



**CERTIFICATION**



Approved. Sealed. Code Compliant.

## **Technical Evaluation Report**

**TER 1501-01**

Postsaver® System

**Planet Savers Industries, LLC**

### **Product:**

**Postsaver® System for use with  
sawn lumber and round posts in  
ground-contact applications**

Issue Date:

July 16, 2018

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DIVISION: 06 00 00 - WOOD, PLASTICS AND COMPOSITES

SECTION: 06 05 83 - Shop-Applied Wood Coating

SECTION: 06 11 00 - Wood Framing

1 PRODUCTS EVALUATED<sup>1</sup>

1.1 Postsaver® System for use with sawn lumber and round posts in ground-contact applications

1.2 Postsaver® System may be marketed with one of the following names:

1.2.1 Postsaver® USA

1.2.2 SmartPost™

1.2.3 GreenPost™

2 APPLICABLE CODES AND STANDARDS<sup>2,3</sup>

2.1 Codes

2.1.1 *IBC—12, 15, 18: International Building Code®*

2.1.2 *IRC—12, 15, 18: International Residential Code®*

2.2 Standards and Referenced Documents

2.2.1 *ANSI/AWC NDS: National Design Specification (NDS) for Wood Construction*

<sup>1</sup> Building codes require data from valid [research reports](#) be obtained from [approved sources](#). Agencies who are accredited through ISO/IEC 17065 have met the [code requirements](#) for approval by the [building official](#). DrJ is an ISO/IEC 17065 [ANAB-Accredited Product Certification Body](#) – [Accreditation #1131](#).

Through ANAB accreditation and the [IAF MLA](#), DrJ certification can be used to obtain product approval in any [jurisdiction](#) or country that has [IAF MLA Members & Signatories](#) to meet the [Purpose of the MLA](#) – “certified once, accepted everywhere.”

Building official approval of a licensed [registered design professional](#) (RDP) is performed by verifying the RDP and/or their business entity complies with all professional engineering laws of the relevant [jurisdiction](#). Therefore, the work of licensed RDPs is accepted by [building officials](#), except when plan (i.e., peer) review finds an error with respect to a specific section of the code. Where this TER is not approved, the [building official](#) responds in writing stating the reasons for [disapproval](#).

For more information on any of these topics or our mission, product evaluation policies, product approval process, and engineering law, visit [drjcertification.org](http://drjcertification.org) or call us at 608-310-6748.

<sup>2</sup> Unless otherwise noted, all references in this TER are from the 2018 version of the codes and the standards referenced therein (e.g., *ASCE 7*, *NDS*, *ASTM*). This material, design, or method of construction also complies with the 2000-2015 versions of the referenced codes and the standards referenced therein.

<sup>3</sup> All terms defined in the applicable building codes are italicized.





- 2.2.2 *ASTM D1204: Standard Test Method for Linear Dimensional Changes of Nonrigid Thermoplastic Sheeting or Film at Elevated Temperature*
- 2.2.3 *ASTM D143: Standard Test Methods for Small Clear Specimens of Timber*
- 2.2.4 *ASTM D312: Specification for Asphalt Used in Roofing*
- 2.2.5 *ASTM D4801: Standard Specification for Polyethylene Sheeting in Thickness of 0.25 mm (0.01 in.) and Greater*
- 2.2.6 *ASTM D4976: Standard Specification for Polyethylene Plastics Molding and Extrusion Materials*
- 2.2.7 *ASTM D882: Standard Test Method for Tensile Properties of Thin Plastic Sheeting*
- 2.2.8 *AWPA E1: Laboratory Methods for Evaluating the Termite Resistance of Wood-based Materials: Choice and No-choice Tests*
- 2.2.9 *AWPA P20: All Barrier Protection Systems*
- 2.2.10 *AWPA U1: Use Category System: User Specification for Treated Wood*
- 2.2.11 *EN 252: Field test method for determining the relative protective effectiveness of a wood preservative in ground contact*
- 2.2.12 *ENV 807: Wood preservatives. Determination of the effectiveness against soft rotting micro-fungi and other soil inhabiting micro-organisms*

