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October 31, 1974
SUPERSEDING
INTERIM REVISION OF
Fed. Spec. TT-W-571i
October 28, 1968

FEDERAL SPECIFICATION

WOOD PRESERVATION: TREATING PRACTICES

This Interim Federal Specification was developed by the U.S. Department of Agriculture, Forest Service, Forest Products Laboratory, P. O. Box 5130, Madison, Wisconsin 53705, based upon currently available technical information. It is recommended that Federal agencies use it in procurement and forward recommendations for changes to the preparing activity at the address shown above.

The United States Department of Agriculture has authorized the use of this Interim Federal Specification as a valid exception to Federal Specification TT-W-571i.

1. SCOPE

1.1 Scope. This specification covers the treatment of different forms and species of wood with various preservatives. It covers treatments of wood items that will be exposed to either moderate or severe hazard of attack by wood-destroying organisms so that an appreciable-retention of preservative as well as significant penetration into wood is necessary. Such results are attainable by pressure processes which are acceptable for all products listed in tables I, II, and III. Certain other processes are acceptable for some items provided that they yield the retention and penetration requirements specified herein. These processes include thermal treatments of some species of poles, and double-diffusion treatments of posts, poles, and lumber. Reference is made to TT-W-572, Wood Preservative, Water Repellent, for the treatment of items such as window sash that are used under mild exposure conditions whereby adequate protection is afforded by short-dip treatments.

2. APPLICABLE DOCUMENTS

2.1 The following documents of the issues in effect on date of invitation for bids or requests for proposal form a part of this specification to the extent specified herein:

Federal specifications:

TT-C-645 - Creosote, Coal Tar, Technical.
TT-C-650 - Creosote-Coal Tar Solution.
TT-C-655 - Creosote, Technical, Wood Preservative, (For) Brush Spray or Open-Tank Treatment.
TT-W-535 - Wood Preservative; Fluoride-Chromate Arsenate-Phenol Mixture.
TT-W-546 - Wood Preservative; Acid Copper Chromate Mixture.
TT-W-549 - Wood Preservative; Ammoniacal copper Arsenite Mixture.
TT-W-550 - Wood Preservative; Chromated Copper Arsenate Mixture.
TT-W-551 - Wood Preservative; Chromated Zinc Chloride Mixture.
TT-W-568 - Wood Preservative; Creosote-Petroleum Solution.
TT-W-570 - Wood Preservative; Pentachlorophenol, Solid.
TT-W-572 - Wood Preservative; Water Repellent.
TT-W-1894 - Wood Preservative; Tributyltin oxide.

(Activities outside the Federal Government may obtain copies of Federal

Specifications, Standards, and Handbooks as outlined under General Information in the Index of Federal Specifications, Standards, and Handbooks at the prices indicated in the Index. The Index, which includes cumulative monthly supplement as issued, is for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.)

(Single copies of this specification and other product specifications required by activities outside the Federal Government for bidding purposes are available without charge from Business Service Centers at the General Services Administration Regional Offices in Boston, New York, Washington, D.C., Atlanta, Chicago, Kansas City, Mo., Fort Worth, Denver, San Francisco, Los Angeles, and Seattle, WA.)

(Federal Government activities may obtain copies of Federal Specifications, Standards, and Handbooks and the Index of Federal Specifications, Standards from established distribution points in their agencies.)

FSC 5520

2.2. Other publications. The following documents form a part of this specification to the extent specified herein. Unless a specific issue is identified, the issue in effect on date of invitation for bids or request for proposal shall apply.

American Wood Preservers Association (AWPA) Standards:

A1 - Standard Methods for Analysis of Creosote and Oil-Type Preservatives.
A2 - Standard Methods for Analysis of Waterborne Preservatives and Fire-Retardant Formulations.
A3 - Standard Methods for Determining Penetration of Preservatives and Fire Retardants.
A4 - Standard Methods for Sampling Wood Preservatives.
A5 - Standard Methods for Analysis of Oil-Borne Preservatives.
A6 - Methods for the Determination of Oil-Type Preservatives and Water in Wood.
A7 - Standard Wet Ashing Procedure for Preparing Wood for Chemical Analysis.
A8 - Qualitative Recovery of Creosote or Creosote-Coal Tar Solution from Freshly Treated Piles, Poles, or Timber (Squeeze Method).
A9 - Standard Method for Analysis of Treated Wood and Treating Solutions by X-ray Emission Spectroscopy.
A10 - Standard Methods of Analysis of CCA Treating Solutions and CCA Treated Wood by Colorimetry.
C1 - All Timber Products--Preservative Treatment by Pressure Processes.
C2 - Lumber, Timbers, Bridge Ties, and Mine Ties--Preservative Treatment by Pressure Processes.
C3 - Piles--Preservative Treatment by Pressure Processes.
C4 - Poles--Preservative Treatment by Pressure Processes.
C5 - Fenceposts--Preservative Treatment by Pressure Processes.
C6 - Crossties and Switch Ties--Preservative Treatment by Pressure Processes.
C8 - Western Red Cedar and Alaska Yellow Cedar Poles -- Preservative Treatment by the Full-Length Thermal Process.
C9 - Plywood -- Preservative Treatment by Pressure Processes.
C10 - Lodgepole Pine Poles--Preservative Treatment by the Full-Length Thermal Process.
C14 - Wood for Highway Construction -- Preservative Treatment by Pressure Processes.
C16 - Wood Used on Farms -- Preservative Treatment by Pressure Processes.
C18 - Standard for Pressure -- Treated Piles and Timbers in Marine Construction.
C23 - Round Poles and Posts Used in Building Construction -- Preservative Treatment by Pressure Processes.
C28 - Standard for Preservative Treatment of Structural Glued Laminated Members and Laminations Before Gluing of Southern Pine, Pacific Coast Douglas-fir, and Western Hemlock by Pressure Processes.
M2 - Standard for Inspection of Treated Timber Products.
M3 - Standard Quality Control Procedures for Wood Preserving Plants.
M4 - Standard for the Care of Pressure-Treated Wood Products.
M5 - Glossary of Terms Used in Wood Preservation.
M6 - Brands Used on Forest Products.
P4 - Standard for Petroleum Oil for Blending with Creosote.
P8 - Standards for Oil-Borne Preservatives.
P9 - Standards for Solvents for Oil-Borne Preservatives.

(Copies of the Standards and Instructions of the American Wood-Preservers' Association may be obtained from its Secretary-Treasurer, 1625 Eye Street, N.W., Washington, D.C. 20006. Prices may be obtained form the Secretary-Treasurer.)

Technical society and technical association specification standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.

