HOOVER TREATED WOOD PRODUCTS, INC.

TECHNICAL NOTE

FOR ADDITIONAL INFORMATION: **www.frtw.com or 1-800-TEC-WOOD (832-9663)**

CERTIFICATION for PYRO-GUARD®

Interior Fire Retardant Treated Wood

PART 1 – GENERAL

1.01 PRODUCT INDENTIFICATION

A. Lumber and plywood bearing the ***PYRO-GUARD®*** mark has a flame spread rating of 25 or less (Class A) when tested in accordance with ASTM E 84, "Standard Test Method for Surface Burning Characteristics of Building Materials". ***PYRO-GUARD®*** fire retardant treated wood shows no evidence of significant progressive combustion when the test is extended for an additional 20 minute period. In addition, the flame front shall not progress more than 10½ feet beyond the centerline of the burners at any time during the test. The flamespread and smoke developed index for each species and product are classified by Underwriters Laboratories Inc. (UL).

B. ***PYRO-GUARD®*** Fire retardant treated wood is manufactured under the independent third party inspection of Underwriters Laboratories Inc. (UL) Follow-Up Service and each piece shall bear the UL classified mark indicating the extended 30 minute ASTM E 84 test.

C. ***PYRO-GUARD®*** shall be labeled kiln dried after treatment (KDAT). Timber Products Inspection, Inc. (TP) shall monitor the process and the TP mark shall appear on the label.

D. ***PYRO-GUARD®*** shall be produced in accordance with ICC Evaluation Service Report 1791 (ESR-1791) latest version.

E. ***PYRO-GUARD®*** meets the performance requirements of AWPA U1, Commodity Specification H for Use Category UCFA and AWPA C20/C27 (Type A, HT).

F. ***PYRO-GUARD®*** is listed on the Department of Defense (DoD) Qualified Products List (QPL) and meets the requirements of MIL-L-19140-E as a Type 1 fire retardant treatment for lumber and plywood.

PART 2 – PRODUCTS

2.01 FIRE RETARDANT TREATMENT

A. Treatment shall be ***PYRO-GUARD®*** manufactured by Hoover Treated Wood Products, Inc.

B. Structural performance of ***PYRO-GUARD®*** fire retardant treated wood has been evaluated in accordance with ASTM D 5664 for lumber and ASTM D 5516 for plywood. Evaluation of plywood data is in accordance with ASTM D 6305. Evaluation of lumber data is in accordance with ASTM D 6841. The resulting design value and span rating adjustments are published in ICC Evaluation Report ESR-1791, which includes evaluation of high temperature (**HT**) strength testing for roof applications.

C. ***PYRO-GUARD®*** is an Interior "Type A" fire retardant with individual surface burning characteristics for the species and products listed under UL Certifications.

D. ***PYRO-GUARD®*** Interior fire retardant treated wood is kiln dried after treatment (KDAT) to maximum moisture content of 19% for lumber and 15% for plywood.

E. ***PYRO-GUARD®*** does not contain VOC's, urea-formaldehyde, or formaldehyde, halogens, sulfates, chlorides, or ammonium phosphate.

F. Plywood treated with ***PYRO-GUARD®*** shall be manufactured under US Product Standard PS 1or PS 2. Panels shall have a minimum bond durability of Exposure 1.

G. Grade marked lumber treated with ***PYRO-GUARD®*** shall be in accordance with PS 20.

PART 3-EXECUTION

3.01 INSTALLATION

A. ***PYRO-GUARD®*** fire retardant treated wood used in structural applications shall be installed in accordance with the conditions and limitations listed in ESR-1791 as issued by the ICC Evaluation Service, Inc.

B. ***PYRO-GUARD®*** fire retardant treated wood shall be installed in compliance with the requirements of the applicable building codes and product recommendations.

C. ***PYRO-GUARD®*** shall not be installed in areas where in service it is exposed to precipitation, direct wetting, or condensation.

D. As with untreated wood, avoid exposure to precipitation during shipping, storage or installation. Apply a water resistive barrier or underlayment over dry sheathing as soon as practical to avoid any precipitation on the panel. Panels that get wet should be allowed to dry before covering or be replaced.

HOOVER TREATED WOOD PRODUCTS, INC.

TECHNICAL NOTE

FOR ADDITIONAL INFORMATION: **www.frtw.com or 1-800-TEC-WOOD (832-9663)**

SPECIFICATION for PYRO-GUARD®

Interior Fire Retardant Treated Wood

PART 1 – GENERAL

1.01 PRODUCT INDENTIFICATION

A. Lumber and plywood bearing the ***PYRO-GUARD®*** mark has a flame spread rating of 25 or less (Class A) when tested in accordance with ASTM E 84, "Standard Test Method for Surface Burning Characteristics of Building Materials". ***PYRO-GUARD®*** fire retardant treated wood shows no evidence of significant progressive combustion when the test is extended for an additional 20 minute period. In addition, the flame front shall not progress more than 10½ feet beyond the centerline of the burners at any time during the test. The flamespread and smoke developed index for each species and product are classified by Underwriters Laboratories Inc. (UL).

B. ***PYRO-GUARD®*** Fire retardant treated wood is manufactured under the independent third party inspection of Underwriters Laboratories Inc. (UL) Follow-Up Service and each piece shall bear the UL classified mark indicating the extended 30 minute ASTM E 84 test.

C. ***PYRO-GUARD®*** shall be labeled kiln dried after treatment (KDAT). Timber Products Inspection, Inc. (TP) shall monitor the process and the TP mark shall appear on the label.

D. ***PYRO-GUARD®*** shall be produced in accordance with ICC Evaluation Service Report 1791 (ESR-1791) latest version.

E. ***PYRO-GUARD®*** meets the performance requirements of AWPA U1, Commodity Specification H for Use Category UCFA and AWPA C20/C27 (Type A, HT).

F. ***PYRO-GUARD®*** is listed on the Department of Defense (DoD) Qualified Products List (QPL) and meets the requirements of MIL-L-19140-E as a Type 1 fire retardant treatment for lumber and plywood.

PART 2 – PRODUCTS

2.01 FIRE RETARDANT TREATMENT

A. Treatment shall be ***PYRO-GUARD®*** manufactured by Hoover Treated Wood Products, Inc.

B. ***PYRO-GUARD®*** is an Interior "Type A" fire retardant with individual surface burning characteristics for the species and products listed under UL Certifications.

C. Structural performance of ***PYRO-GUARD®*** fire retardant treated wood has been evaluated in accordance with ASTM D 5664 for lumber and ASTM D 5516 for plywood. Evaluation of plywood data is in accordance with ASTM D 6305. Evaluation of lumber data is in accordance with ASTM D 6841. The resulting design value and span rating adjustments are published in ICC Evaluation Report ESR-1791, which includes evaluation of high temperature (**HT**) strength testing for roof applications.

D. ***PYRO-GUARD®*** Interior fire retardant treated wood is kiln dried after treatment (KDAT) to maximum moisture content of 19% for lumber and 15% for plywood.

E. ***PYRO-GUARD®*** does not contain VOC's, urea formaldehyde or formaldehyde, halogens, sulfates, chlorides, or ammonium phosphate.

F. Plywood treated with ***PYRO-GUARD®*** shall be manufactured under US Product Standard PS 1or PS 2. Panels shall have a minimum bond durability of Exposure 1.

G. Grade marked lumber treated with ***PYRO-GUARD®*** shall be in accordance with PS 20.

PART 3-EXECUTION

3.01 INSTALLATION

A. ***PYRO-GUARD®*** fire retardant treated wood used in structural applications shall be installed in accordance with the conditions and limitations listed in ESR-1791 as issued by the ICC Evaluation Service, Inc.

B. ***PYRO-GUARD®*** fire retardant treated wood shall be installed in compliance with the requirements of the applicable building codes and product recommendations.

C. ***PYRO-GUARD®*** shall not be installed in areas where in service it is exposed to precipitation, direct wetting, or condensation.

D. As with untreated wood, avoid exposure to precipitation during shipping, storage or installation. Apply a water resistive barrier or underlayment over dry sheathing as soon as practical to avoid precipitation on the panel. Panels that get wet should be allowed to dry before covering, or be replaced.

