

APPENDIX D: PROTOCOL FOR STANDARDIZATION OF NEW WOOD PRESERVATIVE FINISHES

Maintained by Subcommittee P-6

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.

INTRODUCTION

The purpose of this protocol is to serve as a guideline for data requirements needed by the AWPA Nonpressure Technical Committee for standardization of surface applied wood preservative finishes. This protocol covers ready-to-use solutions which are applied to wood by simple nonpressure methods. For more specific guidance in the standardization process, sponsors are encouraged to interact directly with the Nonpressure Technical Committees early in the preservative evaluation process.

Standard test methods may not yet be available for evaluating all of the criteria outlined in this document. Whenever this is the case, it is suggested that nonstandard methods be used to provide the necessary data. Use of such methods is acceptable provided they are based on sound experimental principles. A decision on the acceptability of data generated by all test methods will be made by the appropriate AWPA Technical Committee.

Development of a wood preservative standard involves a variety of factors and data on each factor is needed in order to make an evaluation. The important criteria for surface applied wood preservative finishes are outlined below. The criteria in this protocol are intended to serve as guidelines; the final decision on specific requirements will be made by the appropriate AWPA technical committees.

1.0 CHEMICAL AND PHYSICAL PROPERTIES

Pertinent information on the chemical and physical properties of the wood preservative finish should be provided. These properties should include (but may not be limited to): flammability, vapor pressure, boiling point, evaporation rate, density, viscosity, color, odor, package stability, corrosivity to fasteners and volatile organic content (VOC). The active ingredient(s) and weight percentage(s) of each should be provided.

2.0 ENVIRONMENTAL

A Material Safety Data Sheet should be submitted along with the status of registration by the U.S. Environmental Protection Agency and acceptance by the individual states. Methods for disposal of treated wood should also be provided.

3.0 ANALYTICAL METHODS

Analytical methods are required for all wood preservative active ingredients. At least one standard method for each of the following should be submitted to the P5 Subcommittee for review. Whenever possible, documentation of the accuracy and precision of the submitted methods should be provided. The submission should include methods for:

3.1 Solution Analysis - Determination of the concentration of active ingredient(s) in the formulated wood preservative finish.

3.2 Wood Analysis - Determination of the surface concentration of active ingredient(s) on the treated wood.

4.0 EFFICACY

4.1 Laboratory Test - Determination of the efficacy of the wood preservative finish against a variety of fungi is needed. The test should be performed on hardwood, softwood, and composite substrates. Fungi should include brown rot, white rot, stain and mildew organisms. Examples of such tests include the JWA test, BAM RAL test, BRE Bait test, EN152-1, CTFT test, and EMPA Chip test, and European Prestandard prENV 839 (sources are listed in Appendix A). In selecting the appropriate test(s), the end-use requirements of the consumer should be considered.

The objective of the laboratory test is to provide information on the efficacy of wood preservative finishes against pure cultures of common decay and staining fungi. Weakness against a single fungus does not necessarily indicate that the finish is a poor wood preservative. Use of reference preservatives and uncoated controls is necessary to provide a comparison to existing systems.

4.2 Field Test - The objective of the field test is to evaluate the performance of the wood preservative finish against decay, mold and stain fungi in an actual outdoor exposure over a period of time. When the wood preservative finish is exposed in an area where wood destroying insects are a recognized hazard, appropriate measurement of insect attack should also be included in the field test(s). Review articles on field test performance can be referenced from Forest Products Journal, AWPA Proceedings, and IRG documents (see Appendix A).

4.2.1 Substrates - Tests should be carried out on several

wood species which are common substrates for wood preservative finishes. Examples include redwood, cedar, southern yellow pine (untreated and CCA treated), and composites such as plywood and T-111 siding.

4.2.2 Exposure Configuration - Products intended for use on siding should be exposed at 45 and/or 90 degrees southern exposure. Products intended for use on decking or other horizontal applications should be exposed horizontally. Other configurations (i.e. vertical northern) which favor the growth of specific organisms may be used to supplement the above exposure tests.

4.2.3 Exposure Sites - A minimum of two geographically separated test sites is recommended. These sites should be selected so they provide two distinctly different exposure environments. At least one severe hazard area (Hawaii, Florida, Mississippi, etc.) is recommended.

4.2.4 Exposure Time - In high stain/decay/insect hazard areas a typical exposure time to produce meaningful results is 18-24 months. For areas of lower stain/decay/insect hazard (e.g., Michigan) longer exposure times will likely be required.

The rate of decay/attack of untreated controls should be a guide in determining the length of exposure required. These untreated controls as well as test specimens treated with preservatives of recognized performance (e.g. 5% pentachlorophenol) shall be included for comparison purposes.

4.2.5 Evaluation criteria - Test panels can be rated visually using methods as outlined in ASTM Standard D3274. Insect attack should be noted and rated as to severity. This is critical in that the penetration of wood destroying insects below the layer of treatment in the wood can severely compromise the protection against decay.

The effect of the wood preservative finish on the durability and appearance of other paints or coatings applied after treatment should be evaluated. Information regarding the evaluation of coatings durability is available from ASTM and the Window and Door Manufacturers Association (see Section 7.0).

4.2.6 Biocide Depletion - Exposed test specimens should be analyzed for residual biocide at appropriate exposure intervals. The frequency of sampling is dependent upon the weathering characteristics of the product being tested as well as the ruggedness of the active ingredient(s) it contains.

5.0 OTHER PROPERTIES

A wood preservative finish may also include ingredients to provide additional protection and beautification to the treated wood. Examples include water repellents, pigments, and ultraviolet (UV) stabilizers. When such claims are made, data should be provided to support the claims based on

pertinent laboratory tests and/or outdoor exposure evaluations. Untreated controls and substrates treated with finishing systems lacking these enhancements should be included for comparison purposes.

6.0 PROPOSED STANDARD

A proposed preservative Standard should be drafted and submitted with all supporting data. The draft Standard should include:

- (a) Identity and weight percentage of active ingredient(s), Physical and chemical properties,
- (b) Directions for use and recommended coverage requirements, Special handling, safety, storage and disposal requirements,
- (c) Reference to the appropriate analytical methods, and
- (d) Proposed end uses.

7.0 SOURCES OF INFORMATION

For information on JWPA Test contact:

Japan Wood Preservers Industry Association
1-9-13, Akasaka, Minato-ku, Tokyo, 107, Japan

For information on the following research papers and European standards:

BAM RAL test (CEN-WG-9-2),
BRE Bait Test (CEN-WG-9-8),
CTFT test (CEN-WG-9-4),
EMPA Chip test (CEN-WG-9-3),
European Standard EN152-1,
European Pre-standard prENV 839

Contact:

CEN, European Committee for Standardization
Central Secretariat, rue de Stassart 36
B-1050 Brussels, Belgium

Other referenced sources of information:

ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428

Forest Products Journal, c/o Forest Products Society, 2801 Marshall Court, Madison, WI 53705-2295

The International Research Group on Wood Preservation, IRG Secretariat, Box 5607, S-114 86 Stockholm, Sweden

Window and Door Manufacturers Association
1400 East Touhy Ave., Suite G-54, Des Plaines, IL 60018