3. REQUIREMENTS

3.1 General requirements. Since difficulty may be encountered in obtaining the specified retention and penetration, it is the responsibility of the supplier to select piles, poles, and posts for treatment that have sufficient conditioning and, for some species, incising prior to treatment and the use of treating conditions which do not damage the wood according to AWPA standards C1 and M3, are further responsibilities of the supplier (see 3.4 and 3.5). Unless otherwise specified in the contract or purchase order (see 6.2), the treatment of various products and species shall be in accordance with tables I, II, and III and footnotes thereto. Inspection of treated products shall be made in accordance with paragraphs 4.2 to 4.2.7 inclusive. Whenever differences exist between this specification and corresponding industry specifications, the requirements of this specification shall prevail.

3.2 Segregation of material for treatment. The material shall be separated or spaced so as to insure contact of treating medium with all surfaces. Whenever the quantity of material ordered is sufficient, items of different species, size, conditioning, and retention requirements shall be treated in separate charges.

3.3 Empty- and full-cell processes. Empty-cell treatment shall be used with preservative oils and oil-borne preservatives except when the retention specified is greater than can be obtained by an empty-cell process. Water-borne preservatives shall be injected by the full-cell process whenever the product is to be used in coastal waters or in foundations. A modified full-cell process is described in AWPA Standard C1, may be used for plywood and sawn material less than 5 inches in thickness and not intended for use in marine exposure or foundations. Control over wood temperature is essential in treating wood with waterborne preservatives containing chromates which are unstable in contact with wood at high temperatures.

3.4 Seasoning. Green material shall be adequately seasoned or conditioned before impregnation with preservative. This practice applies particularly to sawn material that is difficult to penetrate and to round material of thin sapwood species. All lumber that is to be treated with an oil-type preservative and used in buildings or other places where high moisture content or shrinkage after installation would be objectionable shall be dried before treatment. When sawn material is treated with a permanent-type, chromium-containing preservative, such as chromated copper arsenate, the moisture content prior to treatment as determined by resistance-type moisture meter, shall not be more that 25 percent. The moisture content shall be measured at a depth equivalent to the required penetration up to a maximum of 1.5 inches. When treated with other waterborne preservatives, sawn material shall be suitably seasoned or conditioned prior to treatment. Unless otherwise specified (see 6.2), lumber 2 inches (nominal) or less in thickness and plywood that is treated with a waterborne preservative shall be dried after treatment to a moisture content of not more than 19 percent.

3.5 Incising. All lumber and timbers of species that are difficult to penetrate, such as Douglas-fir, western larch, western hemlock, redwood, and pines that are predominantly heartwood, shall be incised prior to treatment, provided the incisions will not make the material unfit for the use intended.

3.6 Marking. Unless otherwise specified (see 6.2), treated material shall be either hammer or heat branded, dye stamped, or metal tagged in accordance with AWPA Standards M1 and M6. Information shall be included for specific commodities, as given in the following:

3.6.1 Poles 50 feet or less in length shall be branded or tagged 10 feet from the butt. Poles 55 feet or more in length shall be branded or tagged 14 feet from the butt. All poles shall have the required branding or tagging included on the butt face. The brand shall identify species, class and length, preservative, retention, supplier, and year of treatment.

3.6.2 Piles shall be branded or tagged in two places approximately 5 and 10 feet from the butt. The brand shall identify species, class and length, preservative, retention, supplier, and year of treatment.

3.6.3 Posts shall be branded or tagged at or within 12 inches of the top. The brand shall identify preservative, supplier, and year of treatment.

3.6.4 Crossties shall be branded at least on one end. The brand shall identify preservative, supplier, and year of treatment.

3.6.5 Crossarms shall be branded on one face. The brand shall identify preservative, supplier, and year of treatment.

3.6.6 Sawn material more than 2 inches (nominal) in thickness and treated with and oil-type preservative shall be individually branded or tagged on one end to identify species, preservative, retention, supplier, and year of treatment. When treated with a waterborne preservative, it may be dye stamped on the surface.

3.6.7 Sawn material less than 2 inches in thickness or plywood when treated with an oil-type preservative may be bundled with tags being attached to the bundles to identify specifies, preservative, retention, supplier and year of treatment. In lieu of tags attached to bundles, when such material is treated with a waterborne preservative, the required information may be dye stamped on the outer pieces of a bundle.

4. QUALITY ASSURANCE PROVISIONS

4.1 The Government reserves the right to perform and/or retain services for any of the inspections set forth in the specification where such inspections are deemed necessary to assure that supplies and services conform to prescribed requirements. Tests to verify the accuracy of inspection reports furnished by the supplier shall be made either by employees of the purchaser or by commercial inspection companies retained by the purchaser. The purchaser may elect to employ the services and accept the stamp or brand of an independent quality control agency. When treated wood, as specified by a Government agency, is procured by a contractor for the construction of a building or other facility for that agency, the contractor shall submit to that agency an inspection report from an independent commercial inspection company acceptable to the purchaser. An omission of this inspection report is permissible if the treated wood bears the brand or stamp of an independent quality control agency acceptable to the purchaser. In the invitation for bids, the purchaser will designate the general procedure to be used in conforming the quality of the products.

4.1.1 Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein, and complete inspection records shall be furnished to the purchaser's office or otherwise stipulated in the order or contract.

4.1.2 Except as otherwise specified, the supplier may utilize his own or any other inspection facilities and services acceptable to the Government (see 4.1).

4.1.3 Inspection of the untreated stock shall be made in a period within 10 days of treatment.

4.1.4 The Government reserves the right to conduct or retain services for inspections at destination. When the results obtained at destination disagree with those obtained at origin, the results of the destination inspection shall be binding.

4.1.5 When inspection is made at destination, it will be made within 30 days of delivery. AWPA methods of assay will be used and an assay retention of 90 percent of the stipulated assay retention will be accepted as conforming. (See footnote 10, table II).

4.2 Instructions. Unless otherwise specified, AWPA Standard M2 (with certain exceptions as given below) shall be followed in the inspection of all treated wood purchased by the Government.

4.2.1 Penetration. In the inspection of piles, building poles, building posts, or Group B utility poles (37.5 in. or more in circumference 6 ft from the butt), each piece shall be bored at the approximate midpoint for the determination of penetration. Any piece that does not show the specified penetration shall be rejected. If 15 percent or more of the pieces in any charge or lot of piles, building poles, Group B utility poles, or building posts fail to meet penetration requirements, the entire charge or lot shall be rejected.

