CODE EVALUATION REPORT

CERUS-1032

PUBLISHED: June 2024
REVISED: June 2024
EXPIRATION: June 2027

PRODUCT: **FTX and FSR Fire-Retardant Treated Wood Shakes and Shingles**

REPORT HOLDER: FSR Treatment, Incorporated

CONTACT DETAILS:
9486 – 288th Street
Maple Ridge, British Columbia
V2W 1I1 Canada
https://firesmartroofing.com

CSI DIVISION:
06 00 00 – Wood, Plastics, and Composites
07 00 00 – Thermal and Moisture Protection

CSI SECTION:
06 05 73 - Wood Treatment
06 05 73.13 - Fire-Retardant Wood Treatment
07 31 29 – Wood Shingles and Shakes

APPLICABLE CODES:
2021, 2018, 2015 International Building Code (IBC)
2021, 2018, 2015 International Residential Code (IRC)
2022, 2019 California Building Code (CBC)
2022, 2019 California Residential Code (CRC)
2021, 2018 International Wildland-Urban Interface Code (IWUIC)

EVALUATED:
Material Requirements
Roof-Fire Classification
Weather Exposure
Moisture Content

IAS ACCREDITED Product Certification Agency PCA-118

1.0 APPROVED FOR FOLLOWING:

APPROVED TYPES OF CONSTRUCTION:	Types I-V A/B
APPROVED USE:	Wood shingle and wood shake roof coverings for use on new and over existing roofs in Types I-V construction.
APPROVED INSTALLATIONS:	New and existing roofs where existing roof is removed, including use in roof fire-classified assemblies including areas prone to hail impact as detailed in this report.

2.0 DESCRIPTION:

2.1 General:

FTX and FSR fire-retardant treated shingles and shakes are pressure-impregnated western cedar CSSB grade complying roof coverings complying with the 2021 / 2018 / 2015 IBC and 2021 / 2018 / 2015 IRC. FTX and FSR fire-retardant treated shingles and shakes comply with Section 1505.6 of the 2021 / 2018 / 2015 IBC and R902.2 of the 2021 / 2018 / 2015 IRC for use in Class A, Class B and Class C roof-classified assemblies evaluated in accordance with ASTM E108 with the finished roof assembly resistant to hail impact.

Fasteners intended for use with FTX and FSR fire-retardant treated western cedar shingles and shakes products are to be Type 304 or Type 316 stainless steel in accordance with Section 4.1.3 of this report.

FTX and FSR fire-retardant treated western red cedar shingles and shakes products comply with Section 1505.6 of the 2022 / 2019 CBC and Section R902.2 of the 2022 / 2019 CRC. See Section of 9.1 of this report for additional details.

FTX and FSR fire-retardant treated western red cedar shingles and shakes products comply as *Ignition-resistant material* in accordance with Section 503.2 of the 2021 / 2018 IWUIC. See Section 9.2 of this report for additional details.

2.2 Products:

2.2.1 FTX and FSR FIRE-RETARDANT TREATED SHINGLES:

FTX and FSR fire-retardant treated western red cedar shingles comply with Section 1507.8.5 of the 2021 / 2018 / 2015 IBC and Section R905.7 of the 2021 / 2018 / 2015 IRC as naturally durable wood complying with CSSB-97 standard material. FTX and FSR fire-retardant treated shingle bundle labels bear the mark of an approved grading agency in accordance with Sections 1507.8.9 of the 2021 / 2018 / 2015 IBC and R905.7.7 2021 / 2018 / 2015 IRC. FTX and FSR fire-retardant shingles are available in a Class B and Class C treatment options and comply with roof-fire classifications Class A, Class B, and Class C after weathering in accordance with ASTM D2898 when installed in accordance with Section 8.3.1 of this report, complying with Section 1505 of the 2021 / 2018 / 2015 IBC and R902.1 of the 2021 / 2018 / 2015 IRC based on evaluation to ASTM E108.

