



Designation: D2921 – 98 (Reapproved 2005)

Standard Test Method for Qualitative Tests for the Presence of Water Repellents and Preservatives in Wood Products¹

This standard is issued under the fixed designation D2921; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This test method covers simple qualitative field or laboratory tests to determine water repellency or the presence of chlorinated phenol² preservative chemicals in wood products that are specified to be water repellent preservative treated.

1.2 The values stated in SI units are to be regarded as standard. The values given in parentheses are for information only.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

- 2.1 *U.S. Federal Specification:*
TT-W-572 Wood Preservative Water-Repellent³
- 2.2 *NIST Standard:*
262-63 Water Repellent Preservative Non-Pressure Treatment for Mill Work⁴

3. Significance and Use

3.1 Although chlorinated phenol-treated wood has become less common due to environmental concerns, repellent-treated wood is commonly specified in construction. This test method provides a means to verify the presence of a significant level of water repellent protection.

4. Apparatus

4.1 *Eyedropper*, plastic squeeze bottle or similar means for metering drops of water.

4.2 *Flame Source*, such as bunsen burner, butane torch, or alcohol burner.

4.3 *Copper Wire Coil Specimen Holder (or Other Suitable Copper Holder)*—A suitable copper wire coil can be made by using a lead pencil as a mandrel to form a helix using copper wire of about 1.6 to 2.4 mm ($1/16$ to $3/32$ in.) in diameter. Leave a space of approximately the diameter of the wire between each loop. The helix should be 19 to 25 mm ($3/4$ to 1 in.) in length. Leave a pigtail of about 152 mm (6 in.) of wire at one end of the helix and form a loop of approximately 25 mm (1 in.) in diameter to be used as a holder for the coil.

4.4 *Sharp Knife*.

5. Water Repellent Test

5.1 Place uncut wood items to be tested so that the end grain is exposed as a horizontal surface. If the end grain cannot be so positioned, comparisons can be made on the flat grain but with less definitive results.

5.2 With an eye dropper, or similar device, allow several drops of water to fall from about 13 mm ($1/2$ in.) on the end grain of the wood. Wait 5 min and then observe the degree of penetration. With flat grain or vertical grain surfaces, waiting periods of 10 to 15 min may be necessary.

5.3 Water drops that immediately flatten out, penetrate and darken the wood, indicate that the wood has not been treated with a water repellent.

5.4 Water drops that “bead-up” and remain as spheres, with little or no color change or penetration, indicate that the wood has been treated with a water repellent. Water repellent preservatives, meeting Fed. Spec. **TT-W-572** and NBS Standard **262-63**, impart sufficient water repellency to the end grain of wood to cause water drops to bead up and form spheres.

6. Preservative Test

6.1 Chlorinated phenol based wood preservatives emit a characteristic green flame upon pyrolysis within a ventilated copper envelope due to the release of chlorine and its consequent reaction with copper (Beilstein’s test). Untreated wood produces a yellow-orange flame but any chlorine containing compound will give a positive test.

6.2 Using the copper wire specimen holder, described in 4.3, hold the coil portion in the flame until it burns with a characteristic yellow-orange color. This preheated coil is then allowed to cool.

¹ This test method is under the jurisdiction of ASTM Committee D01 on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee D01.52 on Factory Coated Wood Products.

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² Pentachlorophenol, tetrachlorophenol and other chlorinated phenols.

³ Available from Standardization Documents Order Desk, DODSSP, Bldg. 4, Section D, 700 Robbins Ave., Philadelphia, PA 19111-5098.

⁴ Available from National Institute of Standards and Technology (NIST), 100 Bureau Dr., Stop 3460, Gaithersburg, MD 20899-3460.