)

- Non-profit organization comprised of manufacturers, distributors, users, and consumers of lumber, that serves as the standing committee for the American Softwood Lumber Standard (Voluntary Product Standard 20)
- Administers an accreditation program for the grade-marking of lumber produced under the system in accordance with PS 20
- Administers accreditation programs for the quality marking of treated lumber produced under standards written and maintained by the American Wood Protection Association (AWPA).

AWPA U1 Standard

- Describes service conditions
- Lists standardized preservatives and species provides commodity specifications for: Sawn, Posts, Crossties, Poles, Piling, Composites, and Marine
- Provides marking requirements
- Provides special requirements (e.g., PWF and marine applications)

AWPA UC Table

3.0 Sawn Products – UC4B

Use Category 4B: Ground Contact or Fresh Water

Preservative retentions pcf (as active ingredients unless otherwise specified)

pcf (US Customary units)	Pines				Spruce					
Preservative	Southern Mixed Southern Radiata, Patula Caribbean	Ponderosa Red Eastern White	Scots Pine-Ger Scots Pine-Swe	Jack Lodgepole	Western White Engelmann Sitka Spruce	Spruce-Pine-Fir West	Coastal Douglas-fir[a]	Hem-fir Hem-fir North Eastern Hemlock Subalpine Fir	Redwood
CR (as solution)	10.0	10.0	#	10.0	10.0	#	10.0	10.0	10.0
CR-S (as solution)	10.0	10.0	#	10.0	10.0	#	10.0	10.0	10.0
CR-PS (as solution)	10.0	10.0	#	10.0	10.0	#	10.0	10.0	10.0
CuN (as Cu metal)[b]	0.075	0.075	#	#	0.075	#	0.075	0.075	#
PCP-A	0.50	0.50	#	0.50	0.50	#	0.50	0.50	0.50
PCP-C	0.50	0.50	#	0.50	0.50	#	0.50	0.50	0.50
ACQ-B[b]	0.60	0.60	#	#	0.60	#	0.60	0.60	#
ACQ-C[b]	0.60	0.60	0.60	0.60	0.60	0.60	#	0.60	#
ACQ-D[b]	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	#
ACZA[b]	0.60	0.60	#	0.60	0.60	0.60	0.60	0.60	0.60
CA-B[b]	0.31	0.31	0.31	0.31	#	#	0.31	0.31	#
CA-C[b]	0.31	0.31	0.31	#	#	#	0.31	0.31	#
CCA[b]	0.60	0.60	#	0.60	0.60	0.60	0.60	0.60	0.60
MCA[b]	0.31	0.31	0.31	#	#	#	#	0.31	#
MCA-C[b]	0.31	#	#	#	#	#	#	0.31	#

= Either no proposal for standardization and/or data demonstrating efficacy of a preservative/species combination has been submitted to AWPA; or the use of the preservative/species combination has been proven ineffective.

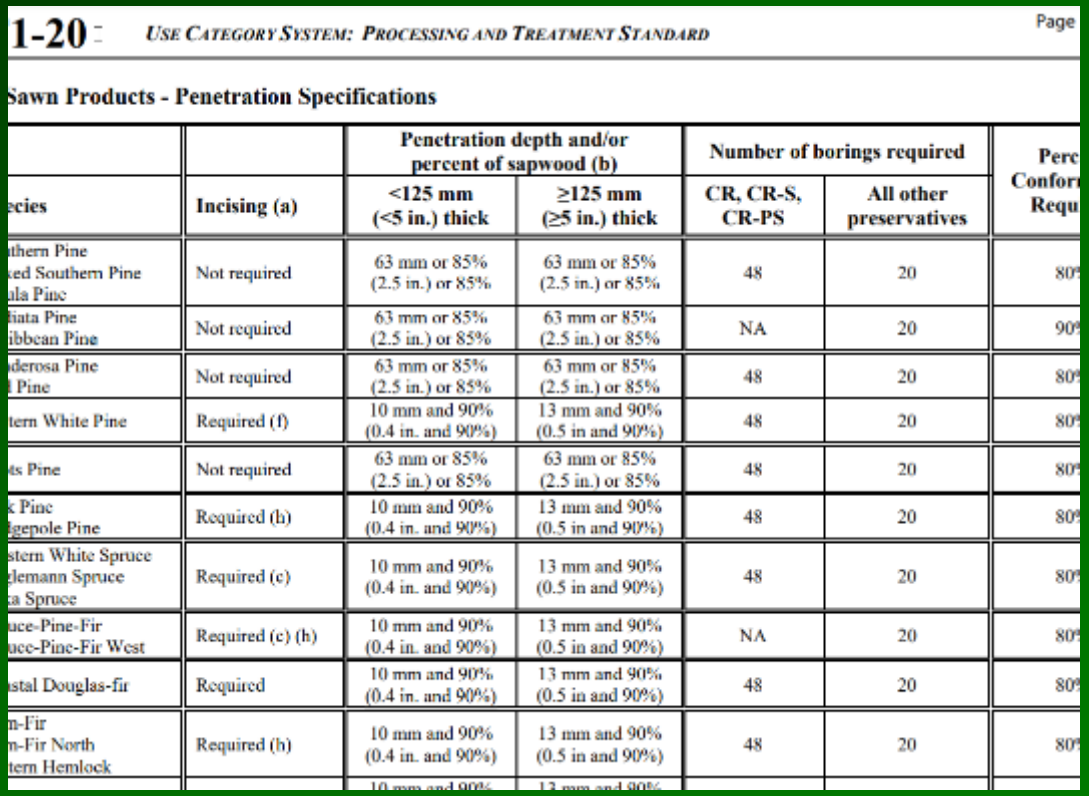
a) Coastal Douglas-fir from a few geographical areas has been found suitable for treatment with CCA. However, it is generally recognized that most sawn products from Coastal Douglas-fir are extremely difficult to treat with the preservative CCA to meet the penetration and retention requirements of this standard even when incised.

b) Retentions are suitable for exposure in areas subject to Formosan subterranean termite activity.

