

Section 4161. Preservative Treatment

4161.01 GENERAL REQUIREMENTS.

Meet the requirements of applicable sections within these specifications for preservative treatment of timber, lumber, piling and posts. Unless specified otherwise, meet the requirements of this section for treatment process and results.

4161.02 PRESERVATIVES.

Meet the requirements of [Section 4160](#). Unless specified otherwise, treatment may be with creosote, pentachlorophenol, copper naphthenate, ammoniacal copper zinc arsenate (ACZA), or chromated copper arsenate (CCA).

4161.03 TREATMENT.

- A.** Except as provided herein, follow the requirements and recommendations of AWPA Standards U1 and T1 and the applicable AWPA Commodity Specifications listed in Tables 4161.03-1 and 4161.03-2 for various materials and usages:

**Table 4161.03-1: Minimum Preservative Retention Requirements
(lb./cu. ft. of wood)
(kg/m³ of wood)**

Material and Usage	Retention					AWPA UC-Section-Special Req.
	Creosote ^(a)	Pentachloro-phenol ^(a)	Copper Napthenate ^(a)	ACZA ^(b)	CCA ^(b, c)	
Lumber and Timber for Structures ^(d)	APWA U1	APWA U1	APWA U1	APWA U1	APWA U1	APWA U1
Piles for Foundation:						
Douglas Fir	17 (272)	0.85 (13.6)	0.14 (2.2)	-	-	UC4C-E
Southern Pine	12 (192)	0.60 (9.6)	0.10 (1.6)	-	-	
Guardrail Posts, and Spacer Blocks:						
Sawed Four Sides	-	0.6 (9.6)	0.075 (1.2)	0.5 (8.0)	0.5 (8.0)	UC4A-A-4.3
Fence, Guide, and Sign Posts:						
Round	-	0.4 (6.4)	0.055 (0.88)	0.4 (6.4)	0.4 (6.4)	UC4A-B
Sawed Four Sides	-	0.5 (8.0)	0.060 (0.96)	0.4 (6.4)	0.4 (6.4)	UC4A-A-4.3
^(a) Oil type preservatives. ^(b) Waterborne preservatives. ^(c) Do not use for the treatment of Douglas Fir. ^(d) Retentions based on AWPA Use Category and Commodity Specifications for different applications.						

**Table 4161.03-2: Minimum Preservative Retention Requirements
inches (mm) of wood and/or % of sapwood penetration**

Material and Usage	Penetration ⁽¹⁾		
	Southern Pine	Douglas Fir	AWPA Material Standard Section
Lumber and Timber for Structures ^(a)	APWA U1, T1	APWA U1, T1	APWA U1, T1
Piles for Foundation:	3.0 in. (75 mm) or 90%	0.75 in. (19 mm) and 85% up to 1.6 in. (40 mm) and 85%	T1-8.5
Guardrail Posts and Spacer Blocks:			
Sawed Four Sides	2.5 in. (63 mm) or 85%	Under 5 in. (125 mm) thick: 0.4 in. (10 mm) and 90% 5 in. (125 mm) and	T1-8.1

		thicker: 0.5 in. (13 mm) and 90%	
Fence, Guide, and Sign Posts:			
Round	2.0 in. (50 mm) or 85%	3/8 in. (9 mm) and 100% up to 1 in. (25 mm) or 85%	T1-8.2
Sawed Four Sides	2.5 in. (63 mm) or 85%	Under 5 in. (125 mm) thick: 0.4 in. (10 mm) and 90% 5 in. (125 mm) and thicker: 0.5 in. (13 mm) and 90%	T1-8.1
(a) Penetrations based on AWPA Use Category and Commodity Specifications for different applications.			

B. Meet the following requirements for other aspects of the treatment process:

- 1. Incising.**
Incise Coastal Douglas Fir lumber.
- 2. Seasoning.**
 - a.** When sawed material is treated with waterborne preservatives (ACZA, CCA), ensure the moisture content prior to treatment, as determined by resistance type moisture meter, is no more than 20% if kiln dried or no more than 23% if air dried.
 - b.** Measure moisture content at a depth equivalent to the required penetration up to a maximum of 1.5 inches (38 mm).
 - c.** After treatment, unless specified otherwise, dry all lumber that is 2 inches (50 mm) or less in nominal thickness and is treated with a waterborne preservative. Dry the lumber to a moisture content of no more than 20% if kiln dried or no more than 23% if air dried.
- 3. Special Treatment for Guardrail and Sign Posts Treated With Oil Type Preservative.**
Before removing sign and guardrail posts from the treatment cylinder, further subject them to live steam at a maximum pressure of 13 psi (90 kPa). Following that, subject the posts to an additional period of vacuum to ensure that the surface of the wood is free from accumulation of oil type preservative.
- 4. Method of Treatment.**
 - a.** Use same preservative for all of the product furnished for each contract item or order.
 - b.** Unless specified otherwise, use the empty cell process with initial air pressure for creosote, pentachlorophenol, or copper naphthenate treatments.
 - c.** Use the full cell process for ACZA and CCA treatments.
- 5. Results of Treatment.**
 - a.** Ensure retention and penetration of preservatives complies with Tables 4161.03-1 and 4161.03-2, unless specified otherwise.
 - b.** Use the assay method to determine preservative retentions.
 - c.** Ensure other treatment requirements are in accordance with AWPA Standards U1 and T1 and the applicable AWPA Specifications listed in Tables 4161.03-1 and 4161.03-2.
- 6. Handling Treated Products.**
Follow AWPA Standard M4 regarding care and handling of preservative treated wood products.
- 7. Product Marking.**
 - a.** Ensure individual pieces of inspected, treated material bear a legible identification mark that is either hammer or heat branded, die stamped, or metal tagged. For material treated with waterborne preservatives, the identification mark may be ink stamped provided the information is clearly visible and legible. Ensure the identification mark, as a minimum, indicates the treater, the species of wood, the preservative treatment type, and the retention level. Acceptable brands or marks are to be similar to the general guidelines for brands listed in AWPA M1 and M6.

- b. Ensure all treated wood material that requires a grade, with the exception of 45 inch (1145 mm) Terminal Posts¹, displays a quality grade mark of an accredited grade monitoring and inspection agency approved under the American Lumber Standards Committee (ALSC).
¹ In the event that Terminal Posts 45 inches (1145) in length to be used for Guardrails can not be stamped with a quality grade mark due to sizing of material, ensure Terminal Posts are instead stamped "MFG No. 1" to indicate that the Terminal Posts were cut from an original piece graded as a No. 1. Wane requirements will be waived.
- c. Material less than 3 feet (1 m) in length does not require a grade mark; however, ensure a statement from the mill/processor certifying the grade of the material is provided. See Documentation Section of [Materials I.M. 462](#). Round wood posts, round wood piles, and round wood poles do not require a grade, since the grading rules apply only to sawn material.
- d. Ensure each bundle of treated wood products has at least one plastic tag identifying the charge number for the bundle.

8. Inspection.

Furnish white and treatment inspections, certifications, and test reports for each shipment according to [Materials I.M. 462](#).