

SECTION 060573 - NON-TOXIC BARRIER PROTECTED, GLASS-WOOD FUSION LUMBER



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This Section defines TimberSIL® barrier protection process to supplement standard carpentry sections by cross-reference in lieu of conventional lumber treatment references.

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following¹:
 - 1. Insoluble Barrier Protected, Glass–Wood Fusion Lumber Product
- B. Related Sections include the following:
 - 1. Division 06 Section "[Miscellaneous] Rough Carpentry" for [structural] wood members and carpentry [concealed from view].
 - 2. Division 06 Section "Exterior Finish Carpentry" for non-structural exterior wood members exposed to view and not specified in another Section.
 - 3. Division 06 Section "Exterior Architectural Woodwork" for [shop-fabricated exterior woodwork].

1.3 LEED REQUIREMENTS²

- A. Credit 5.1 [and 5.2] Local/Regional Materials: Provide wood products and protection process that are harvested/extracted, processed, and manufactured within 500 miles of the Project Site.
- B. Multiple additional LEED Credits are possible, see attached sheet.

¹ In related Sections that require TimberSIL® wood, remove references to conventional wood treatments unless they are also required, and replace with cross reference to this Section, such as: Provide barrier-protected, glass-wood fusion product as indicated in Division 06 Section "Non-Toxic Barrier Protected, Glass –Wood Fusion Lumber Product".

² Delete this Article if project is not seeking LEED certification. Select items below according to credits sought for project, and coordinate with submittals and quality assurance Articles. Check with manufacturer for future product developments that may become available that will contribute toward LEED credits, such as Credit MR 7 Certified Wood. For more information on LEED rating system, see www.usgbc.org/LEED

Determine availability of the following credit based on distance from project site to documented material harvesting and production locations.

1.4 PERFORMANCE REQUIREMENTS³

- A. General: Provide barrier-protected, glass-wood fusion lumber products that comply with performance requirements specified as determined by testing manufacturer's standard assemblies similar to those indicated for this Project, by a qualified testing and inspecting agency.
- B. EPA Exempt, Non-toxic Barrier Product: determined by EPA under 40 CFR Part 152.10. Only such determination achieved in EPA history.
- C. Ignition Resistant Material, Class A Fire Retardant: Class A rating when tested with accelerated, weathered samples according to ASTM 4898, in accordance with 30 minute extended ASTM E 84 method. Criteria: a listed flame spread index of 25 or less and show no evidence of significant progressive combustion.
 - 1. TimberSIL® Flame-Spread Index: Test result 8.6 (Class A rating is 25 or less).
 - 2. TimberSIL® Smoke-Developed Index: Test result 119 (Class A rating is 450 or less).
- D. Corrosion of Fasteners, per AWPA E12-94: Below allowable loss level of 25 mils/year.
- E. Superior Strength:
 - 1. Modulus of Rupture, per ASTM D4761, ASTM D143: 9,283 psi.
 - 2. Modulus of Elasticity at L/360, per ASTM D4761, ASTM D143: 1,920,700 psi.
- F. Fungus Resistance (White & Brown Rot), per ASTM D1413: No decay.
- G. Termite Resistance, per AWPA E1-72: 10 (Sound, no decay).
- H. Insolubility of glass in situ, per molybdate assay: insoluble.
- I. Microscopic Evaluation: With polarized lenses, barrier-protected whole wood versus unprotected control by independent testing laboratory; Cellular structures undamaged.
- J. Toxic Chemical Content and Known Carcinogens: None. Per X-ray diffraction, glass portion is non-toxic amorphous glass.
- K. Accelerated weathering of TimberSIL® wood without coatings, per ASTM G151: meets or exceeds standards.
- L. Accelerated weathering of 5 wood stains on TimberSIL® wood, per ASTM G151: meets or exceeds standards.

1.5 SUBMITTALS⁴

- A. Product Data: Include manufacturer's printed data indicating the usage of barrier-protected, glass-wood fusion products, environmentally safe preservatives, and instructions for installation and finishing.
- B. Shop Drawings: Indicate materials and details of construction, methods of fastening, erection, and installation.
- C. Samples⁵: For each type of field finishing indicated, provide samples not less than 12 inches long, showing the typical range in color and texture.

³ Retain this Article if performance specification method is required by authorities, or to restrict substitutions.

⁴ Coordinate Submittal items below with carpentry Sections that cross-reference this Section. Duplicated requirements should be deleted.

⁵ Typically delete samples requirement if not field painting, staining, or clear finishing the wood.

- D. Material Certificates: For barrier-protected, glass-wood fusion products, signed by manufacturer of barrier-protecting process.
- E. [LEED Submittals:
 - 1. Credit MR 5.1 [and 5.2]: Manufacturer's certification of the geographical location of the harvesting, processing, and manufacturing for barrier-protected, glass-wood products.
- F. Research/Evaluation Reports: For barrier-protected, glass-wood fusion products.
- G. Maintenance Data: For barrier-protected, glass-wood fusion products, to include in maintenance manuals.
- H. Warranties: Special warranties specified in this Section.

