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
2100 Riveredge Parkway, Suite 175
Atlanta, GA 30328
(800) 241-4402
www.kingspaninsulation.us

REPORT SUBJECT:
Kooltherm® Insulation Boards:
K15 Rainscreen Board
K8 Cavity Board
K7 Pitched Roof BoardK12 Framing Board
K10 FM Soffit Board
K20 Tilt Up Concrete Board
K5 External Wall Board
K3 Floor Board

1.0 SCOPE OF EVALUATION

This Research Report addresses compliance with the following Codes:

- 2018, 2015 and 2012 *International Building Code* (IBC)
- 2018, 2015 and 2012 *International Residential Code* (IRC)
- 2018, 2015 and 2012 *International Energy Conservation Code* (IECC)

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 2018 Code sections. Section number from earlier versions of the code may differ.

2.0 USES

Kooltherm® Insulation Boards are used for non-structural thermal insulation in ceiling and floor assemblies, and door cavities in all Types of construction. In wall assemblies, the insulation boards are limited to Type V construction, except when used on exterior walls of one-story buildings complying with IBC Section 2603.4.1.4.

The insulation boards may be used as an air barrier material in accordance with IECC Section C402.5.1.2.1.

3.0 DESCRIPTION

3.1 General:

Kooltherm® K15, K8, K7, and K12 Insulation Boards are phenolic foam core insulation boards with composite foil facers on both surfaces.

Kooltherm® K10 Insulation Boards are phenolic foam core insulation boards with a glass-tissue-based facing on the back surface and a composite foil facer on the exterior surface.

Kooltherm® K20, K5, and K3 Insulation Boards are phenolic foam core insulation boards with a glass-tissue-based facing on both surfaces.

The Kooltherm® Insulation Boards recognized in this report have a nominal core density of 2.0 lb/ft^3, and thicknesses ranging from 25mm to 75mm.

3.2 Performance Characteristics:

3.2.1 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)

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

3.2.3 Air Permeability: Kooltherm® Insulation Boards have an air leakage rate as listed in Table 3 when tested in accordance with ASTM E2178.

4.0 INSTALLATION

4.1 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 R316.4 as applicable.

5.0 CONDITIONS OF USE

The Kooltherm® Insulation Boards described in this Research Report comply with, or are suitable alternatives to, what is specified in those Codes listed in Sections 1.0 and 2.0 of this report, subject to the following conditions:

5.1 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.

5.2 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.

5.3 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.

5.4 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.

6.0 SUPPORTING EVIDENCE

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

6.2 Data in accordance with the ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC12), dated June 2012 (revised January 2015).

6.3 Intertek Listing Report "Kingspan - Kooltherm Phenolic Insulation Boards".

7.0 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.

8.0 OTHER CODES

This section does not apply.

9.0 CODE COMPLIANCE RESEARCH REPORT USE

9.1 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.

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

9.3 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.

TABLE 1 – PROPERTIES EVALUATED

PROPERTY	IBC SECTION[1]	IRC SECTION[1]	IECC SECTION[1]
Physical properties	NA	NA	NA
Surface burning characteristics	2603.3	R316.3	NA
Thermal resistance	1301	N1101.10 [N1101.12], N1102	C303.1.1, C303.1.4, R303.1.1, R303.1.4
Air Permeance	NA	NA	C402.5.1.2.1

[1] Section numbers in parentheses refer to the 2012 Code if different

TABLE 2 – THERMAL RESISTANCE

Kooltherm® Product	Product Thickness (mm)	R-VALUE (RSI) @ 75°F (24°C) Mean Temperature
K15, K8, K7, and K12	25mm	**6.3** ft^2▪h▪^{o}F/BTU
	75mm	**23.8** ft2▪h▪^{o}F/BTU
K10	25mm	**6.4** ft2▪h▪^{o}F/BTU
	75mm	**24.5** ft^2▪h▪^{o}F/BTU
K20, K5, and K3	25mm	**6.6** ft^2▪h▪^{o}F/BTU
	75mm	**24.9** ft^2▪h▪^{o}F/BTU

TABLE 3 – AIR PERMEANCE RATING

Kooltherm® Product	Minimum Product Thickness (mm)	Air Leakage (L/s/m^2)
K15, K8, K7, and K12	25mm	< 0.02
K10	25mm	< 0.02
K20, K5, K3	25mm	< 0.02