ICC EVALUATION SERVICE

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ICC-ES Evaluation Report

ESR-1791

Reissued December 1, 2013

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DIVISION: 06 00 00—WOOD, PLASTICS, AND COMPOSITES
Section: 06 05 73.33—Fire-Retardant Wood Treatment

REPORT HOLDER:

HOOVER TREATED WOOD PRODUCTS, INC.
154 WIRE ROAD
THOMSON, GEORGIA 30824
(706) 595-7355
www.frtw.com

EVALUATION SUBJECT:

PYRO-GUARD® FIRE-RETARDANT-TREATED WOOD

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2012, 2009 and 2006 *International Building Code®* (IBC)
- 2012, 2009 and 2006 *International Residential Code®* (IRC)

Properties evaluated:

- Surface-burning characteristics: flame spread, smoke developed index, significant progressive combustion
- Structural
- Corrosion
- Hygroscopicity
- Thermal barrier (roof and floor applications)
- Component of fire-resistance-rated assemblies

2.0 USES

PYRO-GUARD® fire-retardant-treated wood is used in areas not exposed to the weather or wetting where the code permits the use of wood or fire-retardant-treated wood.

3.0 DESCRIPTION

3.1 General:

PYRO-GUARD® fire-retardant-treated wood is lumber and plywood that is pressure impregnated with the fire retardant chemical PYRO-GUARD®. PYRO-GUARD® fire-retardant-treated wood is dried after treatment to 19 percent moisture content (MC) for lumber and 15 percent moisture content (MC) for plywood. PYRO-GUARD® fire-retardant chemical and fire-retardant-treated lumber and plywood are produced in accordance with an approved quality control procedure.

PYRO-GUARD® treated lumber of the following species is recognized as being fire-retardant-treated wood:

Southern pine	Douglas fir
Hem-fir	Spruce-pine-fir (SPF)
Western hemlock	Red spruce
Lodgepole pine	White spruce
Ponderosa pine	Jack pine
Alpine fir	Black spruce
Balsam fir	Engelmann spruce
White fir	

PYRO-GUARD® treated plywood fabricated with face and back veneers of the following species is recognized as being fire-retardant-treated wood:

Southern pine	Douglas fir
Lauan	

3.2 Surface Burning Characteristics:

PYRO-GUARD® fire-retardant-treated wood has a flame-spread index of 25 or less and a smoke-developed index of 450 or less when tested in accordance with ASTM E84 or UL 723, and shows no evidence of significant progressive combustion when the test is continued for an additional 20-minute period. Additionally, the flame front does not progress more than $10^1/_2$ feet (3200 mm) beyond the centerline of the burners at any time during the test. Refer to Section 2303.2 of the IBC and Section R802.1.3 of the IRC.

3.3 Structural Strength:

The effects of the PYRO-GUARD® chemical treatment on the strength of the treated lumber and plywood must be accounted for in the design of the wood members and their connections. Load duration factors greater than 1.6 are not permitted.

The structural performance of PYRO-GUARD® fire-retardant-treated wood has been evaluated using ASTM D5516 for plywood and ASTM D5664 for lumber. Maximum loads and spans for plywood have been developed following ASTM Practice D6305. Design value adjustments for lumber have been developed following ASTM Practice D6841.

3.3.1 Lumber:

The base design values for untreated lumber found in the American Wood Council's National Design Specification (NDS) Supplement: Design Values for Wood Construction,

must be modified by the factors in Table 2 for the applicable species, use and property.

Southern pine and Douglas fir have been evaluated for use in roof framing and must be subjected to the adjustments indicated in Table 2 for roof framing.

Other softwood species noted in Section 3.1 must be subjected to the design adjustments indicated in Table 2 for service temperatures up to 100°F (38°C).

3.3.2 Plywood: Southern Pine and Douglas fir plywood have been evaluated for use as roof sheathing to temperatures of 170ºF (77° C) in accordance with ASTM D5516 and ASTM D6305.

Table 1 provides maximum loads and spans which modify the untreated panel spans for roof applications by thickness and construction. The adjusted loads are applicable to the species noted in Section 3.1 of this report.

3.4 Corrosion:

The corrosion rate of aluminum, carbon steel, galvanized steel, copper or red brass in contact with wood is not increased by PYRO-GUARD® fire-retardant treatment when the product is used as recommended by the manufacturer.

3.5 Hygroscopicity:

The moisture content of PYRO-GUARD® fire-retardant-treated lumber and plywood is less than 28 percent when evaluated in accordance with ASTM D3201 at 92 percent relative humidity (Section 2303.2.7 of the 2012 and 2009 IBC, Section 2303.2.4 of the 2006 IBC, Section R802.1.3.7 of the 2012 and 2009 IRC, Section R802.1.3.4 of the 2006 IRC). PYRO-GUARD® wood is suitable for use in interior conditions where sustained relative humidity is 92 percent or less and condensation does not occur.

4.0 DESIGN AND INSTALLATION

4.1 General:

Structural systems that include PYRO-GUARD® fire-retardant-treated lumber or plywood must be designed and installed in accordance with the applicable code using the appropriate lumber design value adjustment factors and plywood spans from Tables 1 and 2 of this report. The use of non-vented roof systems with PYRO-GUARD® fire-retardant-treated lumber and plywood is not permitted.

The design value adjustment factors and plywood spans in Tables 1 and 2 of this report are applicable under elevated temperatures resulting from cyclic climatic conditions in the continental United States. They are not applicable under continuous elevated temperatures resulting from manufacturing or other processes which must require special consideration in design. Such conditions are outside the scope of this report.

All of the wood species listed in Section 3.1 of this report have been evaluated for structural performance for interior applications where the service temperature does not exceed 100°F (38°C). Southern pine and Douglas fir lumber have been evaluated for structural performance for roof framing applications [150° F (66°C)] as indicated in Table 2 of this report. Southern pine and Douglas fir plywood have been evaluated for roof structural performance for roof sheathing application [170º F (77°C) maximum temperatures] and are permitted for structural applications limited to the spans and loads indicated in Table 1 of this report.

The treated wood should not be exposed to precipitation during storage or installation. If the material does become wet, it must be replaced or permitted to dry (maximum 19 percent moisture content for lumber and 15 percent moisture content for plywood) prior to covering or enclosure by wallboard or other construction materials (except for protection during construction).

4.2 Thermal Barrier:

4.2.1 Roof applications: PYRO-GUARD® plywood, when used to separate foam plastic insulation from the interior of a building, must be a minimum of $^{15}/_{32}$ thickness category (refer to Table 1) and be installed in accordance with Section 2603.4.1.5 of the 2012, 2009 and 2006 IBC, Section R316.5.2 of the 2012 and 2009 IRC, and Section R314.5.2 of the 2006 IRC, as applicable.

4.2.2 Floor Applications: PYRO-GUARD® plywood, when used to separate foam plastic insulation from the interior of a building, must be a minimum of $^{1}/_{2}$ thickness category (refer to Table 1) and be installed in accordance with Section 2603.4.1.14 of the 2012 IBC.

4.3 Use as a Component of Fire-resistance-rated Wall Assemblies:

4.3.1 Two-hour Exterior Wall Assembly: In Type III, Type IV and Type V construction, the exterior wall assemblies must be constructed of PYRO-GUARD® treated wood studs and plywood. The design values for the studs must be adjusted in accordance with Table 2 for service temperatures to 100ºF (38ºC). The allowable spans for the plywood sheathing must be in accordance with the spans given in Table 1 for Pyro-Guard Wall/Subfloor.

When the fire-resistance rating is required from only the interior side, the wall must be constructed in accordance with Figure 3.

4.3.2 One-hour Exterior Wall Assembly: In Type III, Type IV and Type V construction, the exterior wall assemblies must be constructed of PYRO-GUARD® treated wood studs and plywood. The design values for the studs must be adjusted in accordance with Table 2 for service temperatures to 100ºF (38ºC). The allowable spans for the plywood sheathing must be in accordance with the spans given in Table 1 for Pyro-Guard Wall/Subfloor.

When the fire-resistance rating is required from the exterior side and the interior side, the wall must be constructed in accordance with Figure 4.

When the fire-resistance rating is required only from the interior side, the wall must be constructed in accordance with Figure 5.

4.4 Fasteners:

Fasteners used in PYRO-GUARD® fire-retardant-treated wood must be in accordance with 2012, 2009 and 2006 IBC Section 2304.9.5, 2012 and 2009 IRC Section R317.3 and 2006 IRC Section R319.3, or must be of other corrosion-resistant materials that are manufactured from materials listed in Section 3.4 of this report.

When PYRO-GUARD® fire-retardant- treated wood products are used and installed in code- compliant interior enclosed dry applications not exposed to dampness or wetting, uncoated carbon steel fasteners are permitted.

Design adjustment factors and minimum size for fasteners are indicated in Table 1 and Table 2 of this report.

