



ICC-ES Evaluation Report

Reissued May 2022

ESR-1362

This report is subject to renewal May 2024.

DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION

Section: 07 21 00—Thermal Insulation

REPORT HOLDER:

REFLECTIX INCORPORATED

EVALUATION SUBJECT:

REFLECTIX™ RDB1 INSULATION, REFLECTIX™ HVBB48075 INSULATION AND REFLECTIX™ HVBP INSULATION

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2018, 2015, 2012, 2009 and 2006 *International Building Code*® (IBC)
- 2018, 2015, 2012, 2009 and 2006 *International Residential Code*® (IRC)
- 2018, 2015, 2012, 2009 and 2006 *International Mechanical Code*® (IMC)
- 2018, 2015, 2012, 2009 and 2006 *International Energy Conservation Code*® (IECC)
- 2013 *Abu Dhabi International Building Code* (ADIBC)†

†The ADIBC is based on the 2009 IBC. 2009 IBC code sections referenced in this report are the same sections in the ADIBC.

Properties evaluated:

- Thermal resistance
- Surface-burning characteristics

2.0 USES

RDB1 and HVBP insulations are recognized for use as insulation installed in floors in residential and commercial buildings of any construction type. HVBP and HVBB48075 insulations are recognized for use with metal air ducts in residential and commercial buildings of any construction type. When installed in accordance with this report, Reflectix™ RDB1, HVBB48075 and HVBP insulations provide thermal resistance values (*R*-values) as noted in Section 4.0 and Table 1 or Table 2 of this report.

The RDB1 and HVBP insulations are recognized for installation in 2-by-10-inch (50.8 by 254 mm) wood-framed crawl-space assemblies as indicated in Figure 1.

Reflectix™ HVBP and HVBB48075 insulations are recognized for installation on metal air ducts as indicated in Figures 2 and 3.

3.0 DESCRIPTION

Reflectix™ RDB1, HVBB48075 and HVBP, and Tempshield™ RDB1, HVBB48075 and HVBP, are, respectively, identical products. For purposes of this report, where the name Reflectix™ appears, the attributes described also apply to Tempshield™.

Reflectix™ RDB1 and HVBP are 1/4-inch-thick (6.35 mm), flexible, reflective, bubble-pack-type insulations consisting of seven layers. Two outer layers of metalized surfaces are each bonded to a layer of polyethylene. These outer plies encapsulate two inner layers of bubble-pack encapsulating air with a center layer of polyethylene. Reflectix™ RDB1 and HVBP are available in standard widths of 16, 24, and 48 inches (406, 609, and 1219 mm) and lengths of 25, 50, and 125 feet (7.62, 15.24 and 38.10 m).

Reflectix™ HVBB48075 is a nominally 3/4-inch-thick, flexible, reflective, bubble-pack-type insulation consisting of seven layers. Two outer layers of metalized surfaces are each bonded to a layer of polyethylene. These outer plies encapsulate two inner layers of bubble-pack encapsulating air with a center layer of metalized film. Reflectix™ HVBB48075 is available with a width of 48 inches (1219 mm) and a length of 75 feet (22.9 m). Reflectix™ foil tape is a standard aluminum foil tape with acrylic adhesive backing, sold in 2-inch-wide (50.8 mm) rolls that are 150 feet (3810 mm) long. The tape is used to repair tears and to cover seams in Reflectix™ insulation.

Reflectix™ RDB1, HVBP and HVBB48075 insulations, with a full-length joint seam repaired using Reflectix™ foil tape, have a maximum flame-spread index of 25 or less and maximum smoke-developed index of 50 or less when tested for surface-burning characteristics in accordance with ASTM E84 (UL 723).

4.0 INSTALLATION

4.1 General:

Reflectix™ RDB1 and HVBP insulations may be installed as described in Section 4.2.1. HVBP and HVBB48075 insulations may be installed as described in Section 4.2.2.

The manufacturer's published installation instructions and this report must be strictly adhered to, and a copy of

the instructions must be available at all times on the jobsite during installation. If there are any conflicts between the manufacturer’s published instructions and this report, this report governs.