### 3 PERFORMANCE EVALUATION

- 3.1 Postsaver® System has been evaluated to determine its suitability as a barrier system for protection of sawn lumber and round posts used in ground-contact applications where it is required by code to provide the following:
  - 3.1.1 Weather resistance in accordance with *AWPA E1* and *EN 252*.
  - 3.1.2 Resistance to fungal decay as required by *IBC Section 2304.12<sup>4</sup>* and *IRC Section R317*.
  - 3.1.3 Protection from subterranean termites where required by *IBC Section 2304.12<sup>5</sup>* and *IRC Section R318*.
  - 3.1.4 Dynamic impact performance in accordance with *EN 252*.
  - 3.1.5 Strength retention of lumber in barrier system in accordance with *ASTM D143*.
- 3.2 Any code compliance issues not specifically addressed in this section are outside the scope of this TER.
- 3.3 Any engineering evaluation conducted for this TER was performed on the dates provided in this TER and within Dr.J's professional scope of work.

### 4 PRODUCT DESCRIPTION AND MATERIALS

- 4.1 Postsaver® System (Figure 1) is a factory-applied polyethylene wrap for wood posts and columns that provides protection from decay and termites when applied to one end of preservative-treated or nonpreservative-treated solid sawn lumber and engineered products made from solid-sawn lumber (e.g. glulam or built-up sawn lumber posts/columns).

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<sup>4</sup> [2012 IBC Section 2304.11](#)

<sup>5</sup> [2012 IBC Section 2304.11](#)

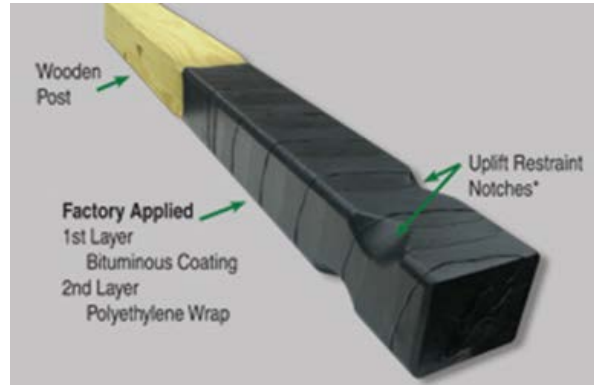


FIGURE 1. POSTSAVER® SYSTEM

## 4.2 Materials

### 4.2.1 Wrap:

4.2.1.1 Polyethylene sheathing is applied in a spiral technique with a 1½" overlap (minimum 1¼") and shrink-wrapped to the bottom of the wood post. Minimum 0.012" thick (0.30 mm) in accordance with *ASTM D4801* and *ASTM D4976*.

### 4.2.2 Adhesive:

#### 4.2.2.1 Bitumen

4.2.2.2 Applied to the inside of the polyethylene boot prior to installation on post. Once applied to the post, the heat-shrinking process liquefies the bitumen allowing it to penetrate the wood creating a solid bond. Bitumen is prepared from asphalt in accordance with *ASTM D312* or *EN 13304* with an average minimum thickness of 0.010" (0.25 mm).

### 4.2.3 Wood post members:

4.2.3.1 Any grade wood post may be used, but the grade mark shall be visible after fabrication. Preservative-treated and engineered wood must feature a quality label from an accredited third-party inspection agency and the label must be visible at all times.

## 4.3 Postsaver® System applied to preservative-treated wood products are acceptable for use in the following AWPA Use Categories<sup>6</sup>, in accordance with *AWPA U1*:

4.3.1 UC4A Ground Contact – General Use/Non-Critical Component. Typical applications include fence posts, deck posts, guardrail posts, and utility poles located in regions of low natural potential for wood decay and insect attack.