4.5 Plywood Diaphragms and Shear Walls:

Wood-frame Diaphragms must be constructed in accordance with Section 2306.2 of the IBC.

Wood-frame shear walls must be constructed in accordance with Section 2306.3 of the IBC.

When PYRO-GUARD® treated plywood is used, the plywood thickness is increased by $^1/_8$ inch (3.2 mm) for the tabulated allowable shear values contained in Section 4.2 or 4.3 of AFPA SDPWS or as shown in the tables referenced in Sections 2306.2 and 2306.3 of the IBC.

5.0 CONDITIONS OF USE

The PYRO-GUARD® fire-retardant-treated wood described in this report complies with, or is a suitable alternative to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 Strength calculations must be subject to the design value adjustment factors and span ratings shown in Tables 1 and 2 of this report.

5.2 The design value adjustment factors and span ratings given in this report must only be used for unincised dimensional lumber and plywood of the species noted in this report.

5.3 PYRO-GUARD® treated wood must not be used in contact with the ground where it will be exposed to precipitation, direct wetting or regular condensation, or in an unvented roof (unvented attic assemblies and unvented enclosed rafter assemblies).

5.4 PYRO-GUARD® treated plywood may be cut or ripped in any direction

5.5 PYRO-GUARD® treated lumber must not be ripped or milled**:** End cuts, holes, and joints (such as tongue and groove), bevel, scarf and lap may be used.

5.6 Treatment is at the facilities of Hoover Treated Wood Products, Inc., in Thomson, Georgia; Pine Bluff, Arkansas; Milford, Virginia; Detroit, Michigan; and Winston, Oregon; under a quality control program with inspections by Timber Products Inspection Inc. (AA-696) and UL LLC (AA-668).

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Fire-retardant-treated Wood (AC66), dated June 2012.

7.0 IDENTIFICATION

Lumber and plywood treated with PYRO-GUARD® fire-retardant chemicals must be identified by the structural grade mark of an approved agency. In addition, all treated lumber and plywood must be stamped with the name of the inspection agencies [UL LLC. (AA-668) and Timber Products Inspection Inc. (AA-696)]; the Hoover Treated Wood Products, Inc., or listee, name and treatment location; labeling information in accordance with Section 2303.2.4 of the 2012 and 2009 IBC and Section 2303.2.1 of the 2006 IBC, Section R802.1.3.4 of the 2012 and 2009 IRC and Section R802.1.3.1 of the 2006 IRC; and the evaluation report number (ESR-1791).

TABLE 1—MAXIMUM LOADS AND SPANS FOR PYRO-GUARD® TREATED PLYWOOD APPLICABLE AT SERVICE TEMPEATURES UP TO 170° F (77° C)

PLYWOOD PERFORMANCE CATEGORY	UNTREATED ROOF/SUBFLOOR SPAN RATING	PYRO-GUARD® ROOF SHEATHING MAXIMUM. LIVE LOAD (psf)				PYRO-GUARD® WALL/SUBFLOOR
		Span (inches)	Climate Zone			Span (inches)
			1A	1B	2	
$^{15}/_{32}$, $^{1}/_{2}$	32/16	24	19	30	43	16
$^{19}/_{32}$, $^{5}/_{8}$	40/20	24 32	42 20	64 32	87 45	20 20
$^{23}/_{32}$, $^{3}/_{4}$	48/24	32 48	34 10	51 18	71 27	24 24
$^{7}/_{8}$	—	48	12	20	30	—
$1^{1}/_{8}$	—	48	21	33	47	48

For **SI:** 1 inch = 25.4 mm, 1 psf = 48 N/m^2 (Pa).

1. All loads are based on two-span condition with panels 24 inches wide or wider, strength axis perpendicular to supports.
2. Fastener size and spacing must be as required in the applicable building code for untreated plywood of the same thickness; except that roof sheathing must be fastened with (1) minimum 8d common or 8d deformed shank nails spaced a maximum 6 inches o.c. at edges and a maximum of 12 inches o.c. at intermediate supports for panels on 24- and 32-inch spans and spaced a maximum of 6 inches o.c. on all supports for panels on a 48-inch span, or (2) other fasteners with comparable withdrawal and lateral load capacities at the same maximum spacings. The use of staples to attach roof sheathing to framing is not permitted. For $1^{1}/_{8}$- performance category roof sheathing panels, minimum 10d common or deformed shank nails must be used.
3. Roof spans and loads apply to roof systems having the minimum ventilation areas required by the applicable building code. Fifty percent of required vent area must be located on upper portion of sloped roofs to provide natural air flow.
4. For low-sloped or flat roofs with membrane or built-up roofing having a perm rating less than 0.2, use rigid insulation having a minimum *R* value of 4.0 between sheathing and roofing, or use next thicker panel than tabulated for the span and load (e.g., $^{19}/_{32}$ for 24 inches, $^{23}/_{32}$ for 32 inches); and use a continuous ceiling air barrier and vapor retarder with a perm rating less than 0.2 on the bottom of the roof framing above the ceiling finish.
5. For unblocked roof diaphragms, panel edge clips are required for roof sheathing: one midway between supports for 24-inch and 32-inch spans, two at $^{1}/_{3}$ points between supports for 48-inch span. Clips must be specifically manufactured for the plywood thickness used.
6. Tabulated loads for Zone 1A are based on a duration of load adjustment for 7-day (construction) loads of 1.25. Tabulated loads for Zone 1B and Zone 2 are based on a duration of load adjustment for snow of 1.15. All values within the table are based on a dead load (DL) of 8 psf. If the DL is less than or greater than 8 psf, the tabulated live load may be increased or decreased by the difference. Applicable material weights, psf: asphalt shingles - 2.0, $^{1}/_{2}$- performance category plywood - 1.5, $^{5}/_{8}$- performance category plywood - 1.8, $^{3}/_{4}$- performance category plywood - 2.2.
7. Climate Zone definition:
   1 - Minimum design roof live load or maximum ground snow load up to 20 psf:
      A - Southwest Arizona, Southeast Nevada (area bounded by Las Vegas-Yuma-Phoenix-Tucson)
      B - All other qualifying areas of the continental United States
   2 - Minimum ground snow load over 20 psf
8. PYRO-GUARD® treated plywood must not be used as roof sheathing if a radiant shield is used beneath the roof sheathing.
9. The $^{19}/_{32}$- and $^{5}/_{8}$- performance category are limited to performance rated 4-ply or 5-ply. $^{23}/_{32}$- and $^{3}/_{4}$- performance category are limited to performance rated 5-ply or 7-ply.
10. Subfloor applications are limited to 100 psf maximum live load, except $1^{1}/_{8}$- performance category on 48-inch span limited to 65 psf total load.
11. Deflection of roof sheathing at tabulated maximum live load is less than $^{1}/_{240}$ of the span, and under maximum live load plus dead load is less than $^{1}/_{180}$ of the span.
12. Staples used to attach asphalt shingles must be minimum $^{15}/_{16}$-inch crown and minimum 1-inch leg, or otherwise comply with the applicable code, with the quantity of fasteners adjusted in accordance with Table 2 of this report.
13. The use of PYRO-GUARD® on exterior walls requires a water-resistive barrier on the outside of the wall and installation of the barrier to provide protection during construction.
14. For diaphragm and shear wall design increase the minimum nominal panel thickness required for untreated plywood by a minimum of $^{1}/_{8}$ inch when PYRO-GUARD® treated plywood is used.