FTX and FSR fire-retardant treated shingles are installed with a minimum Grade 2 shingle available in Class B and Class C treatment option that are provided as starter course for the installation of FTX and FSR fire-retardant treated western red cedar shingles.

2.2.2 FTX and FSR FIRE-RETARDANT TREATED SHAKES:

FTX and FSR fire-retardant treated western red cedar shakes comply with Section 1507.9.6 of the 2021 / 2018 / 2015 IBC and Section R905.8 of the 2021 / 2018 / 2015 IRC as naturally durable wood complying with CSSB-97 Grade 1 material. FTX and FSR fire-retardant treated shake bundle labels bear the mark of an approved grading agency in accordance with Section 1507.9.10 of the 2021 / 2018 / 2015 IBC and R905.8.9 of the 2021 / 2018 / 2015 IRC. FTX and FSR fire-retardant shakes are available in a Class B and Class C treatment options and comply with roof-fire classifications Class A, Class B, and Class C after weathering per ASTM D2898 when installed in accordance with Section 8.3.1 of this report, complying with Section 1505 of the 2021 / 2018 / 2015 IBC and R902.1 of the 2021 / 2018 / 2015 IRC based on evaluation to ASTM E108.

FTX and FSR fire-retardant treated shakes are installed with a minimum Grade 2 taper sawn shake available in Class B and Class C treatment option that are provided as starter course for the installation of FTX and FSR fire-retardant treated western red cedar shingles.

3.0 DESIGN:

Use of FTX and FSR fire-retardant treated shingles and shakes do not require professional design when installed in accordance with Sections 4.1 through 4.3 of this report. Use in applications outside those described in this report requires approval by the authority having jurisdiction.

FTX and FSR fire-retardant treated shingles and shakes are roof coverings for installation over code complying roof sheathings and underlayment. FTX and FSR fire-retardant treated shingles and shakes are intended for use as the finished roof covering on new and over existing construction where existing roof coverings have been removed in accordance with Section 4.1 and 4.3 of this report as applicable.

When used in applications requiring roof fire classified assemblies, installation shall be in accordance with Section 4.4 and Section 8. 1 Table 1 of this report.

When installed in areas defined as hail-prone, installation shall be in accordance with Section 4.5 and Section 8.2 Table 2 of this report for the hail-impact classification levels described.

4.0 INSTALLATIONS:

4.1 General:

FTX and FSR fire-retardant treated shingles and shakes must comply with the manufacturer's published installation instructions, this report, and the applicable code(s). Where conflicts exist, this report and the applicable building code shall be followed.

4.1.1 Sheathing:

FTX and FSR fire-retardant treated shingles and shakes installation can be over spaced sheathing of minimum 1-inch x 4-inch (25 mm x 102 mm) softwood boards, or over solid plywood panel or lumber sheathing of minimum ½ inch (13 mm) thickness complying with the applicable code following Table 1507.8 of the 2021 / 2018 / 2015 IBC or R905.7 (wood shingles) or R905.8 (wood shakes) of the 2021 / 2018 / 2015 IRC as appropriate. Attachment of the sheathing to underlying framing elements is outside the scope of this report and shall be sufficient to resist service wind loads.

4.1.2 Underlayment:

FTX and FSR fire-retardant treated shingles and shakes for use in areas of maximum basic design wind speed (*V*) of less than 140 mph (225 km/hr) require installation of the following underlayment (shingles) or interlayment (shakes) types:

a) ASTM D226 Type I, II, or
b) ASTM D4869 Type I, II, II, or IV.

FTX and FSR fire-retardant treated shingles and shakes for use in areas of maximum basic design wind speed (*V*) of 140 mph (225 km/hr) or greater require installation of the following underlayment (shingles) or interlayment (shakes):

a) ASTM D226 Type II or
b) ASTM D4869 Type IV

Underlayment and interlayments are to bear the mark of compliance with the specifications and Type noted.

Underlayment is be installed in accordance with the applicable code and the manufacturer's published installation instructions.

