
STANDARD QUALITY CONTROL PROCEDURES FOR WOOD PRESERVING PLANTS

Jurisdiction: AWPA Subcommittee T-7

This Standard has most recently been amended in 1981, 1992, 1995, 1997, 1999, 2000, 2001, 2002, 2003, and 2005.

This AWPA Standard is promulgated according to an open, consensus procedure. It consists of 6 pages.

The following are considered to be the minimum requirements for exercising total quality control in wood preserving plants and adherence is necessary in order to assure "Quality and Reliability" of applicable treated timber products.

PART A**POLES, PILING, TIES, TIMBERS AND OTHER COMMERCIAL/INDUSTRIAL PRODUCTS
NORMALLY SUBJECT TO WRITTEN SPECIFICATIONS BY THE PURCHASER****1. General Requirements:**

1.1 The plant management is responsible for setting the plant-wide quality policy. Management must have a means of measuring quality performance and monitoring the progress toward meeting applicable quality standards.

1.2 The treating plant shall appoint an employee, trained in quality control procedures, who shall be designated as plant quality control supervisor and who will be responsible for conformance of treated products to the standards and specifications and for the accuracy of equipment used to monitor the treating processes. Specific responsibilities include the following:

Plant Equipment

1. Calibration of gauges
2. Monitoring of equipment to ensure proper operating condition.

Wood Moisture Content

Products before treatment must meet moisture content requirements.

Record Keeping

Records must be kept for each processed lot or charge showing the purchaser, an identification number, date treated, material description and volume expressed in cubic feet and solution concentration. Records shall also be kept to show compliance with requirement for penetration, and for retention as measured by either gauge or assay in accordance with the applicable commodity specification. All records shall become a part of the treating company's permanent file.

Sampling for Penetration and Retention

Treating plants shall perform sampling and inspection of all treated products.

1.3 The procedures in this Standard require monitoring and control, during purchase of the basic raw material and processing until shipment to the customer.

1.4 When relevant, other American Wood Protection Association Standards shall be used with this Standard.

1.5 The treating company shall provide a laboratory either at the treating plant, or at a separate location, with all equipment and supplies needed to analyze the preservative, perform assays and any other tests which are agreed to by the purchaser

and the treating company. The laboratory shall have ample space, light and ventilation or air conditioning. The laboratory shall be maintained in a clean and orderly condition and shall be restricted to the use for which it is intended. Suitable desk and working space shall be provided.

1.5.1 Plants using X-ray fluorescence (XRF) analysis methods shall verify not less than weekly the stability of instrument calibration. Calibration stability shall be checked by using a "monitoring" or "reference" sample of known value whose result should not deviate by more than 5% at the level of expected concentration. A deviation of more than 5% shall be considered suspect and require further investigation to determine the cause for the variance and the need for recalibration or other action. The use of statistical control charts is suggested to alert analysts to long term instrument drift or sample deterioration.

1.6 When it becomes evident that any phase of production does not comply with the requirements of the applicable AWPA Standards, the Quality Control Supervisor shall notify management and corrective action shall be taken.

1.7 The Quality Control Supervisor shall not release any material for shipment to the customer or for inspection until the material complies with the customer's specification. Final acceptance of the material shall be withheld until the preservative and retention is found to conform to specifications.

2. Material Pre-treatment Quality Control

2.1 Plant Quality Control shall determine that all material has been stored in accordance with the applicable Standards of the AWPA while under plant control and prior to preparation for treatment.

2.2 Plant Quality Control shall determine that all material complies with the customer's specification using the recommended procedures in Part A of AWPA Standard M2 unless alternate procedures are established in accordance with an agreement between the purchaser and the treating company.

2.3 The volume of each charge shall be accurately determined when net retention is to be determined on the basis of tank volume readings.

2.3.1 Volumes of round timber products shall be determined in accordance with AWP Standard F3.

2.3.2 Volumes of rough sawn lumber, timbers and ties shall be determined from their nominal dimensions.

2.3.3 Volumes of dressed or machined products shall be determined from their finished dimensions.

2.3.4 Framing, holes or other working shall be disregarded unless they remove 5% or more of the solid volume of the charge.

2.4 Moisture test for sawn softwood products before treatment, using conductance (resistance) type moisture meters.

2.4.1 When moisture content of sawn material is specified prior to treatment either for the purpose of the purchase of wood for treatment or as part of the treating plant quality control program, the following procedure shall be used. For information on meter types, standardization and calibration, see ASTM D4444 (latest version), except for amendments detailed below in Section 2.4.2 - 2.4.5.

