Code Compliance Research Report
CCRR-1066

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DIVISION: 07 00 00 – THERMAL AND MOISTURE PROTECTION
Section: 07 21 00 – Thermal Insulation

REPORT HOLDER:
Kingspan Insulation, LLC
6120 Powers Ferry Road NW, Suite 350
Atlanta, GA 30339
(800) 241-4402
www.kingspaninsulation.us

REPORT SUBJECT:
Kooltherm® Insulation Boards

1.0 SCOPE OF EVALUATION

1.1 This Research Report addresses compliance with the following Codes:

- 2024, 2021, 2018 *International Building Code* (IBC)
- 2024, 2021, 2018 *International Residential Code* (IRC)
- 2024, 2021, 2018 *International Energy Conservation Code* (IECC)

1.2 Kooltherm® Insulation Boards have been evaluated for the following properties:

- Physical properties
- Surface-burning characteristics
- Thermal resistance
- Air permeance

See Table 1 for applicable Code sections related to these properties.

NOTE: This report references the most recent Code edition cited. Section numbers from earlier editions of the Code may differ.

1.3 Kooltherm® Insulation Boards have been evaluated for use as non-structural thermal insulation in ceiling, floor assemblies, and door cavities in all Types of construction. In walls, the insulation boards are limited to Type V construction except as noted in Section 6.4 for use in Types I, II, III, and IV construction.

The insulation boards may be used as an air barrier material in accordance with IECC Section C402.5.1.

2.0 STATEMENT OF COMPLIANCE

Kooltherm® Insulation Boards comply with the Codes listed in Section 1.1, for the properties stated in Section 1.2, and uses stated in Section 1.3, when installed as described in this report, including the Conditions of Use stated in Section 6.0.

3.0 DESCRIPTION

3.1 General: Kooltherm® Insulation Boards are phenolic foam core insulation boards with foil or glass facers on both surfaces. See Table 4 for product descriptions.

The Kooltherm® K15, K8, K7, K12, K10, K20, K5, and K9 Insulation Boards have a nominal core density of 2.0 lb/ft^3 and thicknesses ranging from 25mm to 100mm, and the foam plastic core is grey-mauve in color.

The K108 RF, K110, K120 and K122 Insulation Boards have a nominal core density of 2.4 lb/ft^3, a thickness ranging from 40 to 100mm, and the foam plastic core is grey-mauve in color.

4.0 PERFORMANCE CHARACTERISTICS:

4.1 Surface Burning Characteristics: Kooltherm® Insulation Boards have a flame spread index of 25 or less and a smoke developed index of 450 or less when tested in accordance with UL 723 (ASTM E84).

4.2 Thermal Resistance: Kooltherm® Insulation Boards have thermal resistance values as listed in Table 2.

4.3 Air Permeability: Kooltherm® Insulation Boards have an air leakage rate as listed in Table 3, based on testing in accordance with ASTM E2178.

5.0 INSTALLATION

5.1 General: Kooltherm® Insulation Boards must be installed in accordance with the manufacturer's published installation instructions, the applicable Code, and this Research Report. The manufacturer's published installation instructions and this Research Report must be strictly adhered to, and a copy of the instructions must be available on the jobsite during installation.

Kooltherm® Insulation Boards must be separated from the interior of the building by a thermal barrier complying with IBC Section 2603.4 or IRC Section R303.4 as applicable.

Where the insulation boards are installed without a thermal or ignition barrier, justification complying with IBC Section 2603.9 or IRC Section R303.6 must be provided to the Code Official.

6.0 CONDITIONS OF USE

6.1 Installation must comply with this Research Report, the manufacturer's published installation instructions, and the applicable Code. In the event of a conflict between the manufacturer's instructions and this report, this report governs.

6.2 Exterior walls must have weather protection complying with Section 1402.2 or must be protected by a water-resistive barrier complying with IBC Section 1403.2 or IRC Section R703.2, and by wall coverings that provide the necessary structural wind and seismic resistance.