In areas where there is potential for or has been a history of ice forming along eaves causing the backup of water, an ice barrier is required. The ice barrier may consist of:

a) Two layers of ASTM D226 or ASTM D4869 compliant underlayment specified based off maximum basic design wind speed (*V*) above, cemented together, or
b) A self-adhering polymer modified bitumen sheet complying to ASTM D1970.

Alternate ice barriers are outside the scope of this report but may be used where approved by the authority having jurisdiction.

The ice barrier shall be used as an alternative to the normal underlayment, extending from the lowest edges of all roof surfaces to a point at least 24 inches (610 mm) inside the exterior wall line of the structure. Following, the standard underlayment shall be lapped over the ice barrier and shall overlap a minimum of 4 inches (102 mm). Attachment and overlapping of the ice barrier to underlayment are outside the scope of this report and is to be in accordance with the applicable code and the ice barrier manufacturer's published installation instructions.

Where used in roof-fire classified assemblies, underlayment and installation is to comply with Section 4.4 and Table 2 of this report.

4.1.3 Fasteners:

Fasteners for use with FTX and FSR fire-retardant treated shingles and shakes where installation is within coastal areas (15 miles (24 km) of salt water) shall be Type 316 stainless steel. Fasteners for use with FTX and FSR fire-retardant treated shingles and shakes where installation is non-coastal areas (greater than 15 miles (24 km) of salt water) shall be Type 316 or Type 304 stainless steel.

Fastener type and length are to comply with Table 1507.8, Sections 1507.8 (shingles) or 1507.9 (shakes) of the 2021 / 2018 / 2015 IBC or Table R905.7.5(2) of the 2021 / 2018 / 2015 IRC as applicable.

4.1.4 Flashings:

Flashing, counterflashing, and valley flashing shall be sheet metal complying with the applicable code, where the sheet metal is G90 galvanized of minimum 0.0179 inches (0.455 mm) uncoated thickness. Valley flashing shall extend a minimum 11 inches (279 mm) from the centerline each direction and have a splash diverter rib less than 1 inch (25 mm) height at the flow line formed as part of the flashing. Flashing shall have a minimum lap of 4 inches (102 mm). Valley flashing shall have a 36-inch (914 mm) underlayment running the full length of the valley of either:

1. One layer of Type I ASTM D226 underlayment or
2. Self-adhering ASTM D1970 compliant underlayment in addition to other required underlayment.

In areas where the average daily temperature in January is 25°F (-4°C) or less or a possibility of ice forming along eaves causing water backup exists, the metal valley flashing is to be cemented to the roofing underlayment where slopes are 7:12 (58%) or less, or an ASTM D1970 self-adhering underlayment shall be installed.

While not required, drip edge flashings and rake edge flashings are recommended installed with good roofing practice.

4.2 New Construction:

4.2.1 FTX and FSR Shingles:

FTX and FSR shingles are to be installed on minimum 3:12 (25%) slope. A starter course of shingles is laid with a minimum 1-1/2-inch (38 mm) projection from fascia, and 1-inch (25 mm) projection over gable and rake ends. The starter course should be a double or triple course, with a shingle spacing at ¼-inch (6 mm) to 3/8-inch (10 mm) gap between adjacent shingles. Joints of the subsequent course should be offset a minimum of 1-1/2-inches (38 mm) with no alignment of joints between rows. Two (2) fasteners are installed at approximately ¾-inch (19 mm) from the shingle edge at 1-1/2-inches (38 mm) above exposure line. Shingles of width 8-inches to 12-inches (203 mm to 305 mm), three fasteners are recommended. Fastener types are to comply with Section 4.1.3 of this report and the applicable code.

Ridge caps, hip caps and valleys are to be installed in accordance with the manufacturer's installation instructions and the applicable codes.

Where used in roof-fire classified assemblies FTX and FSR shingles installation is to comply with Section 4.4 and Table 2 of this report.