2.4.2 Pins. Insulated type, 1.5 inches in length.

2.4.3 Position and Depth. Pins shall be driven into the center of the smallest dimension of a piece, about midway along its length. The pins shall be driven to either their full depth or to the midpoint of the piece. When driven to their full depth, care must be taken to avoid a false reading due to contact of the pin hubs with a damp material surface. Small insulation discs are available to prevent this.

2.4.4 Number of tests. The inspector shall make tests of representative pieces as follows. The minimum number of pieces tested for moisture in a lot or charge shall be 5% or 50 pieces, whichever is less, of a charge of boards, lumber, timbers, cross arms or other sawn material.

2.4.5 Expressing results. The vendor and purchaser may agree for results to be expressed in one or both of the following ways. Individual values in excess of 25% may be unreliable and should be considered separately.

(a) Maximum - The highest of the readings obtained in testing any one lot and the percentage of values over 25%.

(b) Average - The numerical average of the readings from each test in each lot and the percentage of values over 25%.

2.4.6 If 10% or more of the metered pieces have moisture readings over 25% determine the average moisture content for a composite sample by the oven-drying method in AWP Standard M2.

2.4.7 The oven-drying method in AWP Standard M2 shall be used to resolve disputes concerning procedures or results and may be used as an alternative test method.

3. Plant Gauges:

3.1 Pressure plants shall be equipped with recording instruments to register time, pressure, temperature and vacuum during each cycle of treatment. Pressure, temperature and vacuum shall be recorded in the common units of kPa (psi), °C (°F), and inches of mercury respectively. Alternatively, methods for converting from recorded units to the common units shall be readily available at the plant. Pressure shall be expressed as relative to atmospheric pressure (gauge). If absolute pressure is recorded, procedures shall be readily

available for conversion to relative pressure. Treating equipment shall have separate and visible temperature, pressure and vacuum indicators with separate sensors for checking the accuracy of the recording equipment. Work tanks shall be equipped with a temperature indicator. Thermal treating vats shall be equipped with a time and temperature recorder and with an indicating thermometer. Where heat is not required for proper treatment of the material and no facilities exist for application of heat to the treating vessel, working and/or storage tank, the temperature devices are not required.

3.2 All equipment used to monitor and record the treating process shall be tested and certified for accuracy at time of installation by an instrument company or qualified tester, and annually thereafter. Evidence of certification shall be affixed to the equipment or shall be readily available from records maintained at the plant. Whenever there is evidence of malfunction not correctable by simple adjustment, the equipment shall be promptly repaired or replaced and recertified for accuracy.

3.3 Certified calibration tables of measuring or work tanks shall be conveniently located and shall identify the person or firm which completed the certification. In the event of any damage or alteration to a tank that may cause an error in readings, the tank shall be re-calibrated and certified by a qualified person or agency.

3.4 Recording instruments shall be compared during different stages of treatment with the readings from the monitoring sensors mentioned in Section 3.1 of this Standard. The recorder readings shall be within 5% of the readings of the monitoring devices. When found nonconforming, instruments and gauges shall be recalibrated in conformance with Section 3.5 Certified tests of recording and monitoring equipment, as required under Section 3.2, shall be made as follows:

(a) Temperature. Compare with a temperature measuring device of certified accuracy and allow a variation not exceeding 2°F.

(b) Pressure. Compare with a certified test gauge or similar gauge testing device and allow a variation not exceeding 21 kPa (3 psi).

(c) Vacuum. Compare with a mercury column or certified gauge and allow a variation not exceeding 1 inch of mercury.

(d) Work Tank. Measure the height of solution at three levels, over a range of at least one-half the volume of the tank, with a tank tape and determine the volume of solution at each level from the certified tank calibration table. The corresponding readings for recording and monitoring equipment shall not vary by more than 1% from the determined volumes.

(e) Tank or Track Scales. Compare with certified test weights and allow a variation in pounds not exceeding 2%.

4. Preservative:

4.1 Plant Quality Control shall determine that the preservative used in each treatment conforms with the requirements for the preservative specified.

4.2 The petroleum distillates or a blend or petroleum distillates and co-solvents shall be tested for conformance to the

applicable P9 requirements in accordance with methods of analysis referenced in AWP Standard P9. Analysis shall be performed a minimum of at least once each quarter year, and/or whenever the material composition or source is changed or altered. Testing may be performed by the supplier of the distillates, an independent laboratory or the treating plant. Actual test data shall become part of the permanent plant record.