TABLE 2—DESIGN VALUE ADJUSTMENT FACTORS FOR PYRO-GUARD® TREATED LUMBER

PROPERTY	PYRO-GUARD® WALL/FLOOR SERVICE TEMPERATURE TO 100°F/38°C			PYRO-GUARD® ROOF FRAMING, SERVICE TEMERATURE TO 150° F/66° C,					
	Douglas fir	Southern pine	Other species	Douglas fir			Southern pine		
				Climate Zone			Climate Zone		
				1A	1B	2	1A	1B	2
Extreme fiber stress in bending, F_b	0.97	0.91	0.88	0.90	0.93	0.96	0.80	0.85	0.89
Tension parallel to grain F_t	0.95	0.88	0.83	0.80	0.87	0.93	0.80	0.84	0.88
Compression parallel to grain, F_c	1.00	0.94	0.94	0.94	0.98	1.00	0.94	0.94	0.94
Horizontal shear F_v	0.96	0.95	0.93	0.95	0.95	0.96	0.92	0.93	0.94
Modulus of elasticity, E	0.96	0.95	0.94	0.96	0.96	0.96	0.95	0.95	0.95
Compression perp. to grain F_{cz}	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Fasteners/connectors	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90

1. Climate Zone definition:
   1 - Minimum design roof live load or maximum ground snow load up to 20 psf:
      A - Southwest Arizona, Southeast Nevada (area bounded by Las Vegas-Yuma-Phoenix-Tucson)
      B - All other qualifying areas of the Continental United States
   2 - Minimum ground snow load over 20 psf
2. Duration of load adjustments for snow loads, 7-day (construction) loads, and wind loads given in the National Design Specifications for Wood Construction apply.
3. Where lumber decking serves as both exposed ceiling and roof sheathing, extreme fiber in bending adjustments of 0.84, 0.83, and 0.89 must be used for southern pine in zones 1A, 1B, and 2, respectively; 0.92, 0.92, and 0.96 must be used for Douglas fir in zones 1A, 1B, and 2, respectively; except that where insulation having a minimum *R* value of 4.0 is installed above the decking, extreme fiber in bending adjustments of 0.91 for southern pine and 0.97 for Douglas fir are permitted in all zones.
4. Modulus of elasticity values apply to all treated lumber decking.
5. Roof framing adjustment factors apply to roof systems with minimum ventilation areas per applicable code. Locate 50 percent of required vent area on upper portion of sloped roofs to provide natural air flow.
6. Other species - species other than southern pine and Douglas fir listed in Section 3.1 of this report.

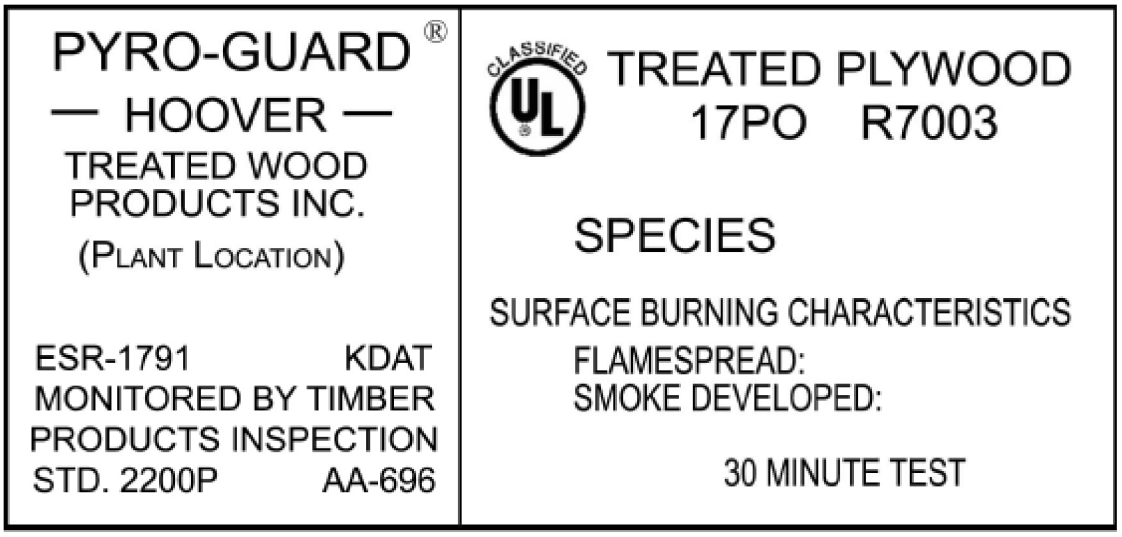

FIGURE 1—PLYWOOD STAMP

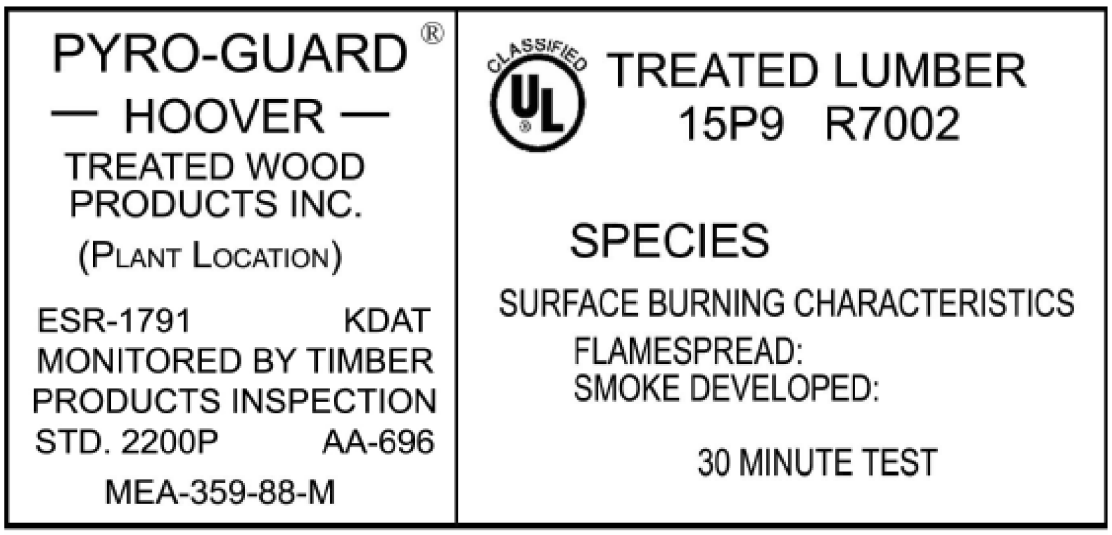

FIGURE 2—LUMBER STAMP

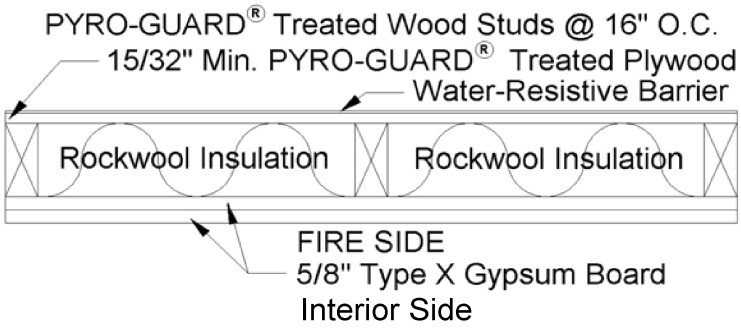

FIGURE 3—2-HOUR FIRE-RESISTANCE-RATED EXTERIOR WALL ASSEMBLY
Use where wall is required to be fire-resistance-rated from the interior side only
Load-bearing, 100% of Calculated Design Load
(ESR-1791 2-HR-Interior Only)

INTERIOR SIDE: Base layer $^{5}/_{8}$-inch (15.9 mm) Tpe X gypsum wallboard applied parallel to studs with $1^{1}/_{4}$-inch-long Type S steel screws spaced 12 inches (304.8 mm) o.c. Face layer $^{5}/_{8}$-inch (15.9 mm) Type X gypsum wallboard applied at right angles to studs with 2-inch-long Type S steel screws spaced 8 inches (203.2 mm) o.c. at edges and 12 inches (304.8 mm) o.c. at intermediate studs. All joints in face layer staggered with joints in base layer. All vertical joints must be located over the studs. All exposed joints and screw heads must be covered with tape and joint compound in accordance with ASTM C840 or GA216. (LOAD-BEARING, 100% of Calculated Design Load)

STUD CAVITY: Spaces between the studs are completely filled rockwool or slag mineral wool batts weighing not less than 3.3 pounds per cubic foot (1 pound per square foot of wall surface).

EXTERIOR SIDE: Pyro-Guard Treated Plywood minimum $^{15}/_{32}$-inch thick fastened at 6 inches on center at edges and 12 inches (304.8 mm) on center in the field and covered with a water-resistive barrier.

EXTERIOR FINISH: Three-coat stucco or minimum 4-inch-thick nominal brick veneer complying with Sections 1404 and 1405 of the IBC, or Chapter 7 of the IRC.