4.2.3 FTX and FSR Shakes:

FTX and FSR shakes are to be installed on minimum 4:12 (33%) slope. A starter course of shakes or shingles are laid with a minimum 1-1/2-inch (38 mm) projection from fascia, and 1-inch (25 mm) projection over gable and rake ends. The starter course should be a single or double course, with a shingle spacing at 3/8-inch (10 mm) to 5/8-inch (16 mm) gap between adjacent shakes or shingles. Joints of the subsequent course should be offset a minimum of 1-1/2-inches (38 mm) with no alignment of joints between rows. Interlayment is to be laid between courses, where the interlayment complies with Section 4.1.2 of this report, and the interlayment is positioned above the butt of the shake at a distance equal to double the weather exposure. Two (2) fasteners are installed at approximately ¾-inch (19 mm) from the shake edge at 1-1/2-inches (38 mm) above exposure line. Shakes of width 8-inches to 12-inches (203 mm to 305 mm), three fasteners are recommended. Fastener types are to comply with Section 4.1.3 of this report and the applicable code.

Where used in roof-fire classified assemblies FTX and FSR shakes installation is to comply with Section 4.4 and Section 8.1 Table 2 of this report.

4.3 Reroofing Applications:

FTX and FSR shingles and shakes are not intended for installation over existing roof systems. Existing roof coverings and underlayment are to be removed, and roof sheathing and penetrations as appropriate are to be inspected to ensure the roof structure is free of rot and damage prior to installation of FTX and FSR shingles and shakes. All past existing roof coverings shall be completely removed, following all installation conditions noted in Section 4.1 and 4.2 shall apply.

4.4. Roof Fire Classified Assemblies:

FTX and FSR shingles and shakes comply for use as Class A, Class B or Class C roof-assemblies per 2021 / 2018 / 2015 IBC Section 1505.1 and 2021 / 2018 / 2015 IRC Section R902.1. FTX and FSR treated western cedar shingles and shakes comply with the requirements of Section 1505.6 *fire-retardant-treated wood shingles and shakes of* the 2021 / 2018 / 2015 IBC and Section R902.2 *fire-retardant-treated shingles and shakes* of the 2021 / 2018 / 2015 IRC.

Installation including maximum roof slope is to be in accordance with Section 8.1 Table 2 of this report.

4.5 Hail-Impact Resistant Assemblies:

FTX and FSR shingles and shakes are Class IV impact resistance rated evaluated following UL 2218. Installation is to be in accordance with Section 8.2 Table 2 of this report.

5.0 LIMITATIONS

- FTX and FSR shingles and shakes must comply with the manufacturer's published installation instructions, this report, and the applicable code(s). Where conflicts exist, this report and the applicable building code shall be followed.
- FTX and FSR treated western cedar shingles and shakes apply to treated western red cedar and Alaskan yellow cedar species. Treatment of alternate species is outside the scope of this report.
- Fasteners for use with FTX and FSR shingles and shakes are to be in accordance with Section 4.1.3 of this report and Sections Table 1507.8 of the 2021 / 2018 / 2015 IBC or Sections R905.7.5 / R905.8.6 of the 2021 / 2018 / 2015 IRC as appropriate. Use of electrogalvanized fasteners are not permitted.
- Wood panel sheathing types are limited to plywood and solid lumber. Use of alternate sheathing types is outside the scope of this report.
- Spaced sheathing is to be minimum 1-inch x 4-inch (25 mm x 102 mm) with spacing allowance is to match weather exposure.
- Interlay use is restricted to shakes only. Interlay application with shingles is not permitted.
- FTX and FSR shingles and shakes are manufactured by approved treatment facilities located in Maple Ridge, BC and Ferndale, WA State with inspections by QAI Laboratories.

6.0 SUPPORTING INFORMATION:

The following data has been evaluated for FTX and FSR shingles and shakes:

- Data outlining Class A, B and C roof-fire classificaiton per ASTM E108, after weathering per ASTM D2898.
- Data outlining Class A, B and C roof-fire classification, after 10-year natural weathering exposure in accordance with standard 15-2 of the 1994 Uniform Building Code.
- California Office of the State Fire Marshall Buildign Materials Listing 4150-1735:0100.
- California Office of the State Fire Marshall Buildign Materials Listing 4150-1735:0101.

