ICC-ES Evaluation Report

ESR-5203

Reissued September 2024

Revised September 27, 2024

Subject to renewal August 2025

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DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION Section: 07 21 00—Thermal Insulation Section: 07 21 23—Loose Fill Insulation Section: 07 21 26—Blown Insulation	REPORT HOLDER: TIMBERHP BY GOLAB INC.	EVALUATION SUBJECT: TIMBERFILL LOOSE-FILL INSULATION AND DENSE-PACK 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)

Properties evaluated:

- Physical Properties
- Surface-Burning Characteristics
- Attic and crawl space installation
- Sound Transmission
- Thermal Resistance
- Fire-resistance-rated Wall Assemblies
- Fireblocking

2.0 USES

TimberFill Loose-Fill Insulation and Dense-Pack 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 has been evaluated for use in the sound-transmission class of wall assemblies in accordance with IBC Sections 720 and 1206, and for use as fireblocking in accordance with IBC Section 718.2 and IRC Section R302.11.

3.0 DESCRIPTION

3.1 General:

TimberFill Loose-Fill Insulation and Dense-Pack Insulation consist of a uniform low-density mixture of wood-based cellulosic fibers and borate only fire-retardant chemicals. The insulation has a flame-spread index of not more than 25 and a smoke-developed index of not more than 450 when tested in accordance with ASTM E84.

TimberFill Loose-Fill Insulation and Dense-Pack Insulation meet the requirements of CPSC 16 CFR Parts 1209 and 1404, as referenced in IBC Section 720.6 and IRC Section R302.10.3, as applicable.

TimberFill Dense-Pack Insulation, having a minimum density of 3.0 lb/ft^3 (48 kg/m^3), has a thermal resistivity (R-value) of 3.8 °F•ft^2•h/Btu (0.67 K•m^2/W) per one inch (25.4 mm) thick insulation, when tested at a minimum thickness of 6 inches (152 mm) in accordance with ASTM C518.

3.2 Loose-Fill Insulation:

TimberFill Loose-Fill Insulation is used in concealed spaces of walls, partitions, roof-ceiling or floor-ceiling assemblies, or is exposed on horizontal or sloped attic floors. The Loose-Fill insulation is also installed either in concealed spaces or on exposed surfaces at a density from 1.4 to 2.5 lbs/ft^3 (22.4 to 40.0 kg/m^3).

3.3 Dense-Pack Insulation:

The Dense-Pack insulation is used in concealed spaces or exposed surfaces at a density from 3.0 to 4.0 lbs/ft^3 (48.1 to 64.1 kg/m^3).

4.0 DESIGN AND INSTALLATION

4.1 General:

Installation of TimberFill Loose-Fill Insulation and Dense-Pack Insulation must comply with this report and the manufacturer's published installation instructions. The manufacturer's published installation instructions must be available at the jobsite at all times during installation. Installation of the TimberFill insulation must comply with ASTM C1015.

4.2 Installation:

4.2.1 Loose-Fill Insulation:

The TimberFill Loose-Fill Insulation is blown into concealed spaces of walls, partitions, or roof-ceiling or floor-ceiling assemblies; or is exposed on horizontal or sloped attic floors. The insulation is installed into its final position using a pneumatic device. The insulation may be applied to sloped attic floors having a maximum slope of 5:12 (41.7 percent slope). The insulation is installed on attic floors at a nominal density from 1.4 to 2.5 lbs/ft^3 (22.4 to 40.0 kg/m^3).

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, IRC Section R702.7, or IECC Section R402.1.1. Attic ventilation, when required by code, must not be blocked by the installation of the insulation in accordance with IRC R806.3.

4.3 Dense-Pack Installation in Unvented Attic and Unvented Enclosed Rafter Assemblies:

When installed as an air-permeable insulation, the TimberFill Dense-Pack 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 using the Dense-Pack Insulation installation methodology.

4.4 Attics – Ignition Barrier:

TimberFill Dense-Pack 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 a minimum installed density of 3 lbs/ft^3 (43.0 kg.m3).

4.5 Crawl spaces:

TimberFill Dense-Pack Insulation must not be applied to foundation walls in either vented or unvented crawl spaces. TimberFill Insulation may be used as floor insulation over a crawl space when a vapor retarder is attached to the bottom of the floor joists.

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 TimberFill insulation having a nominal density not less than 2.6 pcf (42 kg/m^3).

4.7 Fire-resistance-rated Wall Assemblies:

TimberFill Dense-Pack 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:

TimberFill insulation can be used as a fireblocking material in accordance with IBC Section 718.2 and IRC Section R302.11, when installed in combustible concealed locations in accordance with IBC Section 718.1 and IRC Section R302.11,

4.9 Installation in Steel Construction:

The TimberFill 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 2 ½ inch wide by 96 ¼ 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 2 ½ inches (64 mm) on-center. Channels fastened to wood studs with 1 ¼ inch (32 mm) long Type W bugle head drywall screws.
- Insulation screen – fastened to the source side of wood studs with ½-inch (12.7 mm) crown staples; minimum 3 inches (76 mm) overlap of seams between adjacent pieces.
- 2-by-4 wood studs 16 inches (406 mm) on-center fastened by 3 inch (76 mm) long Type W bugle head drywall screws.
- TimberFill loose-fill insulation blown into wall cavities at a density of 2.42 pcf (38.8 kg/m^3).
- 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 1 ¼ -inch (32 mm) long Type S bugle head screws.

4.10.2 Assembly 2 (STC = 53): 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 2 ½ inch wide by 96 ¼ 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 2 ½ inches (64 mm) on-center. Channels fastened to wood studs with 1 ¼ inch (32 mm) long Type W bugle head drywall screws.
- Insulation screen – fastened to the source side of wood studs with ½-inch (12.7 mm) crown staples; minimum 3 inches (76 mm) overlap of seams between adjacent pieces.
- 2-by-6 wood studs 16 inches (406 mm) on-center fastened by 3 inch (76 mm) long Type W bugle head drywall screws.
- TimberFill loose-fill insulation blown into wall cavities at a density of 2.42 pcf (38.8 kg/m^3).
- 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 1 ¼ -inch (32 mm) long Type S bugle head screws.

5.0 CONDITIONS OF USE:

The TimberFill Loose-Fill Insulation and Dense-Pack 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 instructions 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 The installer must provide the code official a signed and dated statement describing the installed insulation, including thickness, coverage area, and number of bags or pounds (kilograms) of insulation installed.

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

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

6.0 EVIDENCE SUBMITTED

6.1 Manufacturer's published installation instructions and product literature.

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

6.3 Reports of physical property tests in accordance with CPSC 16 CFR, Parts 1209 and 1404 / ASTM C739.

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

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

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

6.7 Quality control documentation.

7.0 IDENTIFICATION

7.1 The ICC-ES mark of conformity, electronic labeling, or the evaluation report number (ICC-ES ESR-5203) 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 TimberFill Loose-Fill Insulation and Dense-Pack Insulation described in this report is identified by a stamp bearing the manufacturer's name (TimberHP), the product name, the address of the manufacturing plant, and the date of manufacture. Additionally, each package of TimberFill Insulation must bear a label with information required by CPSC 16 CFR, Parts 1209 and 1404.

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

TIMBERHP BY GOLAB INC.
POST OFFICE BOX 119
MADISON, MAINE 04950
(207) 715-3636
www.timberhp.com