1.6 QUALITY ASSURANCE

- A. Source Limitations: Obtain materials through authorized distributor from manufacturer.
- B. Identify each piece or each bundle of barrier-protected, glass-wood fusion product, by the grade mark and manufacturer's certification tag of barrier-protecting process.
- C. Mockups⁶: Build mockups to verify selections made under sample Submittals and to demonstrate aesthetic effects and qualities of materials and execution.
 - 1. Build mockup of indicated barrier-protected, glass-wood fusion product assemblies [in location as indicated on Drawings] approximately [48 inches square] by full thickness, including supports and fasteners.
 - 2. Approval of mockups is for material and construction qualities specifically approved by Architect in writing.
 - 3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless such deviations are specifically approved by Architect in writing.
 - 4. [Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.]

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Protect against dampness from weather or adjacent surfaces, before, during, and after delivery, and comply with manufacturer's delivery storage and handling instructions. Deliver materials to job site in an undamaged condition. Stack materials flat to avoid twisting or warping, and using spacers to ensure ventilation and drainage. Store materials under cover or in a well-ventilated enclosure, with adequate ventilation around each stack or covering, and protect against extreme changes in temperature and humidity.

1.8 WARRANTY

- A. Special Warranty: Manufacturer's standard transferable warranty form in which manufacturer agrees to repair or replace quantity of TimberSIL® barrier-protected, glass-wood fusion products proven to fail to meet the accepted standards of wood resistant to termites, rot and decay within specified warranty period, not including incorrect installation, cracking, or splitting.
 - 1. Failures include the following:
 - a. Biological degradation, including termite damage, damage in exposed environments and damage from common wood protection problems
 - b. Decay or termite damage as would make TimberSIL® barrier-protected, glass-wood fusion product structurally unfit for the purpose for which it was used.
 - 2. Warranty Period: Forty years from date of purchase.

⁶ Delete below if not required for project.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. TimberSIL® Products; 7481 Huntsman Blvd, Suite 520, Springfield, VA 22153; (703) 644-0991; www.timbersilwood.com; info@timbersilwood.com.

2.2 BARRIER PROTECTED, GLASS-WOOD FUSION LUMBER⁷

- A. Provide glass-wood fusion products barrier-protected with GreenSpec approved TimberSIL® insoluble wood protective barrier, a non-toxic, non-carcinogenic, non-corrosive, non-leaching, stainable, paintable, fire-retardant, redried, fusion of whole wood and aqueous glass solution that retains a natural wood appearance, while improving strength and insulation properties. Products contain no arsenic, chromium, or copper. Microscopic particles of aqueous glass solution combined with an energy source are thoroughly fused with wood forming a protective barrier, making the material unavailable as a food source to insects and decay. TimberSIL® is manufactured using kiln-dried Southern Yellow Pine, inspected by SPIB or TPI.

1. Provide TimberSIL® products⁸ where [barrier-protected or treated wood is indicated] [wood patio decking and related structural elements are indicated] unless noted otherwise.

2.3 HARDWARE

- A. Provide sizes, types, and spacing of materials recommended by manufacturers, except where otherwise indicated.

2.4 FINISHES, GENERAL

- A. Appearance of Finished Work⁹: Variations in appearance of materials are acceptable if they are within the range of [approved samples] [overall color comparable to those found in natural wood].
- B. Field Finishing: [Painted finish as indicated in Division 09 Section "Exterior Painting"] [Transparent finish as indicated in Division 09 Section "Wood Staining and Transparent Finishing"] [or insert finishing product or system].

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, supports, and other conditions affecting performance of work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

⁷ Indicate lumber sizes on drawings. Verify availability of sizes with local TimberSIL® authorized distributor. Indicate locations of barrier-protected versus un-protected products (if any) in carpentry specifications or on drawings.

⁸ Choose first option if using TimberSIL® for most or all applications, or second option if only for wood decking. (Verify terminology with wood decking specification to distinguish from wood roof decking or wood floor decking used in primary structures).

⁹ Select Option A only if painting, staining, or clear-finishing the wood, otherwise select second option, and delete field finishing paragraph below. Delete this Finishes Article entirely if specified in carpentry sections.

3.2 PREPARATION

- A. Prepare substrates to be clean and dry, and free of projections and detrimental substances.

3.3 INSTALLATION, GENERAL

- A. General: Install barrier-protected wood to comply with manufacturer's written instructions and as indicated in Division 06 Section[s] "<insert related carpentry Section titles.>"
- B. Install barrier-protected wood of sizes, types, and configurations indicated. Place members to keep warranty end tags in inconspicuous locations. Where both ends are exposed, relocate end tags to underside of other unexposed surface. [Apply primer to finish work before installing.] [Shop-assemble and finish items where practical.]
- C. Install items in maximum lengths practical. Construct tight joints, except where spacing between members is indicated. Construct in a manner to conceal shrinkage. [Seal joints to shed water.]

3.4 FINISH WORK¹⁰

- A. [Machine sand] [Sand] exposed flat members and square edges until surfaces are smooth and even in appearance.
- B. Wire brush or sand to remove occasional chalky deposits. Machine-finish semi-exposed surfaces.
- C. [Apply finishes indicated.]

3.5 CLEANING AND PROTECTION

- A. Protect finished work from other trades.
- B. Remove and replace products that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 060573

¹⁰ Choose sanding (Option A) or wire-brushing (Option B). Sanding will provide maximum quality of finished work. Pre-sanded products may become available; inquire with manufacturer if interested. Delete Finish Work Article if specified in carpentry sections.