In determining the penetration in Group A utility poles (less than 37.5 inc. in circumference 6 ft from the butt), 20 representative poles in a charge shall be bored at the approximate midpoint. If 18 of the borings meet penetration requirements, the Group A poles in the charge as a whole shall be accepted, but the nonconforming poles shall be rejected. If 16 or 17 of the borings meet penetration requirements, each Group A pole in the charge shall be

bored and only those meeting penetration requirements shall be accepted. If less than 16 of the borings meet penetration requirements, the charge shall be rejected.

4.2.2 Retention. For the assay of a charge of poles, a single boring shall be taken from each of 20 randomly selected poles. For the assay of piles, the number of borings from any charge shall be according to the following schedule:

Number of piles in charge	Number of borings
20 or more	20 from 20 randomly selected piles
15 to 19	One from each pile
Less than 15	At least 20, with an equal number from each pile

The borings shall be cut to the proper length for the species as shown in tables II and III.

4.2.3 In the inspection of treated round fence posts, 30 representative posts of a lot shall be bored from measurement of penetration. If less than 80 percent of the borings show the specified penetration, the entire charge shall be rejected. If 80 percent or more of the borings meed the penetration requirement, a composite sample of one boring from each of 30 posts shall be taken for assay. The borings for assay shall be cut to the proper length for the species as shown in table II. The inspection of sawn posts shall be conducted according to the procedure outlined in 4.2.4 for the inspection of treated timbers.

4.2.4 In the inspection of treated lumber of solid timbers, 20 representative pieces of a lot shall be bored for measurement of penetration. Southern and ponderosa pine shall be bored from sapwood faces only. Douglas-fir, western-hemlock, western larch, redwood, and other species of pine shall be bored from heartwood faces only. If 80 percent or more of the borings meet the penetration requirements, the lot is considered to meed penetration requirements. For laminated timbers, see footnote 7. For the assay of treated southern and ponderosa pine lumber of timber, a composite sample of the outer 0.60 inch of borings shall be taken from heartwood. Single borings shall be taken from 48 representative pieces treated with creosote or creosote-containing solutions, and from 20 representative pieces treated with pentachlorophenol or waterborne preservatives. Retentions in lumber or timbers of species not mentioned above shall be determined by gage readings.

4.2.5 In the inspection of treated plywood, penetration shall be determined by taking borings 12 inches from any edge into one face of each of not less than five panels in any lot. Borings shall be tested for penetration by the appropriate procedure described in AWPA Standard A3. Penetration in plywood shall be considered adequate if each veneer is penetrated. For the assay of treated plywood, samples shall be taken from not less than five panels in each lot. These samples shall be taken at a point 12 inches from any edge. Plywood 5/8 inch or less in thickness shall be sampled through the full thickness. Plywood more than 5/8 inches in thickness shall be sampled from the lower grade face to a depth of 5/8 inch.

4.2.6 The determination of the amount of creosote or creosote-containing solutions in a sample of borings shall be made according to AWPA Standard A6. The determination of the amount of pentachlorophenol in a sample of borings shall be made according to AWPA Standard A5. The determination of the amounts of waterborne preservatives in a sample of borings shall be made according to AWPA Standard A2.

4.2.7 To obtain and test a sample of oil from a marine piling, for compliance with quality requirements, AWPA Standard A8 and A1 shall be used.

5. PREPARATION FOR DELIVERY

5.1 This section is not applicable to this specification.

6. NOTES

6.1 Recommended practices in the procurement and use of treated wood.

6.1.1 Tables I, II, and III are schedules of approved practices for the preservative treatment of wood in various forms with creosote and creosote-containing solutions, pentachlorophenol, and waterborne preservatives which are intended for Government use. The net retentions in the tables are minima. Higher net retentions may be needed for severe use conditions and should be specified; they should also be specified for moderate use conditions whenever a product is of critical structural importance or whenever it is used in a

situation where replacement would be very costly. It is recommended that observations of penetration be made on a number of pieces selected at random from each shipment received at destination. The presence or absence of the mark of a quality control agency or independent inspection agency acceptable to the purchaser should also be noted. When the wood contains such a mark and the penetration observed casts doubt on the quality of the treatment, a thorough inspection by either the Government, a quality control agency, or an independent inspection agency should be made and any nonconforming shipment or lot should be rejected.

6.1.2 Coal-tar creosote, creosote-coal tar solution, creosote-petroleum solution, pentachlorophenol and the four waterborne preservatives, ACA, CCA Type I, CCA Type II, and CCA Type III (tables I, II, and III) are ordinarily to be used for wood exposed to severe weathering conditions, such as contact with soil or water and for important above-ground structures exposed to the weather. Since oil-type preservatives, in addition to affording protection against decay, also retard weathering and checking, they are generally preferable to waterborne preservatives for the treatment of sawn wood that has no exacting requirements on cleanliness or odor and is to be used in contact with the ground. If cleanliness, freedom from odor, or paintability are desireable, either of the four waterborne preservatives mentioned above will give good protection to sawn wood in ground contact provided that the wood is selected for its receptiveness to treatment and treated to meet the minimum penetration requirements listed herein.

6.1.3 Painting of treated wood involves special considerations. Wood treated with creosote, solutions containing creosote, and pentachlorophenol in heavy petroleum solvent, cannot ordinarily be painted satisfactorily. When requested, it can be conditioned by the producer to improve its cleanliness. Difficulties may be encountered in painting wood treated with pentachlorophenol in a light petroleum solvent. When purchasing wood treated with such solutions, the supplier should be required to designate a type or brand of paint that will give satisfactory results on wood so treated. Wood treated with waterborne preservatives should be properly seasoned after treatment (see 3.4) and may require light brushing or sanding in order to provide a paintable product. Since "cleanliness" is a relative term, it is recommended that the purchaser make known his specific requirements and the end use of the material, and that the supplier be required to furnish evidence that the material be suitable for that use. In the absence of accepted methods for determining cleanliness, paintability, and water repellency of pentachlorophenol-treated wood, the purchaser may elect to use arbitrary test methods which should be described in Federal Specification TT-W-572.

6.1.4 The serviceability of treated wood is impaired through cutting or damage to the treated surface. Whenever it is possible, machining, cutting, trimming, etc., should be done prior to treatment. When cutting or damage to the surface of treated wood cannot be avoided, the instructions given in AWPA Standard M4 should generally be followed. Cut surfaces of wood treated with oil-borne preservatives should be given at least two brush applications of either creosote or a solution of at least 5 percent pentachlorophenol in a suitable solvent, or one heavy application of a grease or suitably bodied preservative composition containing 10 percent pentachlorophenol. Cut surfaces of wood treated with a waterborne preservative should be given one application of a concentrated solution of the preservative used in the treatment. (See AWPA Standard M4.) The choice should be based upon cleanliness requirements.