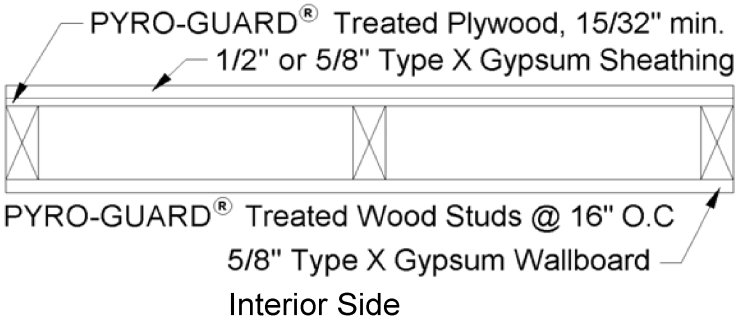

FIGURE 4—1-HOUR FIRE-RESISTANCE-RATED EXTERIOR WALL ASSEMBLY
Use where wall is required to be fire-resistance-rated from the exterior and interior sides.
(ESR-1791 1-HR)

INTERIOR SIDE: One layer $^{5}/_{8}$-inch (15.9 mm) Type X gypsum wallboard applied parallel with or at right angles to studs fastened with GWB-54 nails at 8 inches (203.2 mm) o.c. or 8 inches (203.2 mm) o.c. on the edges and double nailed in the field at 12 inches (304.8 mm) o.c. or $1^{1}/_{4}$-inch (31.75 mm) Type W drywall screws at 16 inches (406.4 mm) o.c. All exposed joints, nail and screw heads must be covered with tape and joint compound in accordance with ASTM C840 or GA216.

STUD CAVITY INSULATION: When used with a $^{1}/_{2}$-inch (12.7 mm) Type X gypsum layer on the exterior? side, spaces between the studs are completely filled with glass fiber mineral wool batts weighing not less than 2 pounds per cubic foot (0.6 pound per square foot of wall surface) or rockwool or slag mineral wool batts weighing not less than 3.3 pounds per cubic foot (1 pound per square foot of wall surface), or cellulose insulation having a nominal density not less than 2.6 pounds per cubic foot [Reference IBC Table 722.6.2(5)]. When used with a $^{5}/_{8}$-inch (15.88 mm) Type X gypsum layer, stud cavity insulation is optional.

EXTERIOR SIDE: One layer $^{1}/_{2}$- or $^{5}/_{8}$-inch (15.9 mm) Type X gypsum sheathing, 48 inches (1,219.2 mm) wide applied parallel to studs fastened in accordance with manufacturer's recommendations and one layer of Pyro-Guard® treated plywood minimum $^{15}/_{32}$ (11.91 mm) category thickness (refer to Table 1) fastened in accordance with Table 2304.9.1 of the IBC and covered with a water resistant barrier. The order of assembly can be either as shown or with the plywood on the outside.

EXTERIOR FINISH: Material, in the minimum thickness, as required by IBC Table 1405.2 installed in accordance with the manufacturers recommendations. Vinyl Siding must not be used in buildings of Type III or Type IV construction.

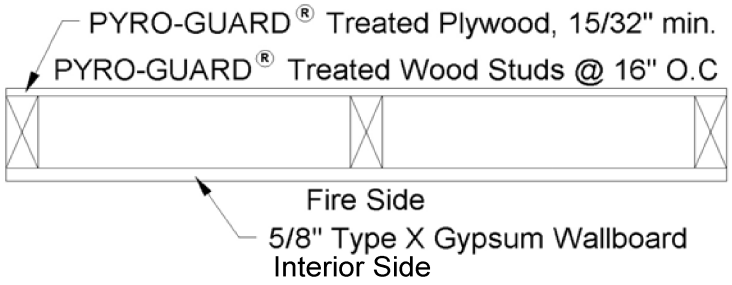

FIGURE 5—1-HOUR FIRE-RESISTANCE-RATED EXTERIOR WALL ASSEMBLY
Use where wall is required to be fire-resistance-rated rated from the interior side only
(ESR-1791 1-HR-Interior Only)

INTERIOR SIDE: One layer $^{5}/_{8}$-inch (15.9 mm) Type X gypsum wallboard applied parallel with or at right angles to studs fastened with GWB-54 nails at 8 inches (203.2 mm) o.c. or 8 inches (203.2 mm) o.c. on the edges and double nailed in the field at 12 inches (304.8 mm) o.c. or $1^{1}/_{4}$-inch (31.75 mm) Type W drywall screws at 16 inches (406.4 mm) o.c. All exposed joints, nail and screw heads must be covered with tape and joint compound in accordance with ASTM C840 or GA216.

STUD CAVITY INSULATION (OPTIONAL): Insulation complying with IBC Section 720 and IBC Table 722.6.2(5).

EXTERIOR SIDE: One layer of Pyro-Guard® treated plywood minimum $^{15}/_{32}$ (11.9 mm) thickness category (Refer to Table 1) fastened in accordance with Table 2304.9.1 of the IBC and covered with a water resistant barrier.

EXTERIOR FINISH: Material, in the minimum thickness, as required by IBC Table 1405.2 installed in accordance with the manufacturers recommendations. Vinyl siding must not be used in buildings of Type III or Type IV construction.

SAFETY DATA SHEET (SDS) for *PYRO-GUARD*® TREATED WOOD

Meets Requirements of OSHA's 29 CFR 1910.1200 (7-1-13 Edition)

SECTION I - Identification

(a) Product identifier used on the label; ***PYRO-GUARD***®

(b) Other means of identification; Ink stamp on Plywood, Lumber or Timbers.

(c) Recommended use of the chemical and restrictions on use; Fire Retardant Treated Wood (FRTW) – Used in areas not exposed to the weather or wetting where the code permits the use of wood or fire-retardant-treated wood.

(d) Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party;

MANUFACTURER
Hoover Treated Wood Products, Inc. 154 Wire Road Thomson, Georgia 30824 706-595-5058 www.frtw.com

(e) Emergency phone number. 706-595-7355

SECTION II – Hazard(s) Identification

(a) Classification of the chemical in accordance with paragraph (d) of § 1910.1200;

All classifications have been performed considering sawing, grinding, drilling, sanding or machining of the product has taken place and wood dust, sawdust, and small wood chips are present. Only "**Softwoods**" are used in the production of the product. So data derived from "**Hardwoods**" studies has not been considered.

Acute Toxicity – N/A
Skin Corrosion/Irritation – Irritant, category 2[3]
Serious Eye Damage/Eye Irritation – Irritant, category 2B
Respiratory or Skin Sensitization:
Respiratory Sensitizer, category 1, sub-category 1B
Skin Sensitizer, category 1, sub-category 1B
Germ Cell Mutagenicity – N/A
Carcinogenicity – Carcinogen, category 2
Reproductive Toxicity – N/A
Specific Target Organ Toxicity Single Exposure – N/A
Specific Target Organ Toxicity Repeated or Prolonged Exposure – N/A
Aspiration Hazard – N/A
Explosives – N/A
Flammable Gases – N/A
Flammable Aerosols – N/A
Oxidizing Gases – N/A
Gases Under Pressure – N/A
Flammable Liquids – N/A
Flammable Solids – Readily Combustible Solids, category 2

Self-Reactive Chemicals – N/A
Pyrophoric Liquids – N/A
Pyrophoric Solids – N/A
Self-Heating Chemicals – N/A
Chemicals Which, In Contact With Water, Emit Flammable Gases – N/A
Oxidizing Liquids – N/A
Oxidizing Solids – N/A
Organic Peroxides – N/A
Corrosive to Metals – N/A

N/A = Not Applicable

(b) Signal word, hazard statement(s), symbol(s) and precautionary statement(s) in accordance with paragraph (f) of § 1910.1200. (Hazard symbols may be provided as graphical reproductions in black and white or the name of the symbol, e.g., flame, skull and crossbones);

Warning Causes Skin Irritation

Precautionary Statements			
Prevention	**Response**	**Storage**	**Disposal**
Wash all body parts which have come into contact with any sawdust generated from sawing, grinding, drilling, sanding, or machining thoroughly after handling. **Wear protective gloves. Any type that creates a barrier is acceptable – Selection should be oriented to decrease contact with splinters and slivers of wood.**	**If on skin: Wash with plenty of water and soap.** **If skin irritation occurs: Get medical advice.** **Take off contaminated clothing and wash it before reuse.**		

Warning Causes Eye Irritation

Precautionary Statements			
Prevention	**Response**	**Storage**	**Disposal**
Wash all body parts which have come into contact with any sawdust generated from sawing, grinding, drilling, sanding, or machining thoroughly after handling.	**If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.** **If eye irritation persists: Get medical advice.**		

Danger May Cause Allergy Or Asthma Symptoms Or Breathing Difficulties If Inhaled

Precautionary Statements			
Prevention	**Response**	**Storage**	**Disposal**
Avoid breathing dust. **In case of inadequate ventilation wear respiratory protection.** **Adequate ventilation is considered that which keeps exposure limits at or below 15mg/m^3**	**If inhaled: If breathing is difficult, remove person to fresh air and keep comfortable for breathing.** **If experiencing respiratory symptoms: Call a poison center.**  **For a poison emergency in the U.S. call 1-800-222-1222**		**Dispose of contents in accordance with all applicable local, regional, national, or international rules and regulations.**

