BORASMART™

TECHNICAL SPECIFICATIONS SHEET

Treatment process

BORASMART™ insect- and mold-resistant-treated lumber is produced using BORALIFE's process of high-temperature dip-diffusion impregnation of a concentrated aqueous sodium borate solution, a recognized and effective wood preservative with very low toxicity.

Sodium borate naturally diffuses through wood using the water present in wood cells at various moisture contents. Our process takes full advantage of this process, minimizing the absorption of more external water that would then need to be evaporated by kiln drying the final product.

Our process uses kiln-dried and graded lumber as input.

EPD #9002-0081

Borate Retention

The treated wood meets requirements of the American Wood Protection Association (AWPA) Standard U1-24; approved for Use Categories UC1 Above ground, interior construction, dry and *UC2 Above ground, interior construction, damp.*

These Use Categories define the associated degree of bio degradation hazard and product service life expectations for specific products and exposure conditions. Provided that exposure conditions are maintained, service life expectation is not limited.

For the NLGA S-P-F species combination, Southern Yellow Pine and Pochote (Bombacopsis Quinata), borate retention exceeds 4,5 kg/m^3 (0,28 pfc) (B_2O_3), as specified by the AWPA Standard U1-24 for exposure in areas subject to Formosan subterranean termite activity.

Moisture Content

Moisture content of the final product is less than 19% (wt).

BORALIFE™

Mechanical Properties

BORASMART™ lumber is primarily composed of Balsam Fir and Eastern Spruce lumber all graded under *NLGA Standard Grade Rules for Canadian Lumber,* meeting the provisions of PS20 and/or CSA O141, commonly referred to as ALS and/or CLS lumber. Balsam fir and Eastern spruce are produced and distributed under the NLGA Spruce-Pine-Fir species combination (S-P-F).

Design values for the S-P-F species combination and appropriate grade are available for use in Canada in the current edition *CSA O86 Engineering Design in Wood.* Design values for the United States are available for use in the current edition of the *National Design Specification for Wood Construction.* Design values are available for use in the EU in the current edition of *EN 1912 Structural Timber Strength Classes- Assignment of visual grades and species.*

As required by the various design standards, BORASMART™ treated lumber was evaluated under the following normative criteria to confirm its properties.

- ASTM D5664-17 – *Standard Test Method for Evaluating the Effects of Fire-Retardant Treatments and Elevated Temperature on Strength Properties of Fire-Retardant Treated Lumber*
- ASTM D6841-16 – *Standard Practice for Calculating Design Value Treatment Adjustment Factors for Fire-Retardant-Treated Lumber*

Table 1 – BORASMART™ Design Value Adjustment Factors for temperature up to 150ºF (66ºC) Spruce-Pine-Fir

	Zone 1a	Zone 1b	Zone 2
Bending F_b	0,94	0,94	0,94
Bending MOE	0,98	0,98	0,98
Tension Parallel to grain F_t	0,78	0,89	0,98
Compression Parallel to grain $Fc_{//}$	0,78	0,89	0,98
Shear parallel to grain F_v	0,78	0,89	0,92
Compression Perpendicular to grain $Fc_{\perp}$	0,95	0,95	0,95
Fastener/Connector	0,78	0,89	0,90

Zone 1: When minimum roof live load or maximum ground snow load ≤20 psf (960 Pa).

Zone 1a: Southwest Arizona and Southeast Nevada (Area bound by Las Vegas, Yuma, Phoenix, and Tucson).

Zone 1b: All other qualifying areas.

Zone 2: Where maximum ground snow load >20 psf (960 Pa).

Hygroscopic properties

Test procedure: ASTM D3201

Hygroscopic properties meet AWPA U1-24 criteria
(Interior Type A High-Temperature (HT) products).
Moisture Content equilibrium ≤ 28%

Corrosivity

Non-corrosive. Can be assembled with standard hardware.

Packaging

Bundles wrapped in waterproof canvas.

Conditions of use

1. All strength and stiffness calculations must be subject to the treatment design value adjustment factors shown in Table 1 of this technical specifications sheet.
2. The treatment design value adjustment factors of Table 1 are to be applied cumulatively with all other applicable adjustment factors from the NDS, including the NDS temperature factor.
3. The design value adjustment factors in this specifications sheet must only be used for unincised dimensional lumber of the species SPF.
4. BORASMART™ insect- and mold-resistant treated lumber must not be installed in an environment where it will be permanently exposed to precipitation, direct wetting, or regular condensation.
5. BORASMART™ insect- and mold-resistant treated lumber must not be used in contact with the ground.
6. BORASMART™ insect- and mold-resistant treated lumber must not be ripped or milled as this would alter the wood's protective characteristics. Framing end cuts, holes, joints such as tongue and groove, bevel scarf and lap may be used.
7. BORASMART™ insect- and mold-resistant treated lumber must only be used in areas (including attics) where the wood is exposed to temperatures of 150°F (66°C) or less.
8. The treatment design value adjustment factors in Table 1 are applicable under elevated temperatures resulting from cyclic weather conditions and are not applicable for continuous elevated temperatures resulting from manufacturing or other processes. Such conditions are outside the scope of this specifications sheet.
9. BORASMART™ insect- and mold-resistant treated lumber must be kept dry during storage. Exposure to precipitation must be avoided. Bundles must remain covered, and the material must be elevated to prevent ground contact.
10. Exposure to precipitation during installation must be avoided as much as practically possible. BORASMART™ insect- and mold-resistant treated lumber must be covered and protected from precipitation as soon as possible. Limited exposure while unprotected during construction may be tolerated, but if the material becomes wet, it must be replaced or allowed to dry to a 19 % moisture content or less, prior to being covered or enclosed by wallboard or other construction materials. The treatment is permanent for the life of the structure, provided the wood is used in dry conditions.

Technologies Boralife Inc.

boralife.ca info@boralife.ca

Wood Treatment Facility:

600, rue Cormier
Sorel-Tracy (Québec)
J3R 5S2 Canada

Canadian Patent: CA 2 948 194
U.S. Patent: 10,933,555

BORALIFE™