6.2 Ordering data. Purchasers should select the preferred options permitted herein, and include the following information in procurement documents:

(a) Title, number, and date of this specification.
(b) Moisture content required at acceptance (see 3.4).
(c) Minimum information required in the branding or marking 9see 3.6).
(d) Treatment other than normally required (see 3.1).
(e) Condition of surface following treatment (see 6.1.2 and 6.1.3).

6.3 Invitation for bids. Invitations for bids should state the quantity, form, species, grade, the fabrication of the wood, the preservatives and retentions required, the corresponding treatment specifications to be compiled with, and also any special requirements, such as cleanliness, paintability, water repellency, and drying of timbers after treatment with waterborne

Table 1.--Treatment of sawn wood products

Form of product and service conditions	Penetration	Assay zone	Minimum net retention of active preservative[1]													Treating specifications[2] (AMPA C1 and others listed below)
			Coal-tar creosote (Fed. Spec. TT-C-645)	Creosote-coal tar solution (Fed. Spec. TT-C-650)	Creosote-petroleum solution (Fed. Spec. TT-W-568)	Pentachlorophenol (Fed. Spec. TT-W-570): In 5.0 to 7.5 percent solution with heavy petroleum solvent (AMPA P9 type A)	Pentachlorophenol (Fed. Spec. TT-W-570): In solution with light petroleum solvent (AMPA P9 type C)	Pentachlorophenol (Fed. Spec. TT-W-570): In solution with volatile solvent (AMPA P9 type B)	Acid copper chromate (Fed. Spec. TT-W-546)	Ammoniacal copper arsenite (Fed. Spec. TT-W-549)	Chromated copper arsenate type I, type II, or type III (Fed. Spec. TT-W-550)	Chromated zinc chloride (Fed. Spec. TT-W-551)	Fluor chrome-arsenate-phenol mixture (Fed. Spec. TT-W-535): type I or type II	Tributyl-tin oxide (Fed. Spec. TT-W-18%)	
	In. and/or pct of sapwood	In.	Pcf	Pcf	Pcf	Pcf	Pcf	Pcf	Pcf	Pcf	Pcf	Pcf	Pcf	Pcf	
Ties																
Crossties, switch ties, and bridge ties																
Beech, birch, and maple	85	Gage only	7.0	7.0	7.0	0.35	--	--	--	--	--	--	--	--	--	C2 and C6
Red oak	65 pct of rings	....do....	Refusal	Refusal	Refusal	Refusal	--	--	--	--	--	--	--	--	--	
Black and red gum	1.5 or 75	....do....	10.0	10.0	10.0	.5	--	--	--	--	--	--	--	--	--	
Ash, black and honey locust, hickory, black walnut, white oak, and interior Douglas-fir	90	....do....	Refusal	Refusal	Refusal	Refusal	--	--	--	--	--	--	--	--	--	
Coastal Douglas-fir, western hemlock, and western larch	0.5 and 90	....do....	8.0	8.0	8.0	.4	--	--	--	--	--	--	--	--	--	
Southern and ponderosa pines	2.5 or 85	....do....	8.0	8.0	8.0	.4	--	--	--	--	--	--	--	--	--	
Jack, lodgepole, and red pines	.5 or 90	....do....	7.0	7.0	7.0	.35	--	--	--	--	--	--	--	--	--	
Timbers[2]:																
Solid																
For use in coastal waters																
In areas where Limnoria tripunctata and pholads are known to be active, or in southern areas for which information on the borer hazard is lacking the dual treatment shall be used (see table III):																C2, C14 C16, and C18
In areas where moderate to heavy limnoria attack is expected but pholads are absent																
Coastal Douglas-fir	0.75 and 90	0 -0.60	--	--	--	--	--	--	--	2.50	2.50	--	--	--		
Western hemlock	.75 and 90	0 - .60	--	--	--	--	--	--	--	2.50	2.50	--	--	--		
Southern pine	2.5 or 85	0 - .60	--	--	--	--	--	--	--	2.50	2.50	--	--	--		
In areas where teredo are present with light limnoria activity																
Coastal Douglas-fir	.75 and 90	0 - .60	1/25.0	--	--	--	--	--	--	2.50	2.50	--	--	--		
Western hemlock	.75 and 90	0 - .60	1/25.0	--	--	--	--	--	--	2.50	2.50	--	--	--		
Southern pine	2.5 or 85	0 - .60	1/25.0	--	--	--	--	--	--	2.50	2.50	--	--	--		
In areas where teredo are present with no limnoria activity																
Coastal Douglas-fir and western hemlock	.75 and 90	0 - .60	1/20.0	--	--	--	--	--	--	--	--	--	--	--		
Southern pine	2.5 or 85	0 - .60	1/20.0	--	--	--	--	--	--	--	--	--	--	--		
For important structural members used in fresh water or in ground contact																
Coastal Douglas-fir and western larch	.75 and 90	0 - .60	12.0	12.0	12.0	.60	--	--	--	.60	.60	--	--	--		
Western hemlock	.75 and 90	0 - .60	12.0	12.0	12.0	.60	--	--	--	.60	.60	--	--	--		
Southern pine	2.5 or 85	0 - .60	12.0	12.0	12.0	.60	--	--	--	.60	.60	--	--	--		