Warning May Cause An Allergic Skin Reaction

Precautionary Statements			
Prevention	**Response**	**Storage**	**Disposal**
Avoid breathing dust. **Contaminated work clothing must not be allowed out of the workplace** **Wear protective gloves.** **Any type that creates a barrier is acceptable – Selection should be oriented to decrease contact with splinters and slivers of wood.**	**If on skin: Wash with plenty of water and soap**. **If skin irritation occurs: Get medical advice.** **Wash contaminated clothing before reuse.**		**Dispose of contents in accordance with all applicable local, regional, national, or international rules and regulations.**

Warning Suspected Of Causing Cancer Of The Upper Respiratory System

Precautionary Statements			
Prevention	**Response**	**Storage**	**Disposal**
Obtain special instructions before use. **Do not handle until all safety precautions have been read and understood.** **Wear protective gloves and eye protection.** **Acceptable gloves are any type that creates a barrier – Glove selection should be oriented to decrease contact with splinters and slivers of wood.**	**If exposed or concerned: Get medical advice.**	**Store locked up.**	**Dispose of contents in accordance with all applicable local, regional, national, or international rules and regulations.**

Warning Flammable Solid

Precautionary Statements			
Prevention	**Response**	**Storage**	**Disposal**
Keep away from heat, sparks, open flames and hot surfaces. - No smoking. **Ground or Bond container and receiving equipment.** **Use explosion-proof electrical, ventilating, lighting, and processing equipment.** **Wear protective gloves and eye protection.** **Acceptable gloves are any type that creates a barrier – Glove selection should be oriented to decrease contact with splinters and slivers of wood.**	**In case of fire: Use water or wood appropriate fire extinguishers to extinguish.**		

(c) Describe any hazards not otherwise classified that have been identified during the classification process;

If small particles are generated during further processing, handling or by other means, may form combustible dust concentrations in air.

> The Occupational Safety and Health Administration (OSHA) in the United States defines combustible dust as *"a solid material composed of distinct particles or pieces, regardless of size, shape, or chemical composition, which presents a fire or deflagration hazard when suspended in air or some other oxidizing medium over a range of concentrations"*.
>
> Dust particles with an effective diameter of less than 420 microns (those passing through a U.S. No. 40 standard sieves) should be deemed to meet the criterion of the definition.

(d) Where an ingredient with unknown acute toxicity is used in a mixture at a concentration ≥1% and the mixture is not classified based on testing of the mixture as a whole, a statement that X% of the mixture consists of ingredient(s) of unknown acute toxicity is required.

N/A

SECTION III - Composition/Information on Ingredients

Except as provided for in paragraph (i) of §1910.1200 on trade secrets:
For Substances
(a) Chemical name;
(b) Common name and synonyms;
(c) CAS number and other unique identifiers;
(d) Impurities and stabilizing additives which are themselves classified and which contribute to the classification of the substance.
For Mixtures
In addition to the information required for substances:
(a) The chemical name and concentration (exact percentage) or concentration ranges of all ingredients which are classified as health hazards in accordance with paragraph (d) of §1910.1200 and
(1) Are present above their cut-off/concentration limits; or
(2) Present a health risk below the cut-off/concentration limits.
(b) The concentration (exact percentage) shall be specified unless a trade secret claim is made in accordance with paragraph (i) of §1910.1200, when there is batch-to-batch variability in the production of a mixture, or for a group of substantially similar mixtures (See A.0.5.1.2) with similar chemical composition. In these cases, concentration ranges may be used.
For All Chemicals Where a Trade Secret is Claimed
Where a trade secret is claimed in accordance with paragraph (i) of §1910.1200, a statement that the specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret is required.

See Below For Requirements –

Chemical, Common or Synonyms Name	Approximate %	CAS #
Wood (mainly softwoods such as pine)	90% to 98%	None
Monosodium Phosphate Sodium Phosphate (monobasic) Sodium Dihydrogen Phosphate Dihydrogen Sodium Phosphate	1% to 3%	7558-80-7
Sodium Tetraborate Decahydrate 10 Mol Borax	0.25% to 1.5%	1303-96-4
Boric Acid	0.25% to 1.5%	10043-35-3
Urea Phosphate	1% to 3%	4861-19-2
Tetrachloroisophthalonitrile Chlorothalonil Daconil	0.00% to 0.03%	1897-45-6
5-Chloro-2-methly-4-Isothiazolin-3-one	≤ 0.01%	26172-55-4
2-Methyl-4-Isothiazolin-3-one	≤ 0.01%	2682-20-4
Magnesium Nitrate	≤ 0.01%	10377-60-3
Engineered Wood Products may contain bonding agents such as phenol, phenol resorcinol, melamine formaldehyde-based, or polyvinyl acetate resin and other ingredients below reportable levels	Balance	

SECTION IV – First-aid Measures

(a) Description of necessary measures, subdivided according to the different routes of exposure, i.e., inhalation, skin and eye contact, and ingestion;

First Aid Procedures

First Aid for Inhalation: – If inhalation symptoms appear remove from area of exposure and monitor. If persistent irritation, severe coughing, allergic-type responses or breathing difficulty occurs, get medical attention.

First Aid for Skin Contact: – If skin contact symptoms appear remove from area of exposure and monitor. Remove contaminated clothing. Wash affected area with soap and water. If irritation persists after washing, get medical attention.

First Aid for Eye Contact: – Wood dust may cause mechanical irritation. Treat dust in eye as foreign object. Remove contact lenses if worn. Flush eyes with large amounts of water to remove dust particles. Do not rub the eyes. Seek medical attention if irritation persists.

First Aid for Ingestion: – Not applicable under normal use, and considered unlikely. If occurred - Do not induce vomiting unless directed by a medical care giver, drink water. Never give anything by mouth to an unconscious person. Seek medical advice.

Notes to Physician: – All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

(b) Most important symptoms/effects, acute and delayed.

Potential Health Effects

Inhalation

Wood dust may cause nasal dryness, irritation, coughing and sinusitis. Repeated exposures (even below 15 mg/m3) to certain wood dusts such as Western Red Cedar, can produce allergic responses in some sensitive individuals. Wood dust can be irritating to eyes, nose and respiratory tract following prolonged exposure.

Skin Contact

Various species of wood dust may evoke allergic contact dermatitis in sensitized individuals. If an allergy preexists or develops, it may be necessary to remove the sensitized worker from further exposure to wood dust or wood-based products. The chemical components may cause slight to mild irritation.

Eye Contact

Dust or splinters may cause irritation or injury to the eyes. The chemical components can cause burning sensation, tearing, and redness.

Ingestion

Not applicable under normal use, and considered unlikely. If occurred may result in irritation of the digestive tract.

(c) Indication of immediate medical attention and special treatment needed, if necessary.

N/A

SECTION V – Fire-fighting Measures

(a) Suitable (and unsuitable) extinguishing media.

FIRE EXTINGUISHING MEDIA: Water, foam or Fire Extinguishers designated for wood. Partially burned dust is especially hazardous if dispersed into the air. Remove burned or wet dust to open area after fire is extinguished.

(b) Specific hazards arising from the chemical (e.g., nature of any hazardous combustion products).

EXPLOSIVE LIMITS: Sawing, sanding or machining wood products can produce wood dust as a by-product. Wood dust is a strong to severe explosion hazard if a dust "cloud" contacts an ignition source. 212°F (100°C) has been suggested as the upper temperature limit for continuous exposure for wood without risk of ignition (wood dust may require a still lower temperature). An airborne concentration of 40 grams of dust per cubic meter of air is often used as the lowest explosion limit (LEL) for wood dust.

HAZARDOUS COMBUSTION PRODUCTS: Thermal-oxidative degradation, or burning, of wood can produce irritating and potentially toxic fumes and gases including carbon monoxide, aldehydes and organic acids. Chemical treatment has little or no effect on the above possibilities from untreated wood.

AUTOIGNITION TEMPERATURE: Unknown (Chemical Treatment Retards).

(c) Special protective equipment and precautions for fire-fighters.

None

SECTION VI - Accidental Release Measures

(a) Personal precautions, protective equipment, and emergency procedures.
(b) Methods and materials for containment and cleaning up.

Not applicable for product in purchased form. Sweep or vacuum up sawdust for recovery or disposal. Wood dust clean-up and disposal activities should be accomplished in a manner to minimize creation of airborne dust.

SECTION VII - Handling and Storage

(a) Precautions for safe handling.
(b) Conditions for safe storage, including any incompatibilities.