4.3 The petroleum oil or any blend of petroleum oils for mixing with creosote (AWPA Standard P1/P13) shall be tested for conformance with requirements of AWP Standard P4 prior to blending with creosote. Verification of analysis with supporting documentation shall be required. Testing may be performed by the supplier of oil, an independent laboratory, or the treating plant. Actual test data shall become part of the permanent record.

5. Treatment:

5.1 The treatment, unless otherwise specified, shall conform with the AWP Standards for the commodity and type of treatment specified in accordance with the AWP Use Category System Standards. Plant Quality Control shall maintain records on the cycles of treatment and the tank gauge readings and temperatures.

5.2 Careful observation during treatment shall be made of temperatures and pressures, and their duration, to make certain that maximum limits are not exceeded.

6. Results of Treatment:

6.1 Following treatment, an examination shall be made of the charge for any mechanical or treatment damage. Material with mechanical damage that cannot be repaired shall be rejected. When treatment damage is indicated, the material shall be rejected unless the customer desires to accept the material on a conditional basis.

6.2 Plant Quality Control shall bore the treated material in each and every charge to determine conformance with the penetration specified. Quality Control shall also determine, for every charge by the method specified, that the preservative retention conforms with the specification or the applicable commodity specification.

6.3 In determining retention by the assay method, the boring instructions and precautions given in AWP Standard M2 shall be observed.

7. Reports:

7.1 The treating company shall furnish the purchaser, or his representative, a certificate of compliance or such report on the material and treatment as the purchaser may request.

PART B

CONSUMER/COMMODITY SAWN PRODUCTS NOT NORMALLY SUBJECT TO WRITTEN SPECIFICATIONS BY THE PURCHASER

1. General Requirements:

1.1 The plant management is responsible for setting the plant-wide quality policy. Management must have a means of measuring quality performance and monitoring the progress toward meeting applicable quality standards.

1.2 The treating plant shall appoint an employee, trained in quality control procedures, who shall be designated as plant quality control supervisor and who will be responsible for conformance of treated products to the standards and specifications and for the accuracy of equipment used to monitor the treating processes. Specific responsibilities include the following:

Plant Equipment

1. Calibration of gauges
2. Monitoring of equipment to ensure proper operating condition

Wood Moisture Content

Products before treatment must meet moisture content requirements.

Record Keeping

Records must be kept for each processed lot or charge showing the purchaser, an identification number, date treated, material description and volume expressed in cubic feet and solution concentration. Records shall also be kept to show compliance with requirement for penetration, and for retention as measured by either gauge or assay in

accordance with the applicable commodity specification. All records shall become a part of the treating company's permanent file.

Sampling for Penetration and Retention

Treating plants shall perform sampling and inspection of all treated products.

1.3 The procedures in this Standard require monitoring and control, during purchase of the basic raw material and processing until shipment to the customer.

1.4 When relevant, other American Wood Protection Association Standards shall be used with this Standard.

1.5 The treating company shall provide a laboratory either at the treating plant, or at a separate location, with all equipment and supplies needed to analyze the preservative and perform assays. The laboratory shall have ample space, light and ventilation or air conditioning. The laboratory shall be maintained in a clean and orderly condition and shall be restricted to the use for which it is intended. Suitable desk and working space shall be provided.

1.5.1 Plants using X-ray fluorescence (XRF) analysis methods shall verify not less than weekly the stability of instrument calibration. Calibration stability shall be checked by using a "monitoring" or "reference" sample of known value whose result should not deviate by more than 5% at the level of expected concentration. A deviation of more than 5% shall be considered suspect and require further investigation to determine the cause for the variance and the need for recalibration or other action. The use of statistical

control charts is suggested to alert analysts to long term instrument drift or sample deterioration.

1.6 When it becomes evident that any phase of production does not comply with the requirements of the applicable AWWA Standards, the Quality Control Supervisor shall notify management and corrective action shall be taken.

1.7 The Quality Control Supervisor shall not release any material for shipment to the customer or for inspection until the material complies with the applicable AWWA Standard. Final acceptance of the material shall be withheld until the preservative and retention is found to conform to specifications.

2. Material Pre-Treatment Quality Control:

2.1 Plant Quality Control shall determine that all material has been stored in accordance with the applicable Standards of the AWWA while under plant control and prior to preparation for treatment.

2.2 Plant Quality Control shall determine that all material complies with the AWWA Standards using the recommended procedures in Part B of AWWA Standard M2.