4.2 Thermal Resistance Assemblies:

4.2.1 Crawl Space Wood Floor Joist Assembly:

Reflectix™ RDB1 or HVBP insulation must be fastened to the midpoint and the bottom of nominally 2-by-10-inch wood floor joists spaced 16 inches (406 mm) on center, using 5/16-inch-long (7.9 mm) corrosion-resistant staples every 4 inches (102 mm). The subfloor is a minimum of 1/2-inch (12.7 mm) plywood. At the sides and ends of the floor, the insulation must be stapled to the top of the rim board and then to the midpoint of the first joist. The second layer of insulation must be stapled to the top of the rim board and then to the bottom of the first joist (see Figure 1). Thermal resistance (R-values) for the assembly shown in Figure 1 are specified in Table 1.

4.2.2 Air Duct Insulation Installed with Spacer:

Reflectix™ HVBB48075 and HVBP insulations are recognized for use on the exterior of metal air ducts installed in areas without high traffic. Nominally 3/4-inch-thick-by-1.5-inch-wide plastic spacers are attached to all four corners of the duct using Reflectix™ tape, with this assembly repeated every 2 feet (610 mm) along the duct’s length. Reflectix™ insulation is installed over the spacers and pulled tight to create a 3/4-inch (19 mm) air space. Joints must be taped using Reflectix™ foil tape. Exposed insulation must have all cut or torn portions repaired with UL181 foil tape, which is listed and labeled in accordance with UL 181A. Thermal resistance (R-values) for the insulated metal duct assemblies shown in Figures 2 and 3 are as specified in Table 2.

5.0 CONDITIONS OF USE

The Reflectix™ RDB1, HVBP and HVBB48075 insulations and the Reflectix™ foil tape described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

- 5.1 This evaluation report and the installation instructions, when required by the code official, must be submitted at the time of permit application.
- 5.2 The insulation must be installed in accordance with the manufacturer’s published installation instructions,

this report and the applicable code. In the event of a conflict between the manufacturer’s published installation instructions and this report, this report governs.

- 5.3 Where installed in floor cavities, Reflectix™ insulation must be separated from the interior of the building by a minimum 15-minute thermal barrier in accordance with the applicable code.
- 5.4 Reflectix™ insulation must not be installed exposed on air ducts in locations subject to high traffic.
- 5.5 Reflectix™ HVBB48075 and HVBP, when used on metal air ducts, must be installed in accordance with this report and the applicable requirements of IMC Chapter 6.
- 5.6 When use is as metal air duct insulation on ducts operating at temperatures exceeding 120°F (49°C), the ducts must be provided with sufficient thermal insulation to limit the insulation’s exposed temperature to 120°F (49°C).

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Reflective Insulation (AC02), dated June 2011 (Editorially revised May 2019).

7.0 IDENTIFICATION

- 7.1 Each package of the insulation is labeled with the name and address of the report holder or additional listee, the flame-spread index, the smoke-developed index, the product name, and the evaluation report number (ESR-1362). RDB1 insulation also has the wording “See ESR-1362 for the thermal resistance (R-value) of the assembly or assemblies.” RDB1 and HVBB48075 insulations are labeled with the thermal resistance (R-value) for use as duct insulation. Each package of Reflectix™ tape is labeled with the Reflectix™ name.
- 7.2 The report holder’s contact information is the following:

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POST OFFICE BOX 108
MARKLEVILLE, INDIANA 46056-0108
(800) 879-3645
www.reflectixinc.com

TABLE 1—R-VALUES FOR REFLECTIX™ ASSEMBLIES³

CONFIGURATION	HEAT FLOW DIRECTION	FIGURE NO.	REFLECTIVE INSULATION MODEL NO.	R-VALUE (hr•ft ² •°F/Btu) (Insulated Cavity)	R-VALUE (hr•ft ² •°F/Btu) (Assembly)	R-VALUE (hr•ft ² •°F/Btu) (Insulated Cavity Plus Bottom RDB1)	R-VALUE (hr•ft ² •°F/Btu) (Insulated Cavity Plus Bottom RDB1 Plus Air Film Resistance)
Horizontal	Down	1	RDB1 or HVBP	13.8 ¹	16.6 ²	16.1 ⁴	20.6 ⁵

For SI: 1 inch = 25.4 mm, 1 hr. • ft.²•°F/Btu = 0.176 m²•K/W.