HANDLING:

Protective Gloves – Work gloves are recommended to avoid splinters.

Eye Protection – Safety goggles or glasses are recommended when machining to protect against sawdust and flying wood particles.

Protective Clothing or Equipment – Recommended as typical with any wood working.

Work/Hygienic Practices - Practice good hygiene, wash hands after use and before eating, drinking or using tobacco products.

STORAGE:

No ground contact allowed. Product is shipped dry and should not be exposed to the weather. Water spray may be used to wet down wood dust generated by sawing, grinding, drilling, sanding or machining to reduce the likelihood of ignition or dispersion of dust into the air.

SECTION VIII - Exposure Controls/Personal Protection

(a) OSHA permissible exposure limit (PEL), American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV), and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the safety data sheet, where available.

(b) Appropriate engineering controls.
(c) Individual protection measures, such as personal protective equipment.

EXPOSURE GUIDELINES:

Chemical	OSHA PEL	ACGIH TLV
Wood (mainly softwoods such as pine)	15 mg/m^3 TWA (Listed under Particulates Not Otherwise Regulated - Total dust) 5 mg/m^3 TWA Respirable Fraction	1 mg/m^3 TWA* *Inhalable Fraction
Monosodium Phosphate	None Listed	None Listed
Sodium Tetraborate Decahydrate	None Listed	2 mg/m^3 TWA* 6 mg/m^3 STEL* *Inhalable Fraction (TLV listed under Borate compounds, Inorganic)
Boric Acid	None Listed	2 mg/m^3 TWA* 6 mg/m^3 STEL* *Inhalable Fraction (TLV listed under Borate compounds, Inorganic)
Urea Phosphate	None Listed	None Listed
Tetrachloroisophthalonitrile	None Listed	None Listed
5-Chloro-2-methly-4-Isothiazolin-3-one	None Listed	None Listed
2-Methyl-4-Isothiazolin-3-one	None Listed	None Listed
Magnesium Nitrate	None Listed	None Listed
Engineered Wood Products may contain bonding agents such as phenol, phenol resorcinol, melamine formaldehyde-based, or polyvinyl acetate resin and other ingredients below reportable levels	Unknown	Unknown

ENGINEERING CONTROLS: Due to the explosive potential of wood dust when suspended in air, precautions should be taken during sawing, grinding, drilling, sanding or machining of wood products to prevent sparks or other ignition sources in ventilation equipment. Use of totally enclosed motors is recommended. Provide local exhaust as necessary to meet OSHA requirements for airborne exposure limits.

INDIVIDUAL PROTECTION MEASURES:

RESPIRATORY PROTECTION: When sawing, grinding, drilling, sanding or machining, a dust mask is recommended. Typical use of this material does not result in workplace exposures that exceed the exposure limits listed in the Exposure Limit Information Section. For those special workplace conditions where the listed exposure limits are exceeded, a respiratory protection program meeting OSHA 1910.134 and ANSI Z88.2 requirements must be followed.

VENTILATION REQUIREMENTS: In enclosed environments, ventilation may be required in order to maintain exposure limits.

PROTECTIVE GLOVES: Not required. However, cloth, canvas, or leather gloves are recommended to minimize potential splinters, slivers or mechanical irritation when handling product or wood dust generated from the product.

EYE PROTECTION: Googles or safety glasses are recommended when excessive exposures to wood dust may occur (e.g. during clean up).

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: As necessary to limit exposure when handling the product or wood dust generated from the product.

WORK/HYGIENIC PRACTICES: Follow good hygienic and housekeeping practices. Clean up areas where wood dust settles to avoid excessive accumulation of this combustible material. Minimize compressed air blow down or other practices that generate high airborne-dust concentrations. Do not handle material near food, feed or drinking water. Use good personal hygiene. Wash hands before eating or smoking.

SECTION IX - Physical and Chemical Properties

(a) Appearance (physical state, color, etc.);

(b) Odor;

If plywood - Rigid panel usually ½" to ¾" thick and 4'width and 8' length. If Lumber – Plank usually 2" nominal thickness but can vary from ½" to 4" with widths varying from 2" to 12" wide and lengths normally from 6 to 18 feet. If Timbers – Thickness is greater than 4" and widths and lengths vary. Color and odor are dependent upon wood specie. Chemical treatment only darkens the woods natural color.

(c) Odor threshold; N/A

(d) pH; N/A

(e) Melting point/freezing point; N/A

(f) Initial boiling point and boiling range; N/A

(g) Flash point; N/A

(h) Evaporation rate; N/A

(i) Flammability (solid, gas); Wood Dust Combustible

(j) Upper/lower flammability or explosive limits; Wood Dust $\geq$ 40 g/m^3

(k) Vapor pressure; N/A

(l) Vapor density; N/A

(m) Relative density; Variable - Dependent on wood species and moisture content (typically 22 – 37 lbs/ft^3)

(n) Solubility(ies); Chemical treatment might be leachable under extreme wetness which is not allowed

(o) Partition coefficient: n-octanol/water; N/A

(p) Auto-ignition temperature; Auto-ignition Temperature is ≥ 572 F

(q) Decomposition temperature; ≥ 572 F

(r) Viscosity. N/A

SECTION X - Stability and Reactivity

(a) Reactivity; N/A

(b) Chemical stability; Stable under normal conditions. Wood dust generated from sawing, grinding, drilling, sanding or machining the product is combustible. Keep in cool, dry place away from ignition sources.

(c) Possibility of hazardous reactions; None Known

(d) Conditions to avoid (e.g., static discharge, shock, or vibration); Large accumulations of air-borne wood dust. Product in direct ground contact. Product becoming wet.

(e) Incompatible materials; Oxidizing agents, Drying Oils, Strong Bases, and Reducing Agents.

(f) Hazardous decomposition products. Thermal-oxidative degradation, or burning, of wood can produce irritating and potentially toxic fumes and gases including carbon monoxide, aldehydes, oxides of sodium, oxides of phosphorus. Reaction with strong reducing agents, such as metal hydrides or alkali metals, will generate hydrogen gas, which could create an explosive hazard.

SECTION XI - Toxicological Information

Description of the various toxicological (health) effects and the available data used to identify those effects, including:
(a) Information on the likely routes of exposure (inhalation, ingestion, skin and eye contact);
(b) Symptoms related to the physical, chemical and toxicological characteristics;
(c) Delayed and immediate effects and also chronic effects from short- and long-term exposure;
(d) Numerical measures of toxicity (such as acute toxicity estimates).
(e) Whether the hazardous chemical is listed in the National Toxicology Program (NTP) Report on Carcinogens (latest edition) or has been found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs (latest edition), or by OSHA.

PRODUCT AS PRODUCED:
Is an article and no toxicological information is available.

OSHA: Wood products are not hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29 CFR 1910.1200. However, wood dust generated by sawing, sanding or machining this product may be hazardous.

COMPONENTS:

Monosodium Phosphate (Acute Toxicity) -

Eye Effects: Slightly irritating (Rabbit, 12.6/110.0, 1 hour exp) - 150 mg (std. Draize), Rabbit.
Skin Effects: Practically Nonirritating (Rabbit, 0.0/0.8, Avg. Max)
Ingestion Effects: Practically Nontoxic (Rat LD_{50} - 8290 mg/kg)

Sodium Tetraborate Decahydrate (Acute Toxicity) -

Ingestion: Low acute oral toxicity; LD_{50} in rats is 4,500 to 5,000 mg/kg of body weight.
Skin/dermal: Low acute dermal toxicity; LD_{50} in rabbits is greater than 10,000 mg/kg of body weight.
Inhalation: Low acute inhalation toxicity; LC_{50} in rats is greater than 2.0 mg/L (or g/m^3)
Eye irritation: Draize tests in rabbits produced eye irritation effects. Years of occupational exposure to Sodium Tetraborate Decahydrate indicates no adverse effects on human eye.

Boric Acid (Acute Toxicity) -

Ingestion: Low acute oral toxicity; LD_{50} in rats is 3,500 to 4,100 mg/kg of body weight.
Skin/dermal: Low acute dermal toxicity; LD_{50} in rabbits is greater than 2,000 mg/kg of body weight.
Inhalation: Low acute inhalation toxicity; LC_{50} in rats is greater than 2.0 mg/L (or g/m^3)
Eye irritation: Draize tests in rabbits produced mild eye irritation effects. Years of occupational exposure to Boric Acid indicates no adverse effects on human eye.

Diurea Phosphate (Acute Toxicity) -

Ingestion Effects: Low acute oral toxicity; LD_{50} in rats is 5,840 mg/kg of body weight.