TT-W-00571J

Table I.--Treatment of sawn wood products--continued

Product, process and solution conditions	Penetration	Assay zone	Minimum net retention of active preservative[1]												Treating specifications[2] (AWPA C1 and others listed below)
			Coal-tar creosote (Fed. Spec. TT-C-520)	Creosote-coal tar solution (Fed. Spec. TT-C-530)	Creosote-petroleum solution (Fed. Spec. TT-C-540)	Pentachlorophenol (Fed. Spec. TT-W-570)			Acid copper chromate (Fed. Spec. TT-W-546)	Ammoniacal copper arsenite (Fed. Spec. TT-W-549)	Chromated copper arsenate type I, type II, or type III (Fed. Spec. TT-W-550)	Chromated zinc chloride (Fed. Spec. TT-W-551)	Fluor chrome-arsenate-phenol mixture (Fed. Spec. TT-W-535) type I or type II	Tributyl-tin oxide (Fed. Spec. TT-W-1094)	
						Petroleum solution with 5.0 to 7.5 percent solution in heavy petroleum solvent (AWPA P9 type A)	In solution with light petroleum solvent (AWPA P9 type C)	In solution with volatile solvent (AWPA P9 type B)							
	pcf/or pct of sapwood	In.	Pcf	Pcf	Pcf	Pcf	Pcf	Pcf	Pcf	Pcf	Pcf	Pcf	Pcf	Pcf	
Timbers--cont.															
Solid--cont.															
For other species used in fresh water or in soil contact															
Coastal Douglas-fir, western larch, and redwood	0.75 and 90	0 -0.60	10.0	10.0	10.0	0.50	0.62	0.62	0.50	0.40	0.40	--	--	--	
Western hemlock, jack, red, loblolly, sugar, red, northern white, and western white pines	.75 and 90	0 - .60	10.0	10.0	10.0	.50	.62	.62	.50	.40	.40	--	--	--	
Southern and ponderosa pines	2.5 or 85	0 - .60	10.0	10.0	10.0	.50	.62	.62	.50	.40	.40	--	--	--	
For use above ground	(8)														
Coastal Douglas-fir, western hemlock, western larch, redwood; jack, loblolly, red, northern white, and sugar pines	.5 and 90	0 - .60	6.0	8.0	8.0	.40	.40	.40	.25	.25	.25	0.45	0.25	--	
Southern and ponderosa pines	2.5 or 85	0 - .60	8.0	8.0	8.0	.40	.40	.40	.25	.25	.25	.45	.25	--	
Glued-laminated	(7)	(9)													C28
For use in coastal waters															
In areas where Limnoria tripunctata and pholads are known to be active or in southern areas for which information on the borer hazard is lacking the dual treatment shall be used (see Table III)															
In areas where moderate to heavy Limnoria attack is expected but pholads are absent															
Coastal Douglas-fir	.75 and 90	0 - .60	--	--	--	--	--	--	--	2.50	2.50	--	--	--	
Western hemlock	.75 and 90	0 - .60	--	--	--	--	--	--	--	2.50	2.50	--	--	--	
Southern, ponderosa, and red pines	2.5 or 85	0 -3.00	--	--	--	--	--	--	--	2.50	2.50	--	--	--	
In areas where teredo are present with light Limnoria activity															
Coastal Douglas-fir	.75 and 90	0 - .60	[3]25.0	--	--	--	--	--	--	2.50	2.50	--	--	--	
Western hemlock	.75 and 90	0 - .60	[3]25.0	--	--	--	--	--	--	2.50	2.50	--	--	--	
Southern, ponderosa, and red pines	2.5 or 85	0 -3.00	[4]25.0	[4]25.0	--	--	--	--	--	2.50	2.50	--	--	--	
In areas where teredo are present with no Limnoria activity															
Coastal Douglas-fir and western hemlock	.75 and 90	0 - .60	[5]20.0	--	--	--	--	---	--	--	--	--	--	--	
Southern, ponderosa, and red pines	2.5 or 85	0 -3.00	[5]20.0	[6]20.0	--	--	--	--	--	--	--	--	--	--	

Table I.--Treatment of sawn wood products--continued

Form of product and service conditions	Penetration	Assay zone	Minimum net retention of active preservative[1]													Treating specifications[2] (AWPA Ci and others listed below)
			Coal-tar creosote (Fed. Spec. TT-C-643)	Creosote-coal tar solution (Fed. Spec. TT-C-650)	Creosote-petroleum solution (Fed. Spec. TT-W-566)	Pentachlorophenol (Fed. Spec. TT-W-570)			Acid copper chromate (Fed. Spec. TT-W-546)	Ammoniacal copper arsenite (Fed. Spec. TT-W-549)	Chromated copper arsenate type I, type II, or type III (Fed. Spec. TT-W-550)	Chromated zinc chloride (Fed. Spec. TT-W-551)	Fluor-chrome-arsenate-phenol mixture (Fed. Spec. TT-W-535) type I or type II	Tributyl-tin oxide (Fed. Spec. TT-W-1899)	
						In 5.0 to 7.5 percent solution with heavy petroleum solvent (AWPA P9 type A)	In solution with light petroleum solvent (AWPA P9 type C)	In solution with volatile solvent (AWPA P9 type B)							
	In. and/or pct of sapwood	In.	Pcf	Pcf	Pcf	Pcf	Pcf	Pcf	Pcf	Pcf	Pcf	Pcf	Pcf	Pcf	
Timbers--cont.															
Glued-laminated--cont.															
For use in fresh water, in ground contact, or for important structural members not in contact with ground or water															
Southern pine, coastal Douglas-fir, and western hemlock	(7)	(8)	12.0	12.0	12.0	0.60	0.75	0.75	--	--	--	--	--	--	
For use above ground															
Southern pine, coastal Douglas-fir, and western hemlock	(8)	(9)	6.0	6.0	6.0	.30	.30	.30	--	--	--	--	--	--	
Laminates prior to gluing															
For use in ground contact															
Coastal Douglas-fir	1.25	0.5-1.00	12.0	--	--	.60	.75	.75	0.50	0.60	0.60	--	--	--	C28
Western hemlock	1.25	.5-1.00	12.0	--	--	.60	.75	.75	.50	.60	.60	--	--	--	
Southern pine	3 or 90	.5-1.00	12.0	--	--	.60	.75	.75	.50	.60	.60	--	--	--	
For use above ground															
Coastal Douglas-fir and western hemlock	1.0	.5-1.00	6.0	--	--	.30	.30	.30	.25	.25	.25	--	--	--	
Southern pine	3 or 90	.5-1.00	6.0	--	--	.30	.30	.30	.25	.25	.25	--	--	--	
Lumber:															
For use in coastal waters															
In areas where Limnoria tripunctata and pholads are known to be active, or in southern areas for which information on the borer hasard is lacking the dual treatment shall be used (see table III)															C2, C14, C16, and C18
In areas where moderate to heavy limnoria attack is expected but pholads are absent															
Coastal Douglas-fir	0.5 and 90	0 -0.60	--	--	--	--	--	--	--	2.50	2.50	--	--	--	
Western hemlock	.5 and 90	0 - .60	--	--	--	--	--	--	--	2.50	2.50	--	--	--	
Southern, ponderosa, and red pines	.75 or 85	0 - .60	--	--	--	--	--	--	--	2.50	2.50	--	--	--	
In areas where teredo are present with light limnoria activity															
Coastal Douglas-fir	.5 and 90	0 - .60	1/25.0	--	--	--	--	--	--	2.50	2.50	--	--	--	
Western hemlock	.5 and 90	0 - .60	1/25.0	--	--	--	--	--	--	2.50	2.50	--	--	--	
Southern, ponderosa, and red pines	.75 or 85	0 - .60	1/25.0	4/25.0	--	--	--	--	--	2.50	2.50	--	--	--	
In areas where teredo are present with no limnoria activity															
Coastal Douglas-fir and western hemlock	.5 and 90	0 - .60	1/20.0	--	--	--	--	--	--	--	--	--	--	--	
Southern, ponderosa, and red pines	.75 or 85	0 - .60	1/20.0	4/20.0	--	--	--	--	--	--	--	--	--	--	

