



ICC-ES Evaluation Report ESR-5203

Issued August 2023

This report is subject to renewal August 2024.

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 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

2.0 USES

TimberFill Loose-Fill 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 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:

TimberFill Loose-Fill 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 and Dense-Pack Insulation meets 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.

3.2 Loose-Fill and Dense-Pack Insulation:

TimberFill Loose-Fill and Dense-Pack Insulation is used in concealed spaces of walls, partitions, and roof-ceiling or floor-ceiling assemblies, or is exposed on horizontal or sloped attic floors. The Dense-Pack insulation is used in concealed spaces at a density from 3.0 to 4.0 lbs/ft³ (48.1 to 64.1 kg/m³) and the Loose-Fill insulation is installed in either concealed spaces or on exposed surfaces at a density from 1.4 to 2.5 lbs/ft³ (22.4 to 40.0 kg/m³).

4.0 DESIGN AND INSTALLATION

4.1 General:

Installation of TimberFill Loose-Fill 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 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/ft³ (22.4 to 40.0 kg/m³).

When installation is above or adjacent to recessed luminaires (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 Unvented Attic and Unvented Enclosed Rafter Assemblies - Dense-Pack Installation:

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

4.4 Attics – Ignition Barrier:

Timberfill 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/ft³ (43.0 kg/m³).

4.5 Crawl spaces:

TimberFill Insulation should 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/m³).

4.7 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.

4.8 Sound Transmission:

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

4.8.1 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/m³).
- 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.

4.8.2 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/m³).
- 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 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 physical property tests in accordance with CPSC 16 CFR, Parts 1209 and 1404 / ASTM C739.
- 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 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 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:

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