¹R-values are according to ASTM C1224 for inside surface to inside surface of the test cavity and do not include the plywood subfloor, bottom layer of RDB1 and floor joists.

²R-values are according to ASTM C1363 for outside surface of sheathing to outside surface of bottom layer of RDB1 of the test assembly.

³R-values in Table 1 can be used to contribute to the IECC’s Building Envelope requirements.

⁴R-values are according to ASTM C1363 for the insulated cavity and bottom RDB1.

⁵R-values are according to ASTM C1363 for the insulated cavity, bottom RDB1 and the bottom air film resistance.

TABLE 2—R-VALUES FOR REFLECTIX™ INSULATED METAL AIR DUCT ASSEMBLIES

MODEL NUMBER	FIGURE NUMBER	R-VALUE ¹ (hr•ft ² •°F/Btu)	R-VALUE ² (hr•ft ² •°F/Btu) including air film resistance
HVBP	2	4.7	6.5
HVBB48075	3	6.4	8.0

For SI: 1 hr•ft²•°F/Btu = 0.176 m²•K/W.

¹R-values are according to ASTM C335, when tested at a mean temperature of 75°F (23.9°C), for outside surface of the duct to the outside surface of insulation.

²R-values are according to ASTM C335, when tested at a mean temperature of 75°F (23.9°C), for outside surface of the duct to the outside surface of insulation including the air film resistance.