Table 1.- Treatment of sawn wood products--continued

Form of product and service conditions	Penetration	Assay zone	Minimum net retention of active preservative[1]												Treating specifications[2] (AWPA Cl and others listed below)
			Coal-tar creosote (Fed. Spec. TT-C-643)	Creosote-coal tar solution (Fed. Spec. TT-C-656)	Creosote-petroleum solution (Fed. Spec. TT-W-566)	Pentachlorophenol (Fed. Spec. TT-W-570)			Acid copper chromate (Fed. Spec. TT-W-546)	Ammoniacal copper arsenite (Fed. Spec. TT-W-549)	Chromated copper arsenate type I, type II, or type III (Fed. Spec. TT-W-550)	Chromated zinc chloride (Fed. Spec. TT-W-551)	Fluor-chrome-phenol mixture (Fed. Spec. TT-W-535) type I or type II	Tributyl-tin oxide (Fed. Spec. TT-W-1894)	
						In 3.0 to 7.5 percent solution with heavy petroleum solvent (AWPA P9 type A)	In solution with light petroleum solvent (AWPA P9 type C)	In solution with volatile solvent (AWPA P9 type B)							
	In. and/or pct of sapwood	In.	Pcf	Pcf	Pcf	Pcf	Pcf	Pcf	Pcf	Pcf	Pcf	Pcf	Pcf	Pcf	
Lumber:															
For use in fresh water in ground contact or for important structural members not in contact with ground or water															
Coastal Douglas-fir, western hemlock, western larch, and redwood	0.4 and 90	0 - 0.60	10.0	--	10.0	0.50	0.62	0.62	0.50	0.40	0.40	--	--	--	C2,C14,C16
Southern and ponderosa pines	2.5 or 85	0 - .60	10.0	10.0	10.0	.50	.62	.62	.50	.40	.40	--	--	--	
Jack, lodgepole, red, northern white, western white, and sugar pines	.4 and 90	0 - .60	10.0	10.0	10.0	.50	.62	.62	.50	.40	.40	--	--	--	
Interior Douglas-fir	90	0 - .60	10.0	--	10.0	.50	.62	.62	.50	.40	.40	--	--	--	
Black or red gum	1.5 or 75	0 - .60	8.0	--	8.0	.40	.50	.50	.50	.40	.40	--	--	--	
Red oak	65 pct of annual rings	0 - .60	7.0	7.0	7.0	.35	.44	.44	.50	.40	.40	--	--	--	
White oak	95 pct of sapwood	--	Refusal	Refusal	Refusal	Refusal	Refusal	--	--	--	--	--	--	--	
For use above ground															
Coastal Douglas-fir, western hemlock, western larch, and redwood	0.4 and 90	0 - .60	8.0	8.0	8.0	.40	.40	.40	.25	.25	.25	0.45	0.25	0.06	
Southern and ponderosa pines	2.5 or 85	0 - .60	8.0	8.0	8.0	.40	.40	.40	.25	.25	.25	.45	.25	.06	
Jack, lodgepole, red, northern white, western white, and sugar pines	.4 and 90	0 - .60	8.0	8.0	8.0	.40	.40	.40	.25	.25	.25	.45	.25	.06	
Interior Douglas-fir	90	0 - .60	8.0	8.0	8.0	.40	.40	.40	.25	.25	.25	.45	.25	.06	
Black or red gum	1.5 or 75	0 - .60	6.0	6.0	6.0	.30	.30	.30	.25	.25	.25	.45	.25	.06	
Red oak	65 pct of annual rings	0 - .60	6.0	6.0	6.0	.30	.30	.30	.25	.25	.25	.45	.25	.06	
White oak	95 pct of sapwood	--	Refusal	Refusal	Refusal	Refusal	Refusal	--	--	--	--	--	--	--	
Posts (see 3.3)	See requirements on timbers for use in ground contact														C2,C14,C16

Table II.--Treatment of round wood products

Form of product and service conditions	Penetration	Assay zone	Minimum net retention of active preservative[1]									Treating specifications[2] (AWPA Cl and others listed below)
			Coal-tar creosote (Fed. Spec. TT-C-645)	Creosote-coal-tar solution (Fed. Spec. TT-C-650)	Creosote-petroleum solution (Fed. Spec. TT-W-568)	Pentachlorophenol (Fed. Spec. TT-W-570)			Acid copper chromate (Fed. Spec. TT-W-546)	Ammoniacal copper arsenite (Fed. Spec. TT-W-549)	Chromated copper arsenate type I, type II, or type III, (Fed. Spec. TT-W-550)	
						In 5.0 to 7.5 percent solution in heavy petroleum solvent (AWPA P9 type A)	In solution with light petroleum solvent (AWPA P9 type C)	In solution with volatile solvent (AWPA P9 type B)				
	In. and/or pct of sapwood	In.	Pcf	Pcf	Pcf	Pcf	Pcf	Pcf	Pcf	Pcf	Pcf	
Piles:												
For use in coastal waters												C3
In areas where Limnoria tripunctata and pholads are known to be active or in southern areas for which information on the borer hazard is lacking the dual treatment shall be used (see table III)	--	--	--	--	--	--	--	--	--	--	--	
In areas where moderate to heavy limnoria attack is expected but pholads are absent												
Coastal Douglas-fir	1.0 and 85	0 -1.0	--	--	--	--	--	--	--	2.50	2.50	
Southern pine	4.0 or 90	0 - .5 .5 -2.0	-- --	-- --	-- --	-- --	-- --	-- --	-- --	2.50 1.50	2.50 1.50	
In areas where teredo are present with light limnoria activity												
Coastal Douglas-fir	1.0 and 85	0 -2.0	3,10 22.0	--	--	--	--	--	--	--	--	
Southern pine	4.0 or 90	0 -3.0	3,10 25.0	4,10 25.0	--	--	--	--	--	--	--	
In areas where teredo are present with no limnoria activity												
Coastal Douglas-fir	1.0 and 85	0 -2.0	5 20.0	--	--	--	--	--	--	--	--	
Southern pine	4.0 or 90	0 -3.0	5 20.0	6 20.0	--	--	--	--	--	--	--	
For land or fresh-water use												
Coastal Douglas-fir, western hemlock, lodgepole pine	0.75 and 85	0 -1.0	17.0	17.0	17.0	0.85	--	--	--	1.00	1.00	
Southern and ponderosa pines	3.5 or 90	0 -3.0	12.0	12.0	12.0	.60	--	--	--	.80	.80	
Jack pine	1.5 or 85	0 -2.0	12.0	12.0	12.0	.60	--	--	--	.80	.80	
Red pine	2.5 or 85	0 -2.0	12.0	12.0	12.0	.60	--	--	--	.80	.80	

