

APPENDIX C: PROTOCOL FOR STANDARDIZATION OF NEW MILLWORK PRESERVATIVE SYSTEMS

Maintained by Subcommittee P-8

This Appendix to AWPA's Technical Committee Regulations is not an AWPA Standard. It is a non-mandatory guidelines document presented to enable the user to understand the basic testing requirements for wood protection systems and to assist the AWPA Technical Committees in the development of AWPA Standards. The testing of products in accordance with this Appendix does not constitute conformance with any AWPA Standard. No product can be considered to conform with an AWPA Standard until it has been subjected to complete technical review and voting by AWPA's Technical Committees, and procedural review and final action by the AWPA Executive Committee pursuant to the AWPA Technical Committee Regulations.

1.0 CHEMICAL AND PHYSICAL PROPERTIES

Pertinent information on the chemical and physical properties of the wood preservative system should be provided with particular emphasis on those factors which may have an effect on the long-term performance (e.g. chemical, thermal or ultra violet light exposure stability).

A wood preservative system shall be defined as a formulation consisting of preservative active ingredient, water repellent, and/or other ingredients needed to maintain the stability in an appropriate solvent.

1.1 Chemical Properties of the Wood Preservative System

- 1.1.1 Active ingredient(s) usage concentration shall be stated.
- 1.2 Physical Properties
 - 1.2.1 Specific Gravity
 - 1.2.2 Flash Point (Cleveland Open Cup - ASTM D-92, or Pensky-Martens Closed Tester ASTM D-93)
 - 1.2.3 Boiling Point
 - 1.2.4 Viscosity at 25°C
 - 1.2.5 pH
 - 1.2.6 Thermal Stability (ASTM E537)
 - 1.2.7 UV Light Sensitivity (ASTM G53)
 - 1.2.8 Vapor Pressure (mm Hg at 20°C)
 - 1.2.9 Vapor Density (Air = 1)
 - 1.2.10 Volatiles (VOC content - -grams/liter)

2.0 ENVIRONMENTAL

Preservative actives, water repellents, base solvents/co-solvents or components thereof cannot occur on priority pollutant lists of the United States EPA. A Material Safety Data Sheet should be submitted along with information on the status of approval by FIFRA.

3.0 ANALYTICAL METHODS

3.1 Solution Analysis - Supplier of the preservative system shall provide the proper analytical methodology to quantify the preservative active ingredient and water repellent in solution.

3.2 Wood Analysis - Supplier of the preservative system shall provide the proper analytical methodology to quantify the preservative active ingredient and water repellent in wood product.

3.3 Penetration Analysis - Supplier of the preservative

system shall provide the proper analytical methodology to measure the preservative active ingredient and the water repellent in wood product from the outer treated edge to the innermost treated ring with measurements made to the nearest millimeter. If a suitable analytical method does not exist every effort should be made to develop one.

4.0 EFFICACY

4.1 Laboratory Tests

4.1.1 Soil Block Test - Data on a minimum of 3 brown rot fungi and 3 white rot fungi is required to provide information on the efficacy of the preservative active ingredient against pure cultures of common wood decay fungi. Appropriate controls should be included to determine the effects of solvents and provide reference to established systems such as pentachlorophenol. Standard testing should be performed in accordance with AWPA Standard E10. Testing Wood Preservatives by Laboratory Soil-Block Cultures with specific reference to:

A. Softwood species - Ponderosa pine (*Pinus ponderosa*) tested in conjunction with *Gloeophyllum trabeum* (Pers. ex Fr.) Murr (ATCC 1153 9).

B. Hardwood species - Yellow poplar (*Liriodendron tulipifera*) tested in conjunction with *Trametes versicolor* (L. ex Fr.) Pilat (ATCC 42462).

C. Additional fungal species as specified with particular reference to those with a known tolerance for the preservative active ingredient or appropriate for the intended wood products.

4.1.2 Insect Tests - For preservative systems to be used in wood products in high insect hazard applications, methods designed to maximize attack by insects are recommended. Additional levels of protection may be required to prevent insect attack and will depend upon the geographical region in which the end product is to be sold. Insecticidal resistance should be tested in accordance with AWPA Standard E1.

4.2 Field Tests

4.2.1 Above Ground Tests - L-Joint Tests in accordance with AWPA Standard E9, "Standard Field Test for the Evaluation of Wood Preservatives to be Used in Non-Soil Contact" is required.

4.2.2 Other Above Ground Tests - Other above ground tests using methods designed to create extreme conditions are recommended for preservative systems to be used in wood products in high insect, environmental exposure or physically

degrading hazard applications.

5.0 PRESERVATIVE PERMANENCE

5.1 Water Leach Test - Leachability of the preservative system in accordance with AWPAs Standard E11 "Standard Method of Determining the Leachability of Wood Preservatives."

5.2 Preservative Active Ingredient Depletion: appropriate tests to determine the permanence of the biocide are required.

6.0 EFFECTS ON WOOD PROPERTIES

6.1 Strength

Strength tests in accordance with ASTM D 143 "Standard Methods of Testing Small Clear Specimens of Timber" using the wood species, preservative retention levels and treatment, and the drying processes appropriate for the intended end use are required. For wood composites, ASTM D1037 is recommended.

6.2 Other Properties

6.2.1 Electrical Conductivity

6.2.2 Hygroscopicity (ASTM - D3201)

6.2.3 Fire Resistance (ASTM E84)

6.2.4 Appearance including color, residue, etc.

6.2.4 Adhesion

6.2.4.1 Paint film by ASTM D3359

6.2.4.2 Wood to wood bonding by ASTM-D1037, Shear Block Test

6.2.4.3 Wood to other substrates by various ASTM methodologies (e.g. - ASTM - D3930)

6.2.5 Dimensional Stability by acoustical emission

6.2.6 Water Repellency by NWWDA TM-2

7.0 CORROSIVITY

7.1 Plant Corrosion - Tests in accordance with NACE Standard TM-01-69 are required using the RTU preservative system.

7.2 Treated Wood/Metal Corrosion - Tests in accordance with AWPAs Standard E12, "Standard Method of Determining Corrosion of Metal in Contact With Treated Wood" are required using the RTU preservative system.