7.0 MARKING:

FTX and FSR shingles and shakes labels are outlined below:

Figure 2. Example of FTX and FSR Shingles and Shakes Finished Bundle Labels

8.0 RESULTS / RATINGS:

8.1 FTX and FSR Shingles and Shakes Properties

Table 1 – Roof Fire Classified Assemblies

System	Substrate[1,2]	Approved Underlayment[2]	Approved Roof Coverings	Installation Guidelines	Maximum Slope	Classification
New Construction Or Reroof when existing roof is removed[1]	Minimum ¼-inch (6 mm) thickness non-combustible covering over solid or spaced sheathing.	Section 4.1.2 installed over the non-combustible covering.	FTX and FSR Shingles and Shakes Class B Treatment	See Sections 2.2, 4.1, 4.2, 4.3	Unlimited	A
	Minimum 15/32-inch (12 mm) thickness solid or minimum 1x4-inch (19x89 mm) spaced sheathing.	1 layer of ASTM D3909 compliant cap stock, installed with offset joints and minimum 2-inch (51 mm) joint and end overlap.				
New Construction Or Reroof when existing roof is removed[1]	Minimum 15/32-inch (12 mm) thickness solid or minimum 1x4-inch (19x89 mm) spaced sheathing.	Section 4.1.2 for shingles. Shakes require a minimum 36-inch (914 mm) width ASTM D226 Type II underlayment installed under the beginning eave starter coarse.	FTX and FSR Shingles and Shakes Class B Treatment	See Sections 2.2, 4.1, 4.2, 4.3	Unlimited	B
New Construction Or Reroof when existing roof is removed[1]	Minimum 15/32-inch (12 mm) thickness solid or minimum 1x4-inch (19x89 mm) spaced sheathing.	Section 4.1.2 for shingles. Shakes require a minimum 36-inch (914 mm) width ASTM D226 Type II underlayment installed under the beginning eave starter coarse.	FTX and FSR Shingles and Shakes Class C Treatment	See Sections 2.2, 4.1, 4.2, 4.3	Unlimited	C

Note 1: Installation non-combustible covering and spaced or solid plywood sheathing is to be in accordance with the applicable code for anticipated service loads.
Note 2: Solid or spaced sheathing shall comply with Sections 4.1 to 4.2 of this report. Attachment of sheathing to resist service loads is outside the scope of this report.
Note 3: Installation of the underlayment is to be in accordance with the applicable code, and the manufacturer's published installation instructions.

8.2 Hail Impact Resistant Assemblies:

Table 2 – Impact Rated Assemblies

Substrate	Approved Underlayment	Approved Roof Coverings	Installation Guidelines	Hail-Impact Classification[1]
Minimum 15/32-inch (12 mm) thickness solid or minimum 1x4-inch (19x89 mm) spaced sheathing.	Section 4.1.2	FTX and FSR Shingles and Shakes Class B and Class C Treatments	See Sections 2.2. 4.1, 4.2 and 4.3	Class IV

Note 1: Hail-impact classification determined in accordance with UL 2218.

9.0 SUPPLEMENTAL CODES

9.1 2022 / 2019 California Building Code, 2022 / 2019 California Residential Code:

FTX and FSR treated western cedar shingles and shakes comply with the requirements of Section 1507.8 (shingles) and 1507.9 (shakes) 2022 / 2019 California Building Code and Sections R905.7 (shingles) and R905.8 (shakes) of the 2022 / 2019 California Residential Code for use *wood* shingles and wood shakes as outlined in Sections 2 through 8 of this report.

FTX and FSR treated western cedar shingles and shakes comply with the requirements of Section 1505.6 *fire-retardant-treated Wood Shingles and Shakes of* the 2022 / 2019 California Building Code and Section R902.2 *fire-retardant-treated shingles and shakes* of the 2022 / 2019 California Residential Code for use *wood* shingles and wood shakes as outlined in Sections 2 through 8 of this report.