TT-W-00571J

Table II.--Treatment of round wood products--continued

Form of product and service conditions	Penetration	Assay zone	Minimum net retention of active preservative[1]								Treating specifications[2] (AWPA C1 and others listed below)
			Coal-tar creosote (Fed. Spec. TT-C-645)	Creosote-coal-tar solution (Fed. Spec. TT-C-650)	Creosote-petroleum solution (Fed. Spec. TT-W-568)	Pentachlorophenol (Fed. Spec. TT-W-570): In 5.0 to 7.5 percent solution in heavy petroleum solvent (AWPA P9 type A)	Pentachlorophenol (Fed. Spec. TT-W-570): In solution with light petroleum solvent (AWPA P9 type C)	Pentachlorophenol (Fed. Spec. TT-W-570): In solution with volatile solvent (AWPA P9 type B)	Acid copper chromate (Fed. Spec. TT-W-546)	Ammoniacal copper arsenite (Fed. Spec. TT-W-549)	Chromated copper arsenate type I, type II, or type III, (Fed. Spec. TT-W-550)	
	In. and/or pct of sapwood	In.	Pcf	Pcf	Pcf	Pcf	Pcf	Pcf	Pcf	Pcf	Pcf	
Poles (round):												C4
Building[11]												C23
Coastal Douglas-fir	2.5 or half of radius and 90	0.25-1.0	12.0	--	--	0.60	--	--	--	0.60	0.60	
Southern and ponderosa pines	...do....	.5 -2.0	12.0	--	--	.60	--	--	--	.60	.60	
Red pine	...do....	.1 -1.6	13.5	--	--	.68	--	--	--	.60	.60	
Utility												C4
Coastal Douglas-fir	0.75 and 85	.25-1.0	[12]9.0,12.0	--	--	[12].45, 0.60	0.75	0.75	--	.60	.60	
Southern and ponderosa pines	3.0 or 90	.5 -2.0	[12]7.5, 9.0	--	--	[12].38, .45	.56	.56	--	.60	.60	
Red pine	2.5 or 85	.1 -1.6	[12]10.5,13.5	--	--	[12].53, .68	.85	.85	--	.60	.60	
Jack pine	1.5 or 85	.1- .75	[12]12.0,16.0	--	--	[12].60, .80	1.0	1.0	--	.60	.60	
Lodgepole pine	0.75 and 85	.1- .75	[12]12.0,16.0	--	--	[12].60, .80	1.0	1.0	--	.60	.60	
Interior Douglas-fir, western larch	0.5 and 100	.1- .6	16.0	--	--	.80	1.0	1.0	--	.60	.60	
Western redcedar	0.5 or 100	.1- .6	16.0	--	--	.80	1.0	1.0	--	.60	.60	
Western redcedar, Alaska yellow and northern white cedars	0.5 or 100	0 - .5	20.0	--	--	1.0	--	--	--	--	--	C7,C8
Posts (round):												
Building[11]												C23
Coastal Douglas-fir	2.5 or half of radius and 90	.25-1.0	12.0	--	--	.60	--	--	--	.60	.60	
Southern and ponderosa pines	...do....	.5 -2.0	12.0	--	--	.60	--	--	--	.60	.60	
Red pine	...do....	.1 -1.6	12.0	--	--	.60	--	--	--	.60	.60	
Fence												C5
Douglas-fir, western hemlock, and western larch	0.4 and 100 up to 1.0	0 -1.0	6.0	6.0	7.0	.30	.38	.38	0.50	.40	.40	
Southern, ponderosa, and red pines	2.0 or 85	0 -1.0	6.0	6.0	7.0	.30	.38	.38	.50	.40	.40	
Jack pine	1.5 or 85	0 -1.0	6.0	6.0	7.0	.30	.38	.38	.50	.40	.40	
Lodgepole pine	1.25 or 85	0 -1.0	6.0	6.0	7.0	.30	.38	.38	.50	.40	.40	

Table III.--Treatment of special wood products

Product and use conditions	Requirements on treatment				Other requirements
	Preservative	Retention[1]	Assay zone	Penetration	
		Pcf	In.	In. and/or pct of sapwood	
Dual-treated marine piles	--	--	--	--	Kiln drying after first treatment not permitted.
Coastal Douglas-fir					
First treatment	Ammoniacal copper arsenite or chromated copper arsenate (types I, II, or III)	1.00	0-1.00	1.0	Do.
Second treatment	Creosote[5]	20.0	0-1.00	(13)	Do.
Southern pine					
First treatment	Ammoniacal copper arsenite or chromated copper arsenate (types I, II, or III)	1.00	0-1.00	1.0	Do.
Second treatment	Creosote[5]	20.0	0-1.00	4.0 or 90	Do.
Dual-treated lumber and timbers for marine use	--	--	--	--	Do.
Coastal Douglas-fir					
First treatment	Ammoniacal copper arsenite or chromated copper arsenate (types I, II, or III)	1.50	0-0.60	0.5 and 90	Do.
Second treatment	Creosote[5]	20.0	0-0.60	0.5 and 90	Do.
Western hemlock					
First treatment	Ammoniacal copper arsenite or chromated copper arsenate (types I, II, or III)	1.50	0-0.60	0.5 and 90	Do.
Second treatment	Creosote[5]	20.0	0-0.60	0.5 and 90	Do.
Southern pine					
First treatment	Ammoniacal copper arsenite or chromated copper arsenate (types I, II, or III)	1.50	0-0.60	1.0	Do.
Second treatment	Creosote[5]	20.0	0-0.60	2.5 or 85	Do.
Mine timbers	--	--	--	--	Mixed hardwood species commercially available are acceptable.
For structures classified as permanent	See table I, timbers in ground contact	--	--	--	Do.
For other structures	5 pct solution of either acid copper chromate, or fluor-chrome-arsenate-phenol mixture or 3 pct solution of chromated zinc chloride	Refusal	--	--	Do.
Lumber for use in contact with, or in close proximity to, foodstuffs	2.5 to 5.0 pct solubilized copper-8-quinolinolate (AWPA P8) dissolved in volatile solvent (AWPA P9)	0.25 by gage	--	--	Prior to treatment, lumber shall be milled to correct width and thickness, and, if practical, cut to correct length. Surface of treated wood shall be clean and free of residual solvent.