4.3.2 UC4B Ground Contact – Heavy Duty/Critical Components. Typical applications include building poles, horticultural posts, and utility poles located in regions of high natural potential for wood decay and insect attack.

<sup>6</sup> These are AWPA designated wood preservation systems and retentions that have been determined to be effective in protecting wood products under specified exposure conditions. The strength of the UCS and its focus is that all wood uses can be placed into one of five major Use Categories that clearly describe the exposure conditions that specific wood products can be subjected to in service. The major Use Categories are further broken down into sub-categories to define the associated degree of biodegradation hazard and product service life expectations for specific products and exposure conditions. The Use Category system is designed to help specifiers and product users locate the appropriate AWPA Standards that specifies preservatives deemed acceptable for specific products and end-use environments.



## 5 APPLICATIONS

### 5.1 General

- 5.1.1 Postsaver® System provides protection to nonpreservative-treated and preservative-treated wood posts and columns used in ground contact applications. Nonpreservative-treated wood posts and columns protected with the Postsaver® System shall only be used in applications where the building code does not require the above ground portion of the member to be preservative-treated (i.e., covered conditions or applications not exposed to weather).
- 5.1.2 Wood members shall comply with all applicable building codes for each application and the design shall be based on the requirements of each individual application.
- 5.1.3 Duration of load increases shall be in accordance with the limitations of the applicable building code, but not greater than 1.6 in accordance with *NDS*® Section 2.3
- 5.1.4 Where the application exceeds the limitations set forth herein, design shall be permitted in accordance with accepted engineering procedures, experience, and technical judgment.

### 5.2 Decay

- 5.2.1 Postsaver® System was tested in accordance with *EN 252* and *ENV 807* for decay. No decay was reported in any of the wrapped stakes at the five year mark of the *EN 252* test plan. Wrapping in the *ENV 807* testing provided an adequate barrier to prevent moisture intrusion or access to air, which are required in decay.

### 5.3 Termite Resistance

- 5.3.1 Postsaver® System was tested in accordance with *AWPA E1* for termite resistance. Results indicated termites did not feed on wrapped wood even in the absence of other sources of food.

### 5.4 Dynamic Impact Performance

- 5.4.1 As part of *EN 252* testing, field stakes were purposely punctured/cut in an effort to show equivalent performance to intact barrier stakes after five years of exposure to below-grade contact. Test results confirm those stakes with deliberate punctures/cuts performed as well as those stakes left intact and all exhibited no sign of fungal attack.

### 5.5 Strength

- 5.5.1 As an alternative to *ASTM D143* testing, Postsaver® System was analyzed by an independent engineer for the ability of the lumber to retain strength properties after being subject to high heat during the heat shrink process of installing the polyethylene wrap. The conclusion of the analysis letter states:
  - 5.5.1.1 New posts on which Postsaver® System boots have been installed according to the manufacturer's recommended procedures will not have impaired structural strength compared to either untreated or preservative-treated posts of the same species, quality, and dimensions.

### 5.6 Ground Contact Condition in Residential Wood Foundations

- 5.6.1 Postsaver® System meets Special Requirement 4.2 in *AWPA U1* (see Section 4.3.2) for use in wood foundation systems with a ground contact condition, in accordance with *IRC Section R402.1.2*<sup>7</sup>.

## 6 INSTALLATION

- 6.1 Postsaver® System-protected wood posts shall be installed in accordance with the applicable code, the approved construction documents, this TER, the manufacturer's instructions and standard framing practice as applied to solid-sawn lumber, as applicable.
  - 6.1.1 In the event of a conflict between any of the above and this TER, the more restrictive shall govern.

