FI-FOIL®

Technical Data

FI-FOIL® VR PLUS SHIELD™

FI-FOIL® VR Plus Shield™ (VR Plus) is a **Multi-Layer Reflective Wall Insulation** with a **10-Year Transferable Limited Warranty**. An ideal alternative to foam board in climate zones 1-2 and an easy hybrid to improve overall performance when used as part of a hybrid cavity assembly in zones 3-8. VR Plus consists of an outer layer of white kraft paper coated with polyethylene, a layer of natural kraft paper aluminum foil laminate, and a layer of aluminum foil. Upon installation, internal expanders separate the layers creating two reflective air spaces. An additional reflective air space is formed when VR Plus is installed facing a minimium 1-1/2" enclosed air gap in the cavity. The perforated version meets medium permeability standards, allowing vapor transmission for improved wall system resilience in humid climates. Available in staple tab and tape tab versions.

TECHNICAL DATA

VERSION	PERFORATED		SOLID	
CAVITY WIDTH	16"	24"	16"	24"
THERMAL PERFORMANCE[1,2,3]				
ASTM C1224 Thermal Resistance, R-Value 1-1/2" Cavity	6.5	6.5	6.5	6.5
ASTM C1224 Thermal Resistance, R-Value 1-5/8" Cavity	7.1	7.1	7.1	7.1
ASTM C1371 Thermal Emittance	≤0.1	≤0.1	≤0.1	≤0.1
FLAMMABILITY				
ASTM E84 In accordance with E2599[4,5]				
ASTM E84 Flame Spread	<25	<25	<45	<45
ASTM E84 Smoke Developed	<450	<450	<450	<450
STRENGTH & PERFORMANCE				
ASTM E96 Water Vapor Permeance (perms)	8.0	8.0	0.0	0.0
ASTM C1258 Delamination & Corrosion (%)	0.0	0.0	0.0	0.0
ASTM C1338 Fungi Resistance	PASS	PASS	PASS	PASS
ASTM C1224 Pliability	No Cracking	No Cracking	No Cracking	No Cracking
ASTM C1224 Bleeding & Delamination	No Bleeding, No Delamination	No Bleeding, No Delamination	No Bleeding, No Delamination	No Bleeding, No Delamination
VERIFIED RECYCLED CONTENT >20%				
Pre-Consumer	1.5	1.6	1.5	1.6
Post-Consumer	29.6	23.1	29.6	23.1
Total Recycled Content	31.1	24.7	31.1	24.7

1 Tested with Heat Flow Horizontal.
2 R-Values tested in accordance with ASTM C1363; R-values in (ft²·hr·°F/Btu).
3 R-Value may increase in applications with a deeper enclosed cavity air space; contact us for calculations.
4 Tested and recorded in reference to 2024 IBC 720.2.1 Facings. The flame spread and smoke-developed limitations do not apply to facings, coverings, and layers of reflective foil insulation that are installed behind and in substantial contact with the unexposed surface of the ceiling, wall or floor finish.
5 Tested to ASTM E84; verified by Intertek Reports cited below.

COMPLIANCE & VERIFICATION

Compliance with the following codes:

- 2024, 2021 International Building Code (IBC)
- 2024, 2021 International Residential Code (IRC)
- 2024, 2021 International Energy Conservation Code (IECC)
- 2023, 2020 Florida Building Code (IBC)
- 2023, 2020 Florida Residential Code (IRC)
- 2023, 2020 Florida Energy Conservation Code (IECC)

Testing to ASTM C1224 for sections cited, verified by R&D Services, Inc.
Reports: RD241296-R1 Feb 17, 2025; RD241295-R1 May 20, 2025

Testing to ASTM E84 verified by Intertek
Reports: 106099642SAT-001 Feb 14, 2025; 106099642SAT-001A Apr 22, 2025

MADE IN USA
With US & Imported Materials

IAPMO ES Certified ER 0291

ASTM INTERNATIONAL
RIMA International
Verified
US-012-10

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FI-FOIL® Auburndale FL · Carthage MO USA
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2026 Apr

FI-FOIL® VR PLUS COMMON PRODUCTS

Item Number	Description	Width	Length	Coverage	Diameter	Weight
F-VRPLUS16500	VR Plus Wall Insulation Roll - Solid	16”	375’	500 SF	12 in	26 lb
F-VRPLUS16500HP	VR Plus Wall Insulation Roll - Perforated	16”	375’	500 SF	12 in	26 lb
F-VRPLUS16500HPTT	VR Plus Wall Insulation Roll - Perforated Tape Tab	16”	375’	500 SF	12 in	27 lb
F-VRPLUS24500	VR Plus Wall Insulation Roll - Solid	24”	250’	500 SF	10 in	26 lb
F-VRPLUS24500HP	VR Plus Wall Insulation Roll - Perforated	24”	250’	500 SF	10 in	26 lb
F-VRPLUS24500HPTT	VR Plus Wall Insulation Roll - Perforated Tape Tab	24”	250’	500 SF	10 in	28 lb

How Reflective Insulation Works

Unlike traditional thermal insulation, FI-FOIL® uses low-emissive (Low-e) radiant surfaces to **reflect heat rather than absorb it.** The Low-e surface(s) of reflective insulation is designed to face enclosed air cavities or air films across the building envelope to reduce transfer of heat energy across these air spaces, resulting in an overall greater performance of wall and ceiling systems. According to ASHRAE Handbook 26.14-15, reflective insulation can provide 2X the thermal performance of other mass insulation and materials. The reason is that reflective insulation technologies effectively **reduce all three (3) modes of heat transfer**: **conduction** (heat transfer between objects in direct contact), **convection** (the circular flow of heat through air and moisture) and **radiation** (the movement of heat in electromagnetic waves). In hybrid applications, ASTM studies have shown that when a radiant surface is installed facing a small air space in an enclosed cavity, the result is a reduction in convection in the cavity, which in turn reduces conductivity of the other mass insulating material(s) within the cavity. Using a reflective component not only improves performance of air spaces across the envelope when used alone--but also notably improves the thermal performance of other mass insulation when used together with it as a hybrid in these assemblies. This provides superior performance and energy efficiency for more comfortable, sustainable, and resilient buildings.

What You Should Know

READ THIS BEFORE YOU BUY: The R-values for Reflective Insulation are shown in literature and product visualizers across our pages at fifoil.com. ‘R’ means resistance to heat flow. The higher the R-value the greater the insulating power. Compare insulation R-values before you buy including other factors to consider. The amount of insulation needed depends mainly on the climate you live in. Your fuel savings from the insulation will depend upon the climate, the type and size of your building, the amount of insulation already in your building. Other factors include your fuel use patterns, and the number of people living or working in the building. If you buy too much insulation, it will cost you more than what you will save on fuel. To get the marked R-value, it is essential that the insulation be installed properly.

CAUTION: Do not install this insulation in an area where it will or could be exposed to exterior elements including, but not limited to, direct sunlight, water, moisture, and/or intense heat. Do not install this insulation in open-air buildings such as structures having no side walls or partial side walls. The building should have four sides. This insulation *can be* installed in buildings with operable garage doors, other doors, and windows provided that the building is otherwise enclosed. If you have any questions about the application, please contact your regional sales manager or call our corporate office at 800.448.3401.