2.3 The volume of each charge shall be accurately determined when net retention is to be determined on the basis of tank volume readings.

2.3.1 Volumes of rough sawn lumber and timbers shall be determined from their nominal dimensions.

2.3.2 Volumes of dressed or machined products shall be determined from their finished dimensions.

2.3.3 Framing, holes or other working shall be disregarded unless they remove 5% or more of the solid volume of the charge.

2.4 Moisture test for sawn softwood products before treatment, using conductance (resistance) type moisture meters.

2.4.1 When moisture content prior to treatment is specified under this Standard for the purpose of either the purchase of wood for treatment or as part of the treating plant quality control program, the following procedure shall be used. For information on meter types, standardization and calibration, see ASTM D4444 (latest version), except for amendments detailed below in Section 2.4.2 - 2.4.5.

2.4.2 Pins. Insulated type, 38 mm (1.5 in.) in length.

2.4.3 Position and depth. Pins shall be driven into the center of the smallest dimension of a piece, about midway along its length. The pins shall be driven to either their full depth or to the midpoint of the piece. When driven to their full depth, care must be taken to avoid a false reading due to contact of the pin hubs with a damp material surface. Small insulation discs are available to prevent this.

2.4.4 Number of tests. The inspector shall make tests of representative pieces as follows. The minimum number of pieces tested for moisture in a lot or charge shall be 2% or 20 pieces, whichever is less.

2.4.5 Expressing results. The results may be expressed in one or both of the following ways. Individual values in excess of 25% may be unreliable and should be considered separately.

(a) Maximum. The highest of the readings obtained in testing any one lot and the percentage of values over 25%.

(b) Average. The numerical average of the readings from each test in each lot and the percentage of values over 25%.

2.4.6 If 15% or more of the metered pieces have moisture readings over 25% determine the average moisture content for a composite sample by the oven-drying method in AWWA Standard M2.

2.4.7 The oven-drying method in AWWA Standard M2 shall be used to resolve disputes concerning procedures or results and may be used as an alternative test method.

3. Plant Gauges:

3.1 Pressure plants shall be equipped with recording instruments to register time, pressure, temperature and vacuum during each cycle of treatment. Pressure, temperature and vacuum shall be recorded in the common units of psi, °F, and inches of mercury respectively. Alternatively, methods for converting from recorded units to the common units, shall be readily available at the plant. Pressure shall be expressed as relative to atmospheric pressure (gauge). If absolute pressure is recorded, procedures shall be readily available for conversion to relative pressure. Treating equipment shall have separate and visible temperature, pressure and vacuum indicators with separate sensors for checking the accuracy of the recording equipment. Work tanks shall be equipped with a temperature indicator. Where heat is not required for proper treatment of the material and no facilities exist for application of heat to the treating vessel, working and/or storage tank, the temperature devices are not required.

3.2 All equipment used to monitor and record the treating process shall be tested and certified for accuracy at time of installation by an instrument company or qualified tester, and annually thereafter. Evidence of certification shall be affixed to the equipment or shall be readily available from records maintained at the plant. Whenever there is evidence of malfunction not correctable by simple adjustment, the equipment shall be promptly repaired or replaced and recertified for accuracy.

3.3 Certified calibration tables of measuring or work tanks shall be conveniently located and shall identify the person or firm which completed the certification. In the event of any damage or alteration to a tank that may cause an error in readings, the tank shall be re-calibrated and certified by a qualified person or agency.

3.4 Recording instruments shall be compared during different stages of treatment with the readings from the monitoring sensors mentioned in Section 3.1 above of this Standard. The recorder readings shall be within 5% of the readings of the monitoring devices. When found nonconforming, instruments and gauges shall be recalibrated in conformance with Section 3.5 below.

3.5 Certified tests of recording and monitoring equipment, as required under Section 3.2, shall be made as follows:

(a) Temperature. Compare with a temperature measuring device of certified accuracy and allow variation not exceeding 2°F.

(b) Pressure. Compare with a certified test gauge or similar gauge testing device and allow a variation not exceeding 21 kPa (3 psi) pressure.

(c) Vacuum. Compare with a mercury column or certified gauge

and allow a variation not exceeding 1 inch of mercury.

(d) Work Tank. Measure the height of solution at three levels, over a range of at least one-half the volume of the tank, with a tank tape and determine the volume of solution at each level from the certified tank calibration table. The corresponding readings for recording and monitoring equipment shall not vary by more than 1% from the determined volumes.