Note: excerpt shown for example only – the AWPA Standards are copyrighted documents

AWPA T1 Standard

- General treating requirements
- Results of treatment
- Preservative minimums (Table 3.2)
- QC and inspection requirements
- Retreatment requirements
- Drying after treatment
- Special requirements by commodity



1-20 — *Use Category System: Processing and Treatment Standard* — Page

Sawn Products - Penetration Specifications

ecies	Incising (a)	Penetration depth and/or percent of sapwood (b) <125 mm (<5 in.) thick	Penetration depth and/or percent of sapwood (b) ≥125 mm (≥5 in.) thick	Number of borings required CR, CR-S, CR-PS	Number of borings required All other preservatives	Perc Confor Requ
thern Pine ked Southern Pine ula Pine	Not required	63 mm or 85% (2.5 in.) or 85%	63 mm or 85% (2.5 in.) or 85%	48	20	80
iata Pine ibbean Pine	Not required	63 mm or 85% (2.5 in.) or 85%	63 mm or 85% (2.5 in.) or 85%	NA	20	90
derosa Pine Pine	Not required	63 mm or 85% (2.5 in.) or 85%	63 mm or 85% (2.5 in.) or 85%	48	20	80
tern White Pine	Required (f)	10 mm and 90% (0.4 in. and 90%)	13 mm and 90% (0.5 in and 90%)	48	20	80
ts Pine	Not required	63 mm or 85% (2.5 in.) or 85%	63 mm or 85% (2.5 in.) or 85%	48	20	80
k Pine gepole Pine	Required (h)	10 mm and 90% (0.4 in. and 90%)	13 mm and 90% (0.5 in and 90%)	48	20	80
stern White Spruce elmann Spruce a Spruce	Required (c)	10 mm and 90% (0.4 in. and 90%)	13 mm and 90% (0.5 in and 90%)	48	20	80
uce-Pine-Fir uce-Pine-Fir West	Required (c) (h)	10 mm and 90% (0.4 in. and 90%)	13 mm and 90% (0.5 in and 90%)	NA	20	80
stal Douglas-fir	Required	10 mm and 90% (0.4 in. and 90%)	13 mm and 90% (0.5 in and 90%)	48	20	80
n-Fir n-Fir North tern Hemlock	Required (h)	10 mm and 90% (0.4 in. and 90%)	13 mm and 90% (0.5 in and 90%)	48	20	80

Penetration Specifications, Assay Zones, Sampling Requirements

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Third-Party Inspection

- The ALSC accredits third-party agencies to inspect treating plants that produce treated lumber products with preservative systems listed in the AWPA Book of Standards (BOS)
- These agencies are subject to review by ALSC to ensure the laboratory and agency inspection activities remain in compliance with standard requirements

AWPA Standard M2

STANDARD FOR THE INSPECTION OF PRESERVATIVE TREATED PRODUCTS FOR INDUSTRIAL USE

- Provides procedures for inspection at wood preserving plants of industrial products including but not limited to poles, crossarms, piling, ties, timbers, round posts and composite wood products
- These products are generally produced to the user's written specifications and supplied directly to the user or through distributors to industrial contractors

- Responsibilities of Plant Personnel
- Suitability of Products for Treatment
- Inspection of Product Before Treatment
- Inspection of Product During Treatment
- Inspection of Product After Treatment e.g., boring instructions, use of indicators, results of treatment testing
- Inspector Identification, Records and Reporting

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Treated Wood Quality Marks

Remedial or Field Treatment

- Anytime there is drilling, sawing, cutting, shaping or any modification after treatment, the affected area should be treated to protect the structure
- **AWPA Standard M4** provides guidance on how to apply treatment in the field

Fasteners and Hardware

- Guidance on hardware for treated wood
  - ICC IBC 2021 (latest version released in Jan 2024)
  - Section 2304.10.6.1 “Fasteners and Connectors for Preservative-Treated Wood”
  - Fasteners (nails, screws, nuts, washers): ASTM A153
  - Connectors: ASTM A653, G185
- Hot-dipped galvanized or stainless steel (not both)

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Benefits of Treated Wood over Other Materials

- Longevity: **30-40 years or more of service life** (if properly treated and installed to specification)
- Sustainability: Renewable resource, environmentally friendly
- Cost-Effective: Wood posts can be almost half the cost of steel posts
- Highly Regulated: Controlled by third-party inspection
- Reliability: Successfully used across the country for almost a century for many DOT applications

Useful Links

- Treated Wood Council (Treated-Wood.org)
- Western Wood Preservers Institute (PreservedWood.org)
- Wood That Lasts eUniversity (preservedwood.org/Tech-Resources/eUniversity)
- WWPI Smartphone App (preservedwood.org/TechResources/SmartphoneApp.aspx)

Android

Apple

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Questions