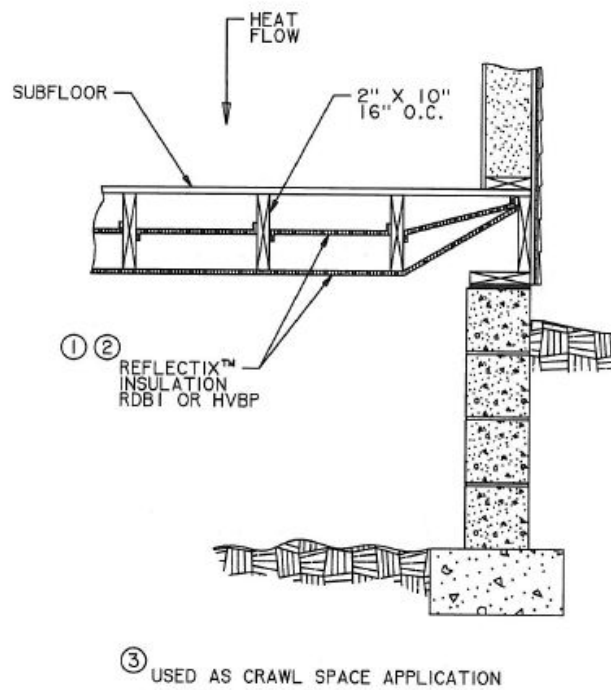


FIGURE 1—TYPICAL CRAWL SPACE APPLICATION

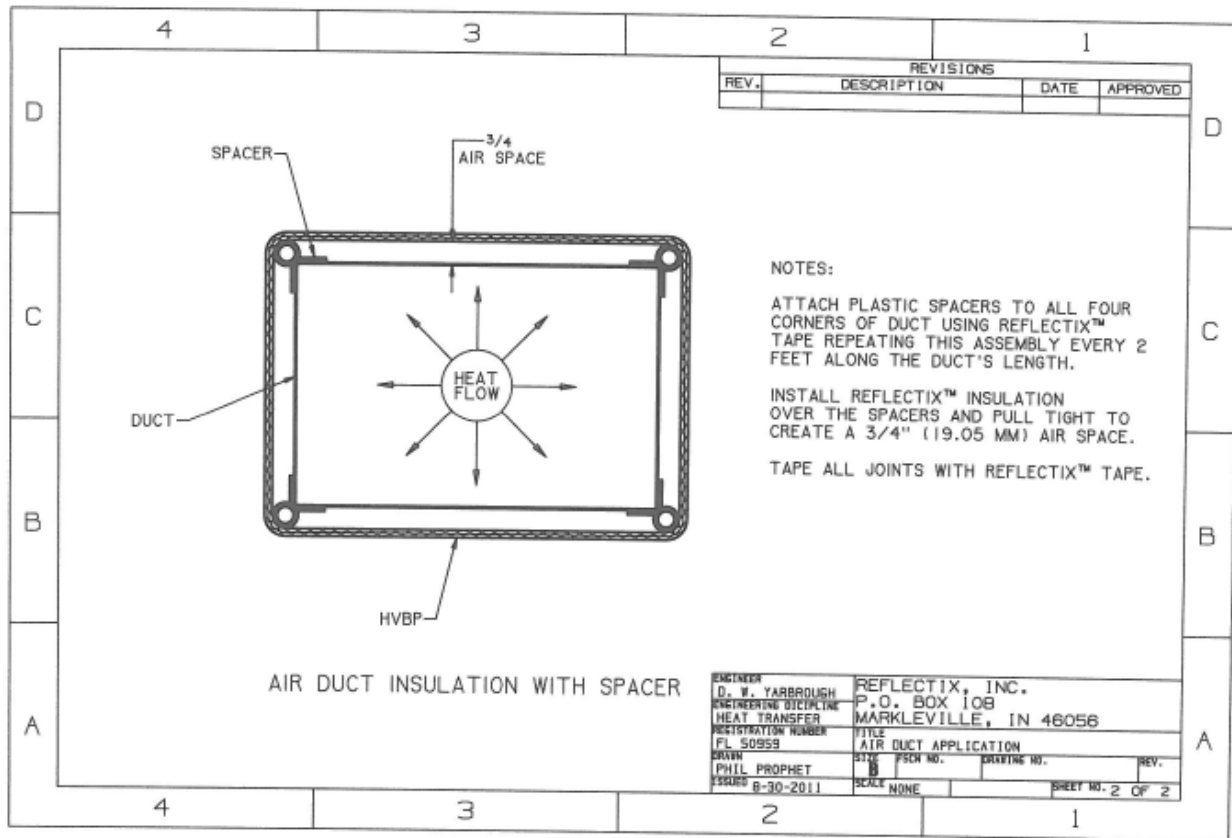


FIGURE 2—TYPICAL METAL AIR DUCT ASSEMBLY – SINGLE LAYER HVBP

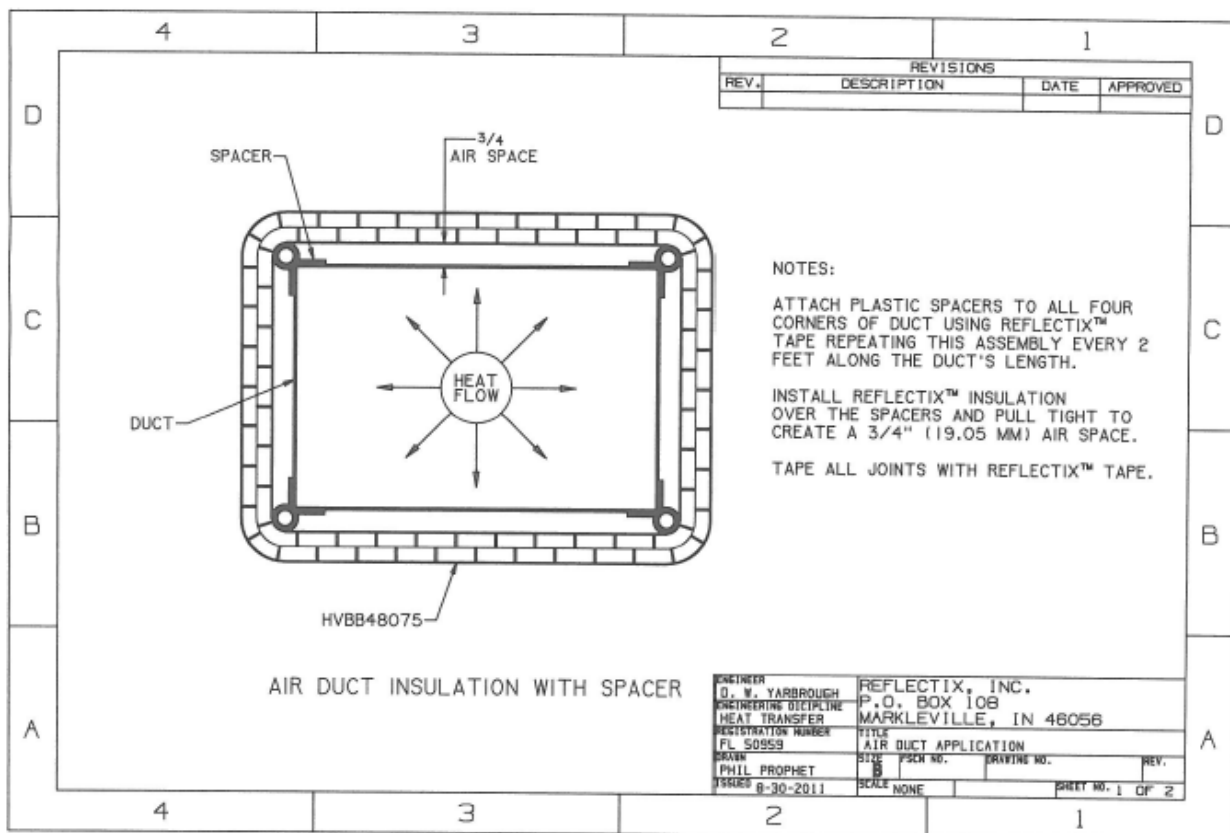


FIGURE 3—TYPICAL METAL AIR DUCT ASSEMBLY – SINGLE LAYER HVBB48075

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1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that the Reflectix™ RDB1 Insulation, Reflectix™ HVBB48075 Insulation and Reflectix™ HVBP Insulation, described in ICC-ES evaluation report ESR-1362, have also been evaluated for the codes noted below.

Applicable code editions:

- 2019 California Building Code (CBC)

For evaluation of applicable chapters adopted by the California Office of Statewide Health Planning and Development (OSHPD) and Division of the State Architect (DSA), see Sections 2.1.1 and 2.1.2 below.

- 2019 California Residential Code (CRC)
- 2019 California Energy Code (CEC)

2.0 CONCLUSIONS

2.1 CBC and CRC:

The Reflectix™ RDB1 Insulation, Reflectix™ HVBB48075 Insulation and Reflectix™ HVBP Insulation, described in Sections 2.0 through 7.0 of the evaluation report ESR-1362, comply with the 2019 CBC and CRC, provided the design and installation are in accordance with the 2018 *International Building Code*® (IBC) and 2018 *International Residential Code*® (IRC) provisions noted in the evaluation report.

The insulation has not been evaluated under CBC Chapter 7A or CRC Section R337, for use in the exterior design and construction of new buildings located in a Fire Hazard Zone within a State Responsibility Area or any Wildland–Urban Interface Fire Area.