Chlorothalonil (Acute Toxicity) -

Ingestion: Low acute oral toxicity; LD_{50} in rats is 4,200 mg/kg of body weight. Can cause gastrointestinal irritation, nausea, vomiting, and diarrhea. Can result in some corrosive action to the mouth, throat, esophagus, and stomach tissue. Studies on rats and mice have suggested that technical chlorothalonil (97%), when fed at high levels in diet, may have oncogenic potential to these laboratory animals. However, neither chlorothalonil nor its metabolites interact with DNA and thus are not mutagenic. Metabolism studies have demonstrated that the rat metabolizes chlorothalonil to form metabolites that are toxic to kidney mitochondria. Much lower levels (150 to >2000 fold) of these metabolites are formed in dogs and monkeys, thus, effects seen in rats may not translate to man. Tumor formation has been related to a non-genotoxic mechanism of action for which threshold levels have been established on rats and mice. Comprehensive dietary and worker exposure studies have shown exposure levels for humans to be well below these threshold levels. In addition, surveillance of chlorothalonil plant workers for over twenty years has not demonstrated any increase in oncogenic potential to humans.
Skin/dermal: Low acute dermal toxicity; LD_{50} in rabbits is greater than 2,000 mg/kg and less than 20,000 mg/kg of body weight. Repeated or excessive dermal exposure may cause marked skin irritation. On overexposed skin, may cause moderate irritation, redness, and a flaky rash may result. Skin rash is seldom observed if the following recommended safeguards are followed:

Wear rubber gloves when handling, using, or applying this product. Special precautions should be taken to ensure that material cannot get inside gloves. Wear long-sleeved shirts, long pants, and rubber boots or disposable coveralls when handling this product.
Inhalation: LC_{50} in rats is greater than 0.20 mg/L and less than 2.1 mg/L (or g/m^3).
Eye irritation (Rabbit/Monkey): Reversible corneal, iridal and conjunctival effects. Maximum mean score (noted at 24 hours): Rabbit = 23.3/110 Monkey = 25.3/110. Human experience indicates that this product may cause mild to severe irritation, depending on the degree of exposure.

The Following Are Taken As A Group:
5-Chloro-2-methly-4-Isothiazolin-3-one
2-Methyl-4-Isothiazolin-3-one
Magnesium Nitrate
(Acute Toxicity) -

The below statements are with the above components at 10.6%, 3.5% and 15.0% respectively; numerous times the actual present in the product.

ROUTES OF ENTRY: Inhalation, dermal absorption, skin contact and eye contact.
SIGNS AND SYMPTOMS OF ACUTE OVEREXPOSURE:

Eyes - Corrosive to eyes. Severely irritating to the eyes and may cause eye burns. May cause permanent eye injury.

Skin - Corrosive to the skin. Severely irritating to the skin and may cause chemical burns to the skin. May cause allergic skin sensitization of susceptible persons. May be fatal if absorbed through the skin.

Ingestion - May be harmful or fatal if swallowed. Ingesting may produce chemical burns to the lips, oral cavity, upper airway, esophagus and possibly the digestive tract.

Inhalation - Harmful if inhaled. Inhalation of vapors, mists or sprays can cause irritation or burns of the nose, throat and lungs.

CHRONIC OVEREXPOSURE: Allergic contact dermatitis observed. Collective data indicate non-mutagenic; not teratogenic.

CHEMICAL LISTED AS A CARCINOGEN OR POTENTIAL CARCINOGEN?:

- NATIONAL TOXICOLOGY PROGRAM (Y/N): N
- IARC MONOGRAPHS (Y/N) N
- OSHA (Y/N) N:

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: N/A

TOXICOLOGICAL DATA:

Dermal LD50 - rabbit: > 1,000 mg/kg
Oral LD50 - rat: 481 mg/Kg
Eye Irritation - rabbit: corrosive
Skin Irritation - rabbit: corrosive
Inhalation LC50 (4hr) – 1.23 mg/l (aerosol)

WOOD DUST (softwood or hardwood) -

OSHA Hazard Rating = 3.3; moderately toxic with probable oral lethal dose to humans being 0.5-5 g/kg (about 1 pound for a 150 pound person) Source: *OSHA Regulated Hazardous Substances*, Government Institutes, Inc., February 1990.

Wood dust generated from sawing, grinding, drilling, sanding or machining may cause nasal dryness, irritation, coughing and sinusitis. NTP and IARC classify wood dust as a human carcinogen (IARC Group 1). This classification is based primarily on increased risk in the occurrence of adenocarcinomas of the nasal cavities and paranasal sinuses associated with exposure to wood dust. The evaluation did not find sufficient evidence to associate cancers of the oropharynx, hypopharynx, lung, lymphatic and hematopoietic systems, stomach, colon or rectum with exposure to wood dust.

SECTION XII - Ecological Information

(a) Ecotoxicity (aquatic and terrestrial, where available); Not available

(b) Persistence and degradability;
(c) Bioaccumulative potential;

Environmental fate of wood dust would be expected to be biodegradable.

(d) Mobility in soil; N/A

(e) Other adverse effects (such as hazardous to the ozone layer). None Known

SECTION XIII - Disposal Considerations

Description of waste residues and information on their safe handling and methods of disposal, including the disposal of any contaminated packaging.

Under RCRA, it is the responsibility of the user of the product to determine, at the time of disposal, whether the product meets RCRA criteria for hazardous waste. Dispose of material according to Local, State, Federal, and Provincial Environmental Regulations.

The producer has made a determination that this product is not considered hazardous waste under Federal hazardous waste regulations 40 CFR Part 261. Incinerate or landfill in accordance with Local, State, and Federal regulations.

SECTION XIV – Transport Information

(a) UN number;
(b) UN proper shipping name;
(c) Transport hazard class(es);
(d) Packing group, if applicable;
(e) Environmental hazards (e.g., Marine pollutant (Yes/No));
(f) Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code);

(g) Special precautions which a user needs to be aware of, or needs to comply with, in connection with transport or conveyance either within or outside their premises.

This product is not regulated as a dangerous good or hazardous material by the U.S. Department of Transportation (DOT).

SECTION XV - Regulatory Information

Safety, health and environmental regulations specific for the product in question.

Toxic Substance Control Act (TSCA): N/A

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): N/A

Domestic Substance List (DSL): N/A

OSHA: Wood products per se are not hazardous under the criteria of the federal OSHA Hazard Communication Standard 29CFR 1910.1200. However, wood dust generated by sawing, sanding or machining wood products may be hazardous and hence included under 1910.1200.

STATE RIGHT-TO-KNOW:
California Prop 65:
Warning: Drilling, sawing, sanding or machining wood products generates wood dust, a substance known to the State of California to cause cancer.
Pennsylvania – When cut or otherwise machined, wood products may emit wood dust. Wood dust appears on Pennsylvania's Appendix A, Hazardous Substance List.
New Jersey – When cut or otherwise machined, wood products may emit wood dust. Wood dust appears on New Jersey's Environmental Hazardous Substance List.

Section 302 extremely hazardous substance: No regulated ingredients.

SARA 313 Information: This product contains one chemical ingredient with known CAS number that exceed the de minimis reporting levels established by SARA Title III, section 313 and 40 CFR section 372. This is Chlorothalonil.

SARA 311/312 Hazard Category: This product has been reviewed according to the EPA "Hazard Categories" promulgated under SARA Title III Sections 311 and 312 and is considered, under applicable definitions, to meet the following categories:

An immediate (acute) health hazard	Yes
A delayed (chronic) health hazard	Yes
A corrosive hazard	No
A fire hazard	No
A reactivity hazard	No
A sudden release hazard	No

FDA: Not intended for use as a food additive or indirect food contact item.

SECTION XVI - Other Information

The date of preparation of the SDS or the last change to it.

Current Issue: 08/01/2014
Previous Issue: None

User's Responsibility: The information contained in this Safety Data Sheet is based on the experience of health and safety professionals and comes from sources believed to be accurate or otherwise technically correct. It is the user's responsibility to determine if the product is suitable for its proposed application(s) and to follow necessary safety precautions. The user has the responsibility to make sure that this SDS is the most up-to-date issue.

NOTICE: Although the information and recommendations set forth herein (hereinafter "Information") are presented in good faith and believed to be correct as of the date hereof, Hoover Treated Wood Products, Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for the purposes prior to use. In no event will Hoover Treated Wood Products, Inc. be responsible for damages or any nature whatsoever resulting from the use of or reliance upon this information. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH INFORMATION REFERS.