Table III.--Treatment of special wood products--continued

Product and use conditions	Requirements on treatment				Other requirements
	Preservative	Retention[1]	Assay zone	Penetration	
		Pcf	In.	In. and/or pct of sapwood	
Lumber for building foundations	—	—	—	—	Only seasoned lumber 2 in. or less in thickness. Each charge shall be assayed.
Douglas-fir, western larch	Ammoniacal copper arsenite or chromated copper arsenate (types I, II, or III)	0.60	0-0.60	0.5 and 90	Lumber shall be incised prior to treatment.
Eastern hemlock	Ammoniacal copper arsenite or chromated copper arsenate (types I, II, or III)	0.60	0-0.60	0.5 and 90	Do.
Southern and ponderosa pines	Ammoniacal copper arsenite or chromated copper arsenate (types I, II, or III)	0.60	0-0.60	0.7 or 90	Lumber shall contain not more than 20 pct heartwood and no boxed heart.
Plywood					
For use in coastal waters	Creosote[3]	25.0	See 4.2.5	Each veneer penetrated	Exterior grade plywood shall be used.
	Ammoniacal copper arsenite or chromated copper arsenate (types I, II, or III)	2.50	See 4.2.5	....do....	Do.
For use in building foundations					
Douglas-fir	Ammoniacal copper arsenite or chromated copper arsenate (types I, II, or III)	0.60	See 4.2.5	....do....	Do.
Southern pine		0.60	See 4.2.5	....do....	Plywood shall contain no heartwood faces.
For use in fresh waters or in ground contact	Creosote[3]	10.0	See 4.2.5	....do....	Exterior grade plywood shall be used.
	Pentachlorophenol in heavy solvent (AWPA P9 type A)	0.50	See 4.2.5	....do....	Do.
	Pentachlorophenol in light or volatile solvent (AWPA P9 types C or B)	0.62	See 4.2.5	....do....	Do.
	Ammoniacal copper arsenite or chromated copper arsenate (types I, II, or III)	0.40	See 4.2.5	....do....	Do.
For use above ground	Creosote[3]	8.0	See 4.2.5	....do....	Do.
	Pentachlorophenol in heavy, light, or volatile solvent (AWPA P9 types A, C, or B)	0.40	See 4.2.5	....do....	Do.
	Ammoniacal copper arsenite or chromated copper arsenate (types I, II, or III), acid copper chromate or fluor-chrome-arsenate-phenol mixture	0.25	See 4.2.5	....do....	Do.
	Chromated zinc chloride	0.45	See 4.2.5	....do....	Do.
	Tributyltin oxide	0.06	See 4.2.5	....do....	Do.

Footnotes for Tables I, II, and III

[1] Whenever a method for the determination of retention in a treated product by the assay of a sample is described in an AWPA specification, purchase shall be made on that basis and a retention gage shall not be accepted in competitive bids.

[2] These standards cover treatment of species most commonly treated. For species offered and not covered by existing standards, the supplier shall furnish evidence of satisfactory experience. Penetration requirements for most generally available products are covered in AWPA specifications and footnotes below. When penetration is not otherwise specified herein or in AWPA specifications, the penetration in the sapwood shall be not less than 2.5 inches unless 85 percent of the sapwood depth is penetrated (see footnote 11). For wood species not included herein or in AWPA specifications, the penetration of heartwood faces shall be not less than 0.4 inch in lumber (i.e., sawn material less than 5 inches in thickness) and not less than 0.5 inches in timbers (i.e., sawn material 5 inches or more in thickness). Retention shall be consistent with end use of the product.

[3] Conforming to class 3 of TT-C-645.

[4] Conforming to class 5 of TT-C-650.

[5] Conforming to either class 1, 2, or 3 of TT-C-645.

[6] Conforming to either class 1, 2, 3, 4, or 5 of TT-C-650.

[7] For ground contact use: For members more than 75 square inches in cross section at the groundline, every member shall be bored for penetration. For members 75 square inches or less in cross section at the groundline, 20 members per charge shall be bored for penetration. Should the charge contain less than 20 members, each member shall be bored. When inspecting southern yellow pine laminated timbers for penetration, borings shall be taken from two different laminations from each member. When boring, coastal Douglas-fir or western hemlock laminated timbers for penetration, one boring shall be taken from the edge of each of the two face laminations and one boring from each of two different interior laminations in each member.

If any boring taken from any member fails to meet the penetration requirement, that member shall be rejected. If 90 percent or more of the members bored meet the specified requirements for either size category, the charge shall be considered to meet penetration requirements. If less than 90 percent of the members bored meet the specified requirements for either size category, the charge shall be rejected.

[8] For above-ground use: One boring shall be taken from each of 20 members in a charge. If 80 percent or more of the borings show a penetration of 2.5 inches or 85 percent of the sapwood in southern and ponderosa pine or 0.50 inch in the heartwood of coastal Douglas-fir or western hemlock, the charge shall be considered to meet penetration requirements. Should a charge contain less than 20 members, each member shall be bored and any member shall be rejected if it fails to meet the penetration described in the foregoing.

[9] For the assay of glued-laminated timbers, 20 borings shall be taken from the 0- to 3.0-inch zone in southern pine and 0 to 0.60 inch in coastal Douglas-fir or western hemlock.

[10] When reserve treated stock is assayed or when inspection is made at destination, a sample of the preservative shall be obtained from a randomly

selected piling by the procedure given in AWPA Standard A8. The properties of the recovered oil shall meet the following requirements when tested by AWPA Standard A1:

	Creosote		Creosote-tar solution	
	Classes 1 and 2	Class 3	Classes 1, 2, 3 and 4	Class 5
Percent distilling to:				
270 deg. C minimum	15	15	15	15
355 deg. C maximum	75	70	65	65
Specific gravity of fraction at 38 deg. C/15.5 deg. C:				
235 deg. to 315 deg. C minimum	1.025	1.030	1.025	1.030
315 deg. to 355 deg. C minimum	1.095	1.105	1.095	1.105
Residue above 355 deg. C	-----	1.160	-----	1.160

[11] In round building poles or in round posts used in post-and-beam types of foundations, penetration in each piece 10 inches or less in diameter shall be at least one-half of the radius. For each piece more than 10 inches in diameter, penetration shall be at least 2.5 inches. In all cases, 90 percent of the sapwood shall be penetrated. Mechanical means to obtain the required penetration, such as incising or boring, are permitted. Borings to determine penetration shall be taken from the incised area. Borings for assay shall be taken from the approximate midpoint, but not from the incised area.

[12] The higher retention is required for large poles (Group B, 37.5 inches and over in circumference), for all poles used under severe service conditions and for all poles having a high replacement cost.

[13] 1.0 inch and 85 percent if sapwood is 2.0 inches or less; 1.75 inches if sapwood is more than 2 inches.

MILITARY INTERESTS:

Custodians:

Army - ME
Navy - SH
Air Force - 84

User activity:

Army - AT

Review Activities:

Preparing activity:

AGR - AFS