ICC-ES Evaluation Report

ESR-5388

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DIVISION: 07 00 00 — THERMAL AND MOISTURE PROTECTION Section: 07 21 00 — Thermal Insulation	REPORT HOLDER: TIMBERHP	EVALUATION SUBJECT: TIMBERBATT THERMAL AND ACOUSTIC INSULATION	

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2021, 2018, and 2015 *International Building Code*® (IBC)
- 2021, 2018, and 2015 *International Residential Code*® (IRC)

Main references of this report are for the 2021 IBC and IRC. See Table 1 for applicable sections of the code for previous IBC and IRC editions.

Property evaluated:

- Physical Properties
- Surface-Burning Characteristics
- Attic and Crawl Space Installation
- Sound Transmission
- Thermal transmission properties
- Fireblocking
- Fire-resistance-rated Wall Assemblies

2.0 USES

TimberBatt Thermal and Acoustic Insulation are used as nonstructural and sound-insulating materials in buildings of any type of construction. The insulation is for use on or within floors, floor-ceiling or roof-ceiling assemblies, attics, crawl spaces, walls, and partitions. The insulation is recognized for use in the sound-transmission class of wall assemblies in accordance with IBC Sections 720 and 1206.

3.0 DESCRIPTION

3.1 General:

TimberBatt Thermal and Acoustic Insulation is an unfaced batt consisting of a uniform low-density mixture of waste wood cellulosic fibers, bi-component fiber binder and borate only fire-retardant chemicals.

TimberBatt thermal and acoustic insulation batts are manufactured in nominal thicknesses varying from 2.0 to 7.25 inches (50.8 and 184.2 mm) and densities ranging from 2.8 ± 5% lbs./ft^3 (44.9 ± 5% kg/m^3) to 3.1 ± 5% lbs./ft^3 (49.7 ± 5% kg/m^3).

3.2 Thermal and Acoustic Insulation:

TimberBatt Thermal and Acoustic Insulation is used as concealed thermal insulation of walls, partitions, and roof-ceiling or floor-ceiling assemblies, or is exposed on horizontal or sloped attic floors.

3.3 Surface Burning Characteristics:

The insulation, at the minimum and maximum density described in Section 3.1, has a flame-spread index (FSI) of 25 or less and a smoke-developed index of 450 or less, when tested in accordance with ASTM E84 at the 5.5-inch-thick (139.7 mm).

3.4 Thermal Resistance Value:

The insulation has a thermal resistance value (R-value) of 14 °F•h•ft^2/Btu (2.46 K•m^2/W) at a 3.5-inch thickness (88.9 mm), a 22 °F•h•ft^2/Btu (3.95 K•m^2/W) at a 5.5-inch thickness (139.7 mm), and a 27 ft^2•h•°F/Btu at a nominal 7.25-inch thickness (184.2 mm) in walls and floor-ceiling assemblies.

3.5 Corrosiveness:

The insulation did not show perforations on the aluminum, copper, or steel specimens when tested for corrosiveness in accordance with ASTM C739, Test Method B.

3.6 Fungi Resistance:

The insulation did not show fungal growth, when tested in accordance with ASTM C1338.

3.7 Moisture Vapor Sorption:

The insulation did not gain more than 15% by weight in moisture, when tested in accordance with ASTM C739.

4.0 DESIGN AND INSTALLATION

4.1 General:

Installation of TimberBatt Thermal and Acoustic Insulation must comply with this report and the manufacturers published installation instructions. The manufacturers published installation instructions must be available at the jobsite during installation.

4.2 Installation:

4.2.1 Thermal Insulation:

The insulation is installed on or within cavities of walls, partitions, or roof-ceiling or floor-ceiling assemblies. The insulation may be applied to horizontal or sloped attic floors.

When installation is above or adjacent to recessed luminaries (lighting fixtures) or other heat-producing elements, a permanent barrier is necessary to maintain a 3-inch (76 mm) clearance between the item and the insulation, unless the recessed luminaire is identified as Type IC and is listed in accordance with the applicable code for direct contact with insulation, or the heat-producing element is listed for zero clearance to combustibles. The installation is limited to areas where the temperature will not exceed 194°F (90°C). The code official may require an approved vapor retarder to be installed in accordance with IBC Section 1404.3 or IRC Section R702.7. Attic ventilation, when required by code, must not be blocked by the installation of the insulation in accordance with IRC R806.3.

4.3 Unvented Attic and Unvented Enclosed Rafter Assemblies:

When installed as an air-permeable insulation, the TimberBatt insulation may be installed directly under the structural roof sheathing in Climate Zone 2B and 3B tile roof only in accordance with IBC Section 1202.3 Item 5.1 and IRC Section R806.5 Item 5.1.

4.4 Attics - Ignition Barrier:

TimberBatt Insulation may be used as an ignition barrier over foam plastic in accordance with IBC Section 2603.4.1.6 and IRC Section R316.5.3, when applied at a minimum thickness of 1½ inches (38.1 mm) and the densities described in Section 3.1.

4.5 Crawl Spaces:

TimberBatt Insulation should not be applied to foundation walls in either vented or unvented crawl spaces. TimberBatt Insulation may be used as floor insulation over a crawl space when a vapor retarder is attached to the bottom of the floor.

4.6 Fire-Resistance Rating Calculated:

The fire-resistance rating of wood-stud walls is increased by 15 minutes when calculating fire-resistance in accordance with IBC Table 722.6.2(5), when the spaces between wood studs are filled with TimberBatt insulation having a nominal density not less than the minimum density described in Section 3.1.