4. Preservative:

4.1 Plant Quality Control shall determine that the preservative used in each treatment conforms with the requirements for the preservative specified.

4.2 The petroleum distillates or a blend of petroleum distillates and co-solvents shall be tested for conformance to the applicable P9 requirements in accordance with methods of analysis referenced in AWWA Standard P9. Analysis shall be performed a minimum of at least once each quarter year, and/or whenever the material composition or source is changed or altered. Testing may be performed by the supplier of the distillates, an independent laboratory or the treating plant. Actual test data shall become part of the permanent plant record.

4.3 The petroleum oil or any blend of petroleum oils for mixing with creosote (AWWA Standard P1/P13) shall be tested for conformance with requirements of AWWA Standard P4 prior to blending with creosote. Verification of analysis with supporting documentation shall be required. Testing may be performed by the supplier of oil, an independent laboratory, or the treating plant. Actual test data shall become part of the permanent record.

5. Treatment:

5.1 The treatment, unless otherwise specified, shall conform with the AWWA Standards for the commodity and type of treatment specified in accordance with AWWA Use Category System Standards. Plant Quality Control shall maintain records on the cycles of treatment and the tank gauge readings and temperatures.

5.2 Careful observation during treatment shall be made of temperatures and pressures, and their duration, to make certain that maximum limits are not exceeded.

6. Results of Treatment:

6.1 Following treatment, an examination shall be made of the charge for any mechanical or treatment damage. When treatment damage is indicated, the material shall be rejected unless the customer desires to accept the material on a conditional basis.

6.2 Plant quality control must document that each charge of material treated to AWWA specifications conforms to the minimum retention and penetration requirements of Standard T1 Use Category System: Processing and Treatment Standard (Section 3) for the intended application and end-use exposure as listed in Section 6 of Standard U1 Use Category System: User Specification for Treated Wood.

6.2.1 Penetration. Each charge of treated material shall be bored to determine conformance of penetration requirements except as permitted in Section 6.4.

6.2.2 Retention. Each charge of treated material must conform to the minimum retention requirements for total actives as well as individual components except as permitted by Sections 6.3 through 6.6. In-plant verification that charges conform to the assay retention requirements shall be determined by analysis of all active components using AWWA standardized methods, except as permitted in 6.3.

6.3 For sawn materials, composites (plywood) and other consumer products treated with waterborne preservatives containing multiple active biocide components, where at least one component is readily analyzed in each charge at the plant site, the retention of the unanalyzed component(s) and the total retention in each charge may be calculated based upon the analyzed component(s) using a documented methodology. Use of this method shall only be permitted when the plant is monitored by a third party inspection agency and the method is reviewed by the agency for its accuracy in providing production that meets all component and total retention requirements. Supporting documentation may include the use of analyzed components levels in the concentrate, treating solutions, and wood as well as charge data that can be used to estimate the retention of any unanalyzed component(s). For plants initiating this method of determining retention, a minimum retention of the analyzed component shall not be less than the preservative's target percent balance for that component as listed in the applicable section of the P5 Standard; however, with additional and continuously supporting database of information verified by third party, may be used to justify a minimum retention of analyzed and unanalyzed component(s) in accordance with Table 1 Standard T1 and for the minimum total retention in the applicable Commodity Specifications. Qualification and subsequent supervision of a plant by its third party inspection agency in the use of an alternative testing methodology shall initially include sampling and testing of all active biocide components in the treating solutions and wood for all charges treated and for each species grouping and retention level treated. It shall include provisions for reduced or increased testing of an active biocide component based on performance of the plant as determined by monitoring by the plant's third party agency, but regardless of performance a plant shall test for all components on at least one out of every twenty charges.

6.4 Treating plants subscribing to an independent and qualified third-party inspection program for treatment of softwood lumber, timber and plywood may qualify by the following procedure to perform reduced sampling and inspection of all species, preservatives and sizes of material labeled or represented for above ground, ground contact or fresh water use approved in the third-party program. Initially every charge shall be sampled and tested for penetration and retention. After ten consecutive conforming charges of material from one species group, treated to a single retention in either of two thickness categories, 2-inches or less in thickness or over 2-inches in thickness, the plant, subject to approval by its third-party inspection agency, qualifies to sample and test at a reduced rate as follows:

- Material 2-inches or less in thickness shall be sampled every tenth charge for penetration and retention.
- Material over 2-inches in thickness shall be sampled every charge for penetration and every fifth charge shall be tested for retention.