<sup>7</sup>Special Requirement 4.2 was added to this *IRC* section in 2018. *IRC* 2015, 2012, and 2009 notes to use Commodity Specification A, Category 4B and Section 5.2 in *AWPA U1*. Section 5.2 was referenced in error in some cases: use Tables in Section 5 with UC4B in the corresponding version of *AWPA U1* referenced by *IRC* 2015, 2012, or 2009, as applicable.

## 6.2 General

- 6.2.1 Note: Uplift Restraint Notches in bottom of post are enlarged for illustration purposes in the details below.
- 6.2.2 For non-structural applications such as fence posts, mailbox posts, or signposts, the top of the Postsaver® System wrap must be a minimum of 2" above the ground level or concrete surface line (Figure 2).

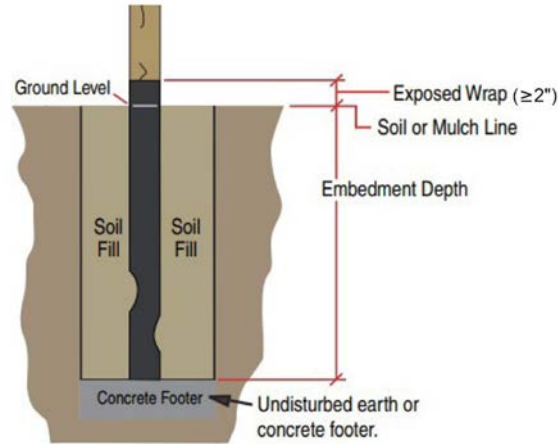


FIGURE 2. SECTION VIEW FOR NON-STRUCTURAL APPLICATIONS

- 6.2.3 For structural applications requiring building code compliance such as support columns for post-frame construction, the top of the Postsaver® System wrap must be a minimum of 8" above the ground level. (Figure 3 and Figure 4)

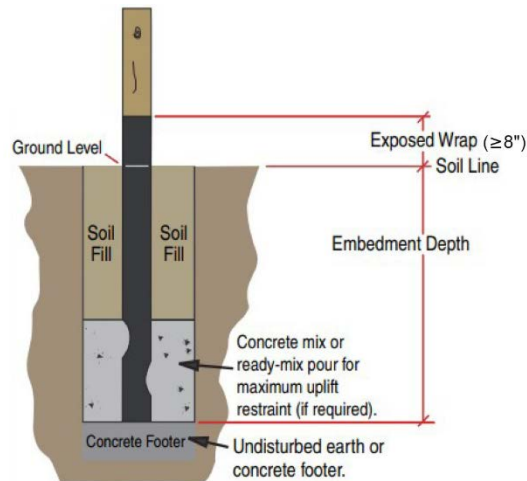


FIGURE 3. SECTION VIEW FOR STRUCTURAL APPLICATION WITH EXPOSED SOIL

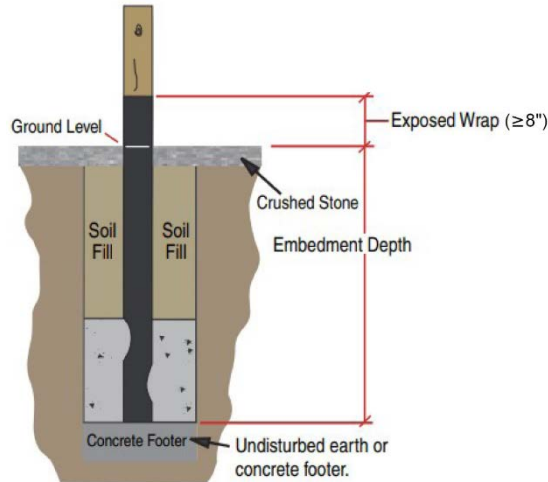


FIGURE 4. SECTION VIEW FOR STRUCTURAL APPLICATION WITH CRUSHED STONE

6.2.4 If a concrete slab is installed, the top of the Postsaver® System wrap must be a minimum of 2" above the top of the concrete surface line (Figure 5).