4.7 Fire-resistance-rated Wall Assemblies:

TimberFill TimberBatt insulation described in this report has been evaluated by testing in accordance with ASTM E119 on load-bearing wall assemblies to establish fire-resistance ratings. Refer to ESL-1595 for designs of 1-hour- and two-hour-fire-resistance-rated wall assemblies constructed with either wood-stud or cold-formed steel stud.

4.8 Fireblocking Materials:

The TimberBatt insulation can be used as a fireblocking material in combustible construction in concealed spaces under section 718.2 of the IBC and R302.11 in the IRC.

4.9 Installation in Steel Construction:

The TimberBatt insulation may be used in construction using cold-formed steel framing or any steel construction where the insulation is in contact with steel structural framing or sheathing.

4.10 Sound Transmission:

The following wall assemblies have a Sound Transmission Class (STC) of 50 or greater in accordance with IBC Section 1206.2:

4.10.1 Assembly 1 (STC = 50): A description of the wall assembly from the source side to the receive side is as follows:

- One layer of $^{5}/_{8}$-inch (16 mm) thick Type X gypsum board in accordance with ASTM C1396 and fastened to the resilient channels with boards vertically using 1-inch (25 mm) long Type S bugle head screws.
- Resilient Channels – ½-inch deep by 2½ inch wide by 96¼ inch long (12.7 mm by 64 mm by 2445 mm) pieces; bottom row inverted and installed horizontally at 24 inches (610 mm) on- center from bottom. Top and bottom rows' screw faces 2½ inches (64 mm) on-center. Channels fastened to wood studs with 1¼ inch (32 mm) long Type W bugle head drywall screws.
- 2-by-4 wood studs 16 inches (406 mm) on-center fastened by 3 inch (76 mm) long Type W bugle head drywall screws.
- 3-inch-thick (76 mm) TimberBatt thermal insulation friction fitted into wall cavities.
- One layer of $^{5}/_{8}$-inch (16 mm) thick Type X gypsum board in accordance with ASTM C1396 and fastened to the wood studs with boards vertically using 1¼ -inch (32 mm) long Type S bugle head screws.

4.10.2 Assembly 2 (STC = 55): A description of the wall assembly from the source side to the receive side is as follows:

- One layer of $^{5}/_{8}$-inch (16 mm) thick Type X gypsum board in accordance with ASTM C1396 and fastened to the resilient channels with boards vertically using 1-inch (25 mm) long Type S bugle head screws.
- Resilient Channels – ½-inch deep by 2½ inch wide by 96¼ inch long (12.7 mm by 64 mm by 2445 mm) pieces; bottom row inverted and installed horizontally at 24 inches (610 mm) on- center from bottom. Top and bottom rows' screw faces 2½ inches (64 mm) on-center. Channels fastened to wood studs with 1¼ inch (32 mm) long Type W bugle head drywall screws.
- 2-by-6 wood studs 16 inches (406 mm) on-center fastened by 3 inch (76 mm) long Type W bugle head drywall screws.
- 5.5-inch-thick (140 mm) TimberBatt thermal insulation friction fitted into wall cavities.
- One layer of $^{5}/_{8}$-inch (16 mm) thick Type X gypsum board in accordance with ASTM C1396 and fastened to the wood studs with boards vertically using 1¼ -inch (32 mm) long Type S bugle head screws.

5.0 CONDITIONS OF USE:

The TimberBatt Thermal and Acoustic Insulation 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 Installation must comply with this report, the manufacturer's published installation instruction and the applicable code. In the event of a conflict between the manufacturer's published installation instructions and this report, this report governs.

5.2 This evaluation report and the manufacturer's published installation instructions, when required by the code official, must be submitted at the time of permit application.

5.3 The insulation may be installed in buildings of any type of construction.

5.4 The installer must provide the code official a signed and dated statement describing the type of insulation installed, including thickness, coverage area, R-value and number of bags or pounds of insulation installed.

5.5 The insulation is manufactured under a quality control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

6.1 Data in accordance with the ICC-ES Acceptance Criteria for Natural Fiber Insulation (AC81), dated March 2004 (editorially revised June 2022).

6.2 Reports of thermal resistance tests in accordance with ASTM C518.

6.3 Reports of surface-burning characteristics tests in accordance with ASTM E84.

6.4 Reports of sound transmission tests in accordance with ASTM E90.

6.5 Reports of fire-resistance-rated wall assembly tests in accordance with ASTM E119.

6.6 Quality control documentation.

7.0 IDENTIFICATION

7.1 The ICC-ES mark of conformity, electronic labeling, or the evaluation report number (ICC-ES ESR-5388) along with the name, registered trademark, or registered logo of the report holder must be included in the product label.

7.2 In addition, each package containing the TimberBatt Thermal and Acoustic Insulation described in this report are identified by a stamp bearing the manufacturers name (TimberHP), product name, address of the manufacturing plant, and the date of manufacture. The label must also include the Flame Spread Index (FSI), Smoke Developed Index (SDI) and thermal resistance (R-value) of the product.

7.3 The report holder's contact information is the following:

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TABLE 1—APPLICABLE SECTIONS OF EACH EDITION OF THE IBC AND IRC

IBC		
2021	**2018**	**2015**
720		
IBC Table 722.6.2(5)		
1202.3 Item 5.1		
1206		1207
1206.2		1207.2
1404.3		1405.3
2603.4.1.6		
IRC		
2021	**2018**	**2015**
R316.5.3		
R702.7		
R806.3		
R806.5 Item 5.1		