When using the reduced schedule, a plant shall sample and test for penetration and retention at least one charge daily in each size category, if either or both categories are treated that day. If the plant quality control program or third-party inspection finds any non-conforming charges, the plant shall immediately begin to sample and test every charge of that thickness category. In addition, at least two charges immediately preceding the non-conforming charges, if available, shall be sampled and tested. All non-conforming material shall be retreated and the conformance verified or the material rejected and the quality mark removed. After ten consecutive charges are found conforming for both penetration and retention the reduced sampling may be resumed. Use of the reduced sampling schedule requires all material 2-inches or less in thickness to be 25% or less moisture content prior to treatment except where other means of conditioning are permitted in AWWA Standard T1. All charges containing material with variations in thickness, width, moisture content or from more than one mill source, shall be sampled and checked for penetration and retention as required by the applicable Use Category System Standard. However, charges with variations in thickness or width or moisture content or from more than one mill source may be sampled and tested using the reduced sampling schedule, provided ten consecutive charges containing the specific mixes, whether size, moisture content or mill source, pass both penetration and retention requirements. Whenever a significant change in a treating process occurs, or the qualified parameters of treatment are altered, ten consecutive charges must pass both penetration and retention tests before reduced sampling and testing can be resumed. In applying the criteria for reduced sampling and testing, the parameters for sizes, moisture contents, mill sources and treating processes shall be documented by the plant during qualification and shall be maintained at all times by the treating plant. The plant shall keep a record showing the maintenance of the qualification parameters.

6.5 Continuous Sampling. The treating plant may pass a charge at 90% of the required retention if (1) the treater is in good standing in an accredited third party inspection program and (2) the average assay result for the charge and the previous 9 charges (excluding any retreats) of the same species and commodity type is greater than or equal to the required retention and (3) the treater is sampling 100% of the charges for the same commodity type. If assays of two consecutive charges or if 4 of the last 10 in-plant assays fail to meet the required retention, then that charge is rejected and the plant must discontinue the Continuous Sampling program and requalify with ten consecutive charges meeting

the required retention. Allowed commodity types are Decking (actual thickness of 0.75" to 1.25"), Dimensional Lumber (actual thickness of 1.50" to 2.50"), Lumber and Timber (actual thickness of 2.50" to 6.00"), and Plywood. Allowed preservative is CCA-C. If less than 10 charges of the same commodity type have been sampled, this procedure is not applicable. Material to be used for Permanent Wood Foundation (AWPA Standard U1, Commodity Specification A, Section 5.2) is excluded.

6.6 To readily monitor the treating process, samples for retention and penetration measurements in lumber treated with CCA are often taken shortly after treatment. Preservative migrates into and out of the assay zone before stabilization takes place and compression of borings during sampling forces preservative out of the sample. Because of these factors retention values on assay samples shown in plant records may be lower than the specified minimum. Plant quality control records at individual plants showing up to ten percent less than the specified minimum are acceptable if supported by evidence that retentions do increase to at least the minimum specified retention as stabilization takes place. This is usually achieved in 24 to 48 hours, but may take longer in colder weather. All treated material from any charge showing retentions more than ten percent below the specified minimum retention shall be retreated or the entire charge may be set aside for an additional test at any time interval chosen by the plant. When the additional test is made, the material must either meet the minimum AWWA retention or the entire charge be retreated. Plant tests that establish a specific retention increase occurring for any time interval shall be performed with at least the same frequency as third party sampling and testing. The adequacy of supporting evidence shall be confirmed through monitoring within an approved third party quality assurance program. Supporting data shall include material, sizes, species, ambient temperatures, treating cycles and heartwood content. Substantial changes in any of these factors shall require new supporting evidence to permit continued use of this procedure. All treated material shall meet the minimum specified retention of the applicable AWWA Standard at the time of shipment from the plant. This shall be verified by sampling and testing within an approved third party inspection program. Individual plants must maintain a satisfactory conformance rate and quality level in the plant's third party quality assurance program for continued use of this procedure. If a plant's conformance rate or quality level becomes unsatisfactory within the third party program, all plant quality control samples must meet the minimum AWWA retention requirement until such time that the plant regains a satisfactory status.

6.7 In determining retention by the assay method, the boring instructions and precautions given in Part B of AWWA Standard M2 shall be observed.

7. Records:

7.1 The treating company shall maintain a record of treatment for each charge or lot containing the minimum information listed in Section 6, Part B of Standard M3.