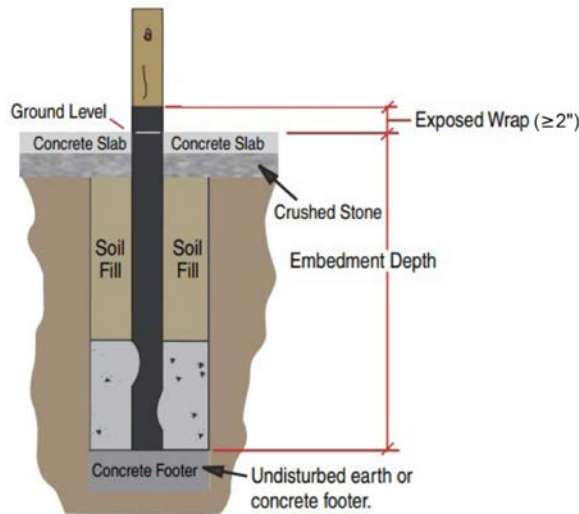


FIGURE 5. SECTION VIEW FOR STRUCTURAL APPLICATION WITH CONCRETE SLAB

## 7 TEST ENGINEERING SUBSTANTIATING DATA

7.1 Test reports and data support the following properties:

- 7.1.1 Tensile strength and shrinkage in accordance with *ASTM D882* and *ASTM 4801 (ASTM D1204)* by RADCO - Resources, Applications, Designs and Controls, Inc.
- 7.1.2 Rate of decay in preservative-treated wood stakes and dynamic impact performance in accordance with *EN 252* by Building Research Establishment, Ltd.
- 7.1.3 Prevention of decay by soil-inhabiting microflora in accordance with *ENV 807* by Building Research Establishment, Ltd.
- 7.1.4 Termite resistance in accordance with *AWPA E1* by Mississippi State University, Forest and Wildlife Research Center Mississippi Forest Products Laboratory.





- 7.1.5 Professional engineering letter regarding *AWPA E10* testing by Mississippi State University, Forest and Wildlife Research Center Mississippi Forest Products Laboratory.
- 7.1.6 Professional engineering letter regarding the Postsaver® System process heat effects on post strength by Stephen T. Smith, PE.
- 7.2 Some information contained herein is the result of testing and/or data analysis by other sources which conform to IBC Section 1703 and relevant professional engineering law. DrJ relies on accurate data from these sources to perform engineering analysis. DrJ has reviewed and found the data provided by other professional sources to be credible.
- 7.3 Where appropriate, DrJ's analysis is based on design values that have been codified into law through codes and standards (e.g., *IBC*, *IRC*, *NDS®*, and *SDPWS*). This includes review of code provisions and any related test data that aids in comparative analysis or provides support for equivalency to an intended end-use application. Where the accuracy of design values provided herein is reliant upon the published properties of commodity materials (e.g., lumber, steel, and concrete), DrJ relies upon the grade mark, stamp, and/or design values provided by raw material suppliers to be accurate and conforming to the mechanical properties defined in the relevant material standard.

## 8 FINDINGS

- 8.1 When used and installed in accordance with this TER and the manufacturer's installation instructions, the product(s) listed in Section 1.1 are approved for the following:
  - 8.1.1 Resistance to fungal decay as required by IBC Section 2304.12 and IRC Section R317.
  - 8.1.2 Protection from subterranean termites where required by IBC Section 2304.12<sup>8</sup> and IRC Section R318.
  - 8.1.3 Weather resistance in accordance with *AWPA E1* and *EN 252*.
  - 8.1.4 Dynamic impact performance in accordance with *EN 252*.
  - 8.1.5 Strength retention of lumber in barrier system.
  - 8.1.6 Residential foundation application with a ground contact condition.
- 8.2 IBC Section 104.11 (IRC Section R104.11 and IFC Section 104.9 are similar) states:

**104.11 Alternative materials, design and methods of construction and equipment.** The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been *approved*. An alternative material, design or method of construction shall be *approved* where the *building official* finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, not less than the equivalent of that prescribed in this code...Where the alternative material, design or method of construction is not *approved*, the *building official* shall respond in writing, stating the reasons the alternative was not *approved*.
- 8.3 This product has been evaluated in the context of the codes listed in Section 2 and is compliant with all known state and local building codes. Where there are known variations in state or local codes applicable to this TER, they are listed here.
  - 8.3.1 No known variations

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<sup>8</sup> 2012 IBC 2304.11





## 9 CONDITIONS OF USE

- 9.1 Postsaver® System complies with the codes listed in Section 2, subject to the following conditions:
- 9.1.1 Do not drop or dump Postsaver® System products when unloading. Do not pick up the wrapped/barrier area of the post with a forklift or crane.
  - 9.1.2 Take all normal precautions to not damage the lumber material when handling. Do not use chains to unload material.
  - 9.1.3 Protect the wooden posts by keeping them off the ground when storing on a jobsite.
  - 9.1.4 Always protect the wrapped/barrier area from excessive heat.
  - 9.1.5 Do not apply banding on the wrapped/barrier area of the posts.
  - 9.1.6 Penetration of the wrap material below ground level by fasteners, bolts, or nails is not permitted. Fastener penetration of the wrap material is permitted as long as it is at least 2" above ground level and there is no direct exposure to weather.
  - 9.1.7 Use of Postsaver® System with non-preserved-treated wood is not permitted in applications where untreated areas of the wood are subject to direct exposure to the weather.
  - 9.1.8 Postsaver® System shall not be used in areas where exposure to Formosan subterranean termites is expected.<sup>9</sup>
  - 9.1.9 Use in tropical climate zones is outside the scope of this TER.
- 9.2 Where required by the building official, also known as the authority having jurisdiction (AHJ) in which the project is to be constructed, this TER and the installation instructions shall be submitted at the time of permit application.
- 9.3 Any generally-accepted engineering calculations needed to show compliance with this TER shall be submitted to the AHJ for review and approval.
- 9.4 Design loads shall be determined in accordance with the building code adopted by the jurisdiction in which the project is to be constructed and/or by the Building Designer (e.g., owner or registered design professional).
- 9.5 At a minimum, this product shall be installed per Section 6 of this TER.
- 9.6 This product is manufactured under a third-party quality control program in accordance with IBC Section 104.4 and 110.4 and IRC Section R104.4 and R109.2.
- 9.7 The actual design, suitability, and use of this TER, for any particular building, is the responsibility of the owner or the owner's authorized agent. Therefore, the TER shall be reviewed for code compliance by the building official for acceptance.
- 9.8 The use of this TER is dependent on the manufacturer's in-plant QC, the ISO/IEC 17020 third-party quality assurance program and procedures, proper installation per the manufacturer's instructions, the building official's inspection, and any other code requirements that may apply to demonstrate and verify compliance with the applicable building code.

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<sup>9</sup> The Formosan subterranean termite (*Coptotermes formosanus*) has now become established in Florida and other southern states. At least one colony has been found in California (1995). [www.termite.com/termites/formosan-subterranean-termite.html](http://www.termite.com/termites/formosan-subterranean-termite.html)



## 10 IDENTIFICATION

- 10.1 The product(s) listed in Section 1.1 are identified by a label on the board or packaging material bearing the manufacturer's name, product name, TER number, and other information to confirm code compliance.
- 10.2 Additional technical information can be found at [www.planetsaverind.com](http://www.planetsaverind.com).

## 11 REVIEW SCHEDULE

- 11.1 This TER is subject to periodic review and revision. For the most recent version of this TER, visit [drjcertification.org](http://drjcertification.org).
- 11.2 For information on the current status of this TER, contact [DrJ Certification](#).

