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**DIVISION: 06—WOOD AND PLASTICS**  
**Section: 06070—Wood Treatment**

**REPORT HOLDER:**

**CHEMCO, INC.**  
**POST OFFICE BOX 875**  
**FERNDALE, WASHINGTON 98248**  
**(360) 366-3500**  
[www.chemco.us](http://www.chemco.us)

**EVALUATION SUBJECT:**

**FRX EXTERIOR FIRE-RETARDANT-TREATED WOOD**

**1.0 EVALUATION SCOPE**

**Compliance with the following codes:**

- 2003 *International Building Code*® (IBC)
- 1997 *Uniform Building Code*™ (UBC)

**Properties evaluated:**

- Structural
- Surface-burning characteristics

**2.0 USES**

Chemco, Inc., FRX fire-retardant-treated wood is solid sawn lumber and plywood that is pressure-impregnated with FRX fire-retardant chemicals, in accordance with approved quality control procedures, and is for use in exterior applications (exposed to weather, or damp or wet locations), as permitted by IBC Section 603.1, Item 1.2, or UBC Section 601.5.4, Item 2.

**3.0 DESCRIPTION**

**3.1 General:**

The Chemco, Inc., FRX fire-retardant-treated wood is solid sawn lumber and plywood that is pressure-impregnated with Chemco's FRX fire-retardant chemical. The lumber is structural-grade southern yellow pine, Douglas fir, white spruce, western red cedar and western hem-fir lumber. The plywood is Structural I grade, exterior plywood of any species.

**3.2 Flame Spread:**

FRX fire-retardant-treated wood has a flame-spread index of 25 or less when tested in accordance with ASTM E 84 (UBC Standard 8-1), as modified by IBC Section 2303.2 and UBC Section 207.

**4.0 DESIGN AND INSTALLATION**

**4.1 General:**

Structural systems that include FRX fire-retardant-treated wood shall 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, respectively, of this report.

FRX fire-retardant-treated lumber shall not be ripped or milled, since this will alter the surface-burning characteristics and invalidate the flame-spread classification.

**4.2 Fasteners:**

Fasteners used in FRX fire-retardant-treated wood shall be hot-dipped zinc-coated galvanized steel, stainless steel, silicon bronze or copper, in accordance with IBC Section 2304.9.5 or UBC Section 2304.3, and shall be subject to the design value adjustment factors indicated in Table 1 of this report.

**5.0 CONDITIONS OF USE**

The FRX exterior fire-retardant-treated wood described in this report complies with, or is an acceptable alternative to what is specified in, these codes listed in Section 1.0 of this report, subject to the following conditions:

- 5.1** Strength calculations are subject to the design value adjustment factors and span ratings shown in Tables 1 and 2, respectively, of this report.
- 5.2** The design value adjustment factors and span ratings given in this report are only used for unincised dimensional lumber and plywood of the species noted in this report.
- 5.3** The fire-retardant-treated wood is used as permitted for exterior use (exposed to weather, damp or wet locations) as permitted by IBC Section 603.1, Item 1.2, or UBC Section 601.5.4, Item 2, as applicable.
- 5.4** The fire-retardant-treated wood is not used in contact with the ground, in roofing applications, or in interior locations.
- 5.5** FRX fire-retardant-treated lumber shall not be ripped or milled, since this will alter the surface-burning characteristics and invalidate the flame-spread classification.
- 5.6** The lumber and plywood are treated at Ferndale, Washington, with inspections by Fire Tech Services, Inc. (AA-641).

**6.0 EVIDENCE SUBMITTED**

- 6.1** Data in accordance with the ICC-ES Acceptance Criteria for Fire-retardant-treated Wood (AC66), dated January 2002.
- 6.2** A quality control manual.

