

**SECTION 955
TREATING TIMBER AND PILING
(Including Treating Materials)**

955-1 General.

The work specified in this Section is the treating of structural timber, timber piling and timber posts. The method of treatment for all such timber materials shall be in accordance with ASTM D 1760, with the exceptions and additions as specified herein.

955-2 Preservative.

The treating of round timber piles (SYP) shall be with chromated copper arsenate (CCA). Ammoniacal copper arsenate (ACA) may be substituted to treat Pacific Coast Douglas Fir if Southern Yellow Pine can not be purchased. All timber posts, braces, structural timber, sheet piles, and all other timber items shall be treated with CCA.

955-3 Process.

For round timber piling, structural timber, sheet piling, posts, braces, and all other timber items, the treatment shall be by the full cell process.

955-4 Requirements for Preservative Materials.

955-4.1 Salt Preservative: The salt preservative shall be chromated copper arsenate of the following compositions:

	Minimum (%)	Maximum (%)
Hexavalent Chromium, as CrO ₃	33.0	50.5
Copper, as CuO	17.0	22.0
Arsenic, as As ₂ O ₅	30.0	48.0

The active ingredients in the solution shall be in proportions within the range required for the salt itself.

The pH of the treating solution shall be between 1.6 and 3.2.

Tests to determine conformance with the foregoing requirements shall be made in accordance with the standard methods of the American Wood Preservers' Association, Standard A2. Random samples of the preservative will be tested by the Department's Office of Materials and Research.

When Douglas Fir is used, ammoniacal copper arsenate shall be used as the salt preservative in lieu of chromated copper arsenate. Ammoniacal copper arsenate shall meet the requirements of ASTM D 1325. Tests to determine conformance shall be in accordance with AWPA Standard A-2.

955-5 Requirements for Retainment.

955-5.1 Piling: A minimum of 2.50 lb/ft³ [40.1 kg/m³] of CCA oxides shall be retained in zone 1, outer 0.50 inch [12.7 mm] and 1.5 lb/ft³ [24.0 kg/m³] in zone 2, outer 0.50 to 2 inches [12.7 to 51 mm].

If ACA is used, a minimum of 2.50 lb/ft³ [40.1 kg/m³] shall be retained in the 0.0 to 1 inch [0 to 25 mm] zone.

955-5.2 Structural Timber and Sheet Piles: When installation is not in a salt (or brackish) water environment, the minimum retention shall be 0.60 lb/ft³ [9.6 kg/m³] of CCA oxides, as determined by cores from the outer 0.60 inch [15.2 mm]. When installation is in a salt (or brackish) water environment, a minimum of 2.50 lb/ft³ [40.1 kg/m³] of CCA oxides shall be retained in the outer 0.60 inch [15.2 mm].

All guardrail material (timber posts, blocks, wedges, etc.) shall retain a minimum of 0.40 lb/ft³ [6.4 kg/m³] of CCA oxides in the outer 1 inch [25 mm] zone.

955-5.3 Posts: Timber fence posts shall retain a minimum of 0.40 lb/ft³ [6.4 kg/m³] of CCA oxides in the outer 1 inch [25 mm] zone.

955-5.4 Determination of Retention: Retention shall be determined by assay performed and certified by the treating company.

955-6 Penetration Requirements.

955-6.1 For Structural Timber and Sheet Piles: For the treatment of structural timber and of sheet piles, Article 5.1 in ASTM D 1760 (headed "Results of Treatment Retention of Preservative") is deleted and replaced by the following: "The preservative shall permeate the sapwood to a depth of 3.5 inches [90 mm], or to 90% of the sapwood thickness; whichever is the greater, with the additional provision that if less than 20% of the number of pieces bored fail to pass such depth requirement, and none of the pieces bored shows less than 85% sapwood penetration, the charge will be considered acceptable.

Where 20% or more of the number of pieces bored fail to meet such requirements for sapwood penetration, or when any of the pieces bored show a sapwood penetration less than 85%, the entire charge will be rejected or shall be retreated."

955-6.2 For Round Piles and Fence Posts: Any round pile or post, which does not show complete sapwood penetration will be rejected or shall be retreated to meet such penetration requirement.

955-6.3 Retreatment: The necessity for retreatment of structural timber, piling and posts shall be avoided as far as practicable and if it becomes apparent that due measures are not being taken to prevent such necessity, the acceptance of retreated materials may be withdrawn.

When retreatment is necessary the maximum limits for temperature of steam or preservative, and for preservative pressure, which apply to the original treatment shall not be exceeded during the retreatment.

955-6.4 Determination of Penetration: Sapwood penetration shall be determined by taking at least one increment boring core from each pile and cap, and other pieces of similar dimensions and, for other sizes of material, at least one boring from the charge for each 1,000 FBM [2 m³] in the charge. All bored holes shall be immediately plugged, with tight fitting treated plugs.

955-7 Handling Salt Treated Piling.

In handling of piles which have been treated with chromated copper arsenate or ammoniacal copper arsenate, cable slings shall be used. Mechanical grabbers or pointed tools shall not be permitted. Rough or careless handling shall be avoided at all times.

955-8 Identification of Treating Plants for Round Piling.

The treating plant shall brand, or place a distinctive permanent mark, on each round pile, approximately 6 feet [2 m] from the butt end, such that the plant responsible for the treatment can be readily determined at any time during the service life of the piling.