2.1.1 OSHPD:

The applicable OSHPD Sections and Chapters of the CBC are beyond the scope of this supplement.

2.1.2 DSA:

The applicable DSA Sections and Chapters of the CBC are beyond the scope of this supplement.

2.2 CEC:

The Reflectix™ RDB1 Insulation, Reflectix™ HVBB48075 Insulation and Reflectix™ HVBP Insulation, described in Sections 2.0 through 7.0 of the evaluation report ESR-1362, comply with the 2019 CEC, provided the design and installation are in accordance with the 2018 *International Building Code*® (IBC) provisions noted in the evaluation report.

2.2.1 Conditions of Use:

In accordance with Section 110.8 of the 2019 California Energy Code, verification of certification by the Department of Consumer Affairs, Bureau of Household Goods and Services, must be provided to the code official, demonstrating that the insulation conductive thermal performance is approved pursuant to the California Code of Regulations, Title 24, Part 12, Chapters 12-13, Article 3, “Standards for Insulating Material.” Certification can be verified with the DCA Bureau of Household Goods and Services using the following link to the bureau’s Directory of Certified Insulation Materials: https://bhgs.dca.ca.gov/consumers/ti_directory.pdf

The insulations have not been evaluated for compliance with the *International Wildland–Urban Interface Code*®.

This supplement expires concurrently with the evaluation report, reissued May 2022.