6.3 Insulation boards must not be used as a nailing base for siding materials. All fasteners must penetrate through the insulation into the existing wall framing or structural sheathing as required by the wall covering manufacturer's instructions or the applicable Code.

6.4 When used in walls of Types I, II, III, or IV construction, data showing compliance with the applicable requirements of IBC Section 2603.5 must be submitted to the Authority Having Jurisdiction.

6.5 Kooltherm® Insulation Boards are manufactured in Pembridge, Leominster, Herefordshire, UK, and Castleblayney, County Monaghan, Ireland under a quality control program with inspections by Intertek Testing Services NA, Inc.

7.0 SUPPORTING EVIDENCE

7.1 Reports of tests in accordance with ASTM C1126-15, ASTM E2178-13, and UL 723 (2013).

7.2 Data in accordance with the ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC12), dated June 2015 (editorially revised May 2016).

7.3 Intertek Listing Report "Kingspan - Kooltherm® Phenolic Insulation Boards".

8.0 IDENTIFICATION

Kooltherm® Insulation Boards are identified on the packaging by a marking bearing the report holder's name (Kingspan), the product name, the manufacturing location, the Intertek Mark, the Code Compliance Research Report number (CCRR-1066), thermal resistance value, flame spread index, and smoke developed index.

9.0 OTHER CODES

This section does not apply.

10.0 CODE COMPLIANCE RESEARCH REPORT USE

10.1 Approval of building products and/or materials can only be granted by a building official having legal authority in the specific jurisdiction where approval is sought.

10.2 Code Compliance Research Reports shall not be used in any manner that implies an endorsement of the product by Intertek.

10.3 Reference to the Intertek Directory of Building Products at https://bpdirectory.intertek.com is recommended to ascertain the current version and status of this report.

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TABLE 1 – PROPERTIES EVALUATED

PROPERTY	2024 IBC SECTION[1]	2024 IRC SECTION[1]	2024 IECC SECTION[1]
Physical Properties	NA	NA	NA
Surface Burning Characteristics	2603.3	R303.3	NA
Thermal Resistance	1301	N1101.10, N1102	C303.1.1, C303.1.4, R303.1.1, R303.1.4
Air Permeance	NA	NA	C402.5.1

[1] Section numbers in earlier versions of the Codes may differ

TABLE 2 – THERMAL RESISTANCE

Kooltherm® Product	Product Thickness (mm)	R-VALUE/Inch @ 75°F Mean Temperature ($ft^2 \cdot h \cdot {}^oF/BTU/in.$)
K15, K8, K7, K12	25mm-100mm	6.8
K10	25mm-100mm	7.0
K20, K5, K9, K3	25mm-100mm	7.4
K110	40mm – 100mm	8.1
K120	40m - 100mm	8.3
K122, K108 RF	40mm – 100mm	7.6

TABLE 3 – AIR PERMEANCE RATING

Kooltherm® Product	Minimum Product Thickness (mm)	Air Leakage ($L/s/m^2$)
K15, K8, K7, K12	25mm	< 0.02
K10	25mm	< 0.02
K20, K5, K9, K3	25mm	< 0.02
K110	40mm	< 0.02
K120	40mm	< 0.02
K122, K108 RF	40mm	< 0.02

TABLE 4 – PRODUCT DESCRIPTIONS

Kooltherm Product	Facers	Product Description
K15	Foil-foil	Rainscreen Board
K8	Foil-foil	Cavity Board
K12	Foil-foil	Framing Board
K7	Foil-foil	Pitched Roof Board
K10	Foil-tissue	Soffit Board
K20	Tissue-tissue	Tilt-up Concrete Board
K5	Tissue-tissue	External Wall Board
K9	Tissue-tissue	Internal Wall Board
K3	Tissue-tissue	Floor Board
K120	Tissue-tissue	Tilt-up Concrete Board **and Internal Insulation Board**
K122	Foil-foil	Rainscreen Board
K108	Foil-foil	Cavity Board
K110	Foil tissue	**Soffit Board and Continuous Insulation Board**

All products are available in 25 to 100mm thicknesses except the K100 series, which are available in 40 to 100mm thicknesses.