**7.0 IDENTIFICATION**

Lumber and plywood treated with FRX fire-retardant chemicals shall be identified by the structural grade mark of

an approved agency. In addition, all treated lumber and plywood shall be stamped with the name of the inspection agency (Fire Tech Services, Inc.); the Chemco, Inc., name and address; the flame-spread index; the treating date; and the evaluation report number (ESR-1159). Additionally, the

FRX-treated lumber and plywood shall be identified with the words "Exterior" and "No increase in the listed classification when subjected to the Standard Rain Test" (see Figures 1 and 2 of this report).

**TABLE 1—DESIGN VALUE ADJUSTMENT FACTORS FOR FRX FIRE-RETARDANT-TREATED LUMBER COMPARED TO UNTREATED LUMBER [APPLICABLE AT TEMPERATURES UP TO 80°F (26.7°C)]<sup>1,2</sup>**

PROPERTY	SOUTHERN YELLOW PINE	DOUGLAS FIR	WHITE SPRUCE	WESTERN RED CEDAR; WESTERN HEM-FIR
Compression parallel to grain	1.00	1.00	0.95	0.95
Horizontal shear	0.91	1.00	0.91	0.91
Tension parallel to grain	0.78	0.88	0.76	0.76
Bending: modulus of elasticity	1.00	0.96	0.94	0.94
Bending: extreme fiber stress	1.00	1.00	0.86	0.86
Fasteners/connectors	0.90	0.90	0.90	0.90

<sup>1</sup>Duration of load adjustments for snow loads, seven-day (construction) loads, and wind loads shall be as specified in the IBC or UBC.

<sup>2</sup>FRX fire-retardant-treated lumber shall not be permitted to be used in contact with the ground, in roofing applications, or in interior locations.

**TABLE 2—ALLOWABLE TOTAL SHEATHING LOAD (psf) FOR FRX FIRE-RETARDANT-TREATED PLYWOOD<sup>1,2,3,4</sup>**

PLYWOOD THICKNESS (inch)	PLYWOOD SPAN RATING	SPAN (inches)								
		12	16	19.2	24	30	32	36	40	48
$\frac{5}{16}$	20/0	185	104	67	47	--	--	--	--	--
$\frac{3}{8}$	24/0	280	161	103	71	28	--	--	--	--
$\frac{15}{32}, \frac{1}{2}$	32/16	409	231	145	102	65	57	--	--	--
$\frac{19}{32}, \frac{5}{8}$	40/20	641	361	231	160	103	88	57	46	--
$\frac{23}{32}, \frac{3}{4}$	48/24	805	453	290	202	128	114	71	61	41

For **SI**: 1 inch = 25.4 mm, 1 psf = 47.9 N/m<sup>2</sup>.

<sup>1</sup>Fastener size and spacing shall be as required in the applicable code for untreated plywood of the same thickness.

<sup>2</sup>Plywood shall be Structural I grade, exterior plywood.

<sup>3</sup>FRX fire-retardant-treated plywood shall not be permitted to be used in contact with the ground, in roofing applications, or in interior locations.

<sup>4</sup>Values are based on a strength reduction factor of 0.88.

CHEMCO, INC.  
Ferndale, WA  
FRX Pressure Treated  
Fire Retardant Lumber  
ICC ES Report No. ESR-1159  
Classification: Exterior  
  
Species:  
  
"No increase in the listed  
classification when subjected to  
the Standard Rain Test" (ASTM  
D2898)  
FSI -  
SDI -  
  
Treated - Month/Year  
Kiln dried after treatment  
  
Fire Tech Services, Inc.  
IAS Report No. AA-641  
MATERIAL NOT TO BE USED IN  
ROOFING APPLICATIONS

FIGURE 1—LUMBER STAMP

CHEMCO, INC.  
Ferndale, WA  
FRX Pressure Treated  
Fire Retardant Plywood  
ICC ES Report No. ESR-1159  
Classification: Exterior  
  
Species:  
  
"No increase in the listed  
classification when subjected to  
the Standard Rain Test" (ASTM  
D2898)  
FSI -  
SDI -  
  
Treated - Month/Year  
Kiln dried after treatment  
  
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FIGURE 2—PLYWOOD STAMP