Where used in areas identified by the state as a *Fire Hazard Severity Zone* or any *Wildland-Urban Interface (WUI)* designated by the enforcing agency, FTX and FSR treated western cedar shingles and shakes are approved for use as fire-retardant treated wood shingles and shakes in accordance with Section 703A.5.2.2 of the 2022 / 2019 CBC referencing *Section 208(c)*, *Title 19 California Code of Regulations*. See California State Office of the Fire Marshall Building Materials listing 4150-1735:0100 and 4150:1735:0101 for use in Class A, Class B, and Class C roof-fire classified assemblies as described in Section 8.1 of this report.

9.2 2021 / 2018 International Wildland-Urban Interface Code (IWUIC)

FTX and FSR Class B treated western cedar shingles and shakes comply with the requirements of 2021 / 2018 IWUIC Section 503.2 *Ignition-resistant building material* item (4), as compliant fire-retardant-treated wood shakes and shingles complying with Section 1505.6 of the 2021 / 2018 / 2015 IBC and classified as Class A roof-fire classified assembly when installed in accordance with Sections 4.4 and 8.1 Table 1 of this report. Installation of FTX and FSR treated western cedar shingles, shakes and roof assembly components are to comply with this report and requirements of the 2021 / 2018 IWUIC based on Ignition Class required.

10.0 MULTIPLE LISTEES

The following manufacturing facilities have been evaluated and approved for FTX and FSR treated western cedar shingles and shakes:

Chemco, Inc.
Ferndale, WA
98248 USA

11.0 ELIGIBILITY OF REPORT

QAI's Code Evaluation Report complies with the 2021 / 2018 / 2015 IBC Section 104.11 *Alternative materials, design and methods of construction and equipment* subsection 104.11.1 *Research Reports*. QAI's Code Evaluation Report complies with the 2024 IBC Section 104.2.3.6.1 *Evaluation Reports*. Supporting data has been evaluated by QAI for compliance of the noted materials and assemblies to the applicable code by QAI, and *approved* source as detailed below.

The attached report has been reviewed by a QAI Registered Professional Engineer approved by the specific state Board of Professional Engineers noted on the specific P.E. seal(s).

Per section 1703 of the IBC, QAI is an independent third-party testing, inspection and certification agency accredited by the International Accreditation Service, Inc. (IAS) for this specific scope (see IAS PCA-118). QAI can confirm that based on its IAS accreditation it meets IBC Section 1703.1 on Independence, Section 1703.1.2 on Equipment and Section 1703.1 on Personnel.

This Evaluation report has been designed to meet the performance requirements of IBC Section 1703.4 and contains the required information to show the product, material or assembly meets the applicable code requirements.

The product is labeled per section IBC 1703 and subject to follow-up inspection per IBC 1703.6 using QAI IAS accredited ISO/IEC 17020 inspection program (see IAS AA-723).

For more information regarding QAI Laboratories, please visit www.qai.org.

The above is an example of the QAI registered Listing mark. The Listing mark may only be used by the Report Holder per the QAI service agreement on products defined in this report. The 'us' indicator in the 4 o'clock position indicates the product complies with the properties evaluated with limitations outlined in this report for use in the US market. A 'c' indicator in the 8 o'clock position indicates the product has been evaluated for use in the Canadian market.

IAS ACCREDITED Product Certification Agency PCA-118

11.0 REFERENCED STANDARDS

ASTM E108 *Standard Test Methods for Fire Tests of Roof Coverings.*
ASTM D2898 *Standard Practice for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing.*
ASTM D226/D226M *Standard Specification for Asphalt=-saturated Organic Felt Used in Roofing and Waterproofing.*
ASTM D1970/D1970M *Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.*
ASTM D3909 *Standard Specification for Asphalt Roll Roofing (Glass Felt) Surfaced with Mineral Granules.*
California State Office of the Fire Marshall Building Materials Listing (BML) 4150-1735:0100.
California State Office of the Fire Marshall Building Materials Listing (BML) 4150-1735:0101.
Title 19, California Code of Regulations, Section 208(c)