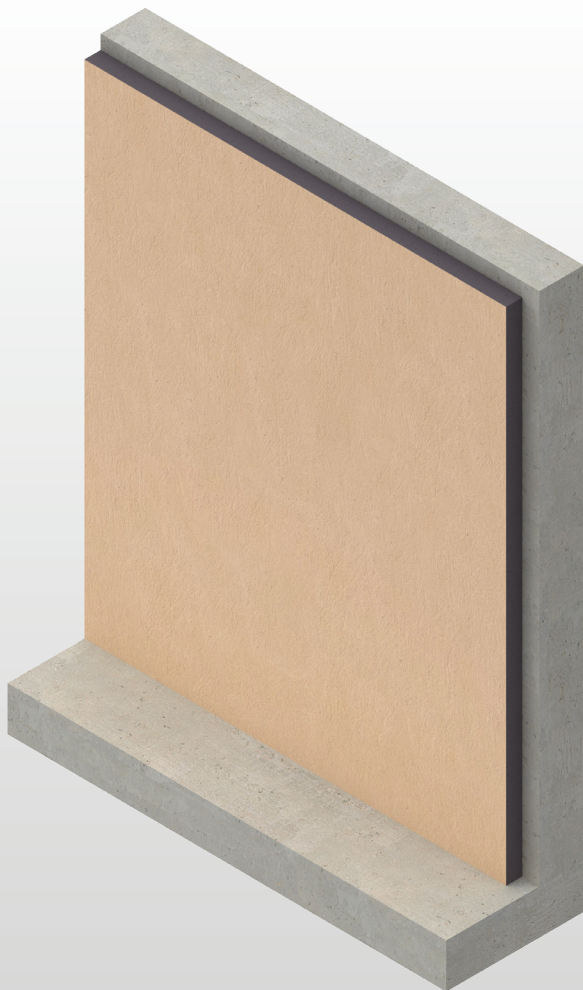




Kooltherm® K9 Internal Insulation Board

INTERNAL INSULATION FOR BASEMENT / CRAWL SPACE / ATTIC WALL APPLICATIONS



- Premium performance rigid thermoset insulation
- R-value of 17 on 2 in
- Higher R-value per inch than any commonly used insulation
- Negligible smoke developed
- ASTM E 84 rating of 5/5 (flame/smoke)
- Unaffected by air infiltration
- NFPA 286 compliant for exposed internal applications
- Easy to handle and install
- Manufactured with a blowing agent that has zero ODP, low GWP, HCFC and CFC free

Fiber-free
Core


Kingspan®

*Low Energy –
Low Carbon Buildings*

Typical Constructions

Introduction

Kingspan Kooltherm® K9 Internal Insulation Board is a premium performance insulation product, used for interior exposed application on basement, crawlspace, attic and habitable space walls.

Interior Application

K9 Insulation Applied Direct to Interior Space Concrete Wall

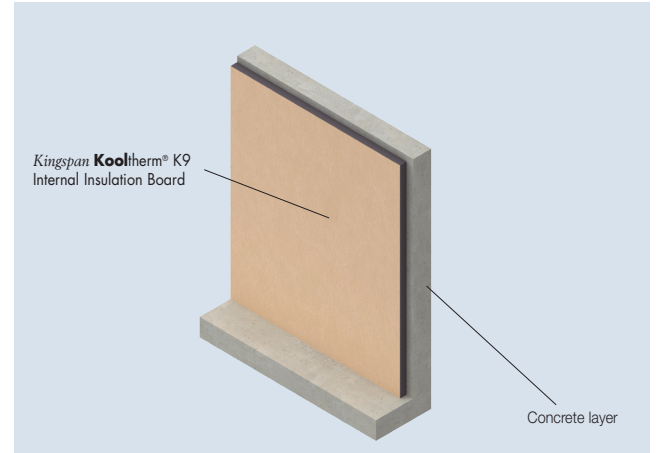


Figure 1

K9 Insulation Applied Direct to Interior Space Concrete Wall with Stud Wall

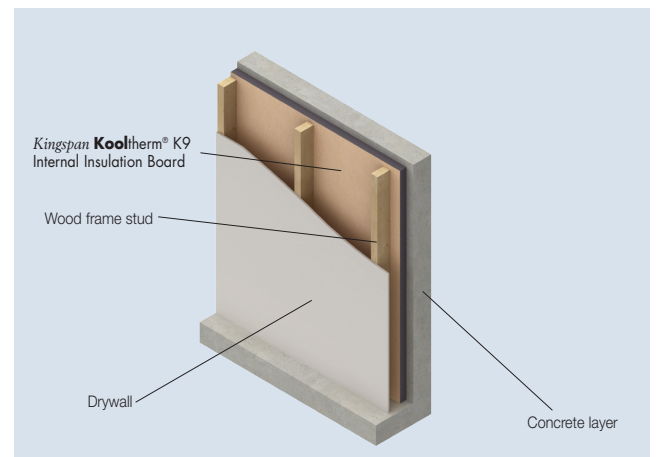


Figure 2

K9 Insulation Applied Direct to Interior Space Concrete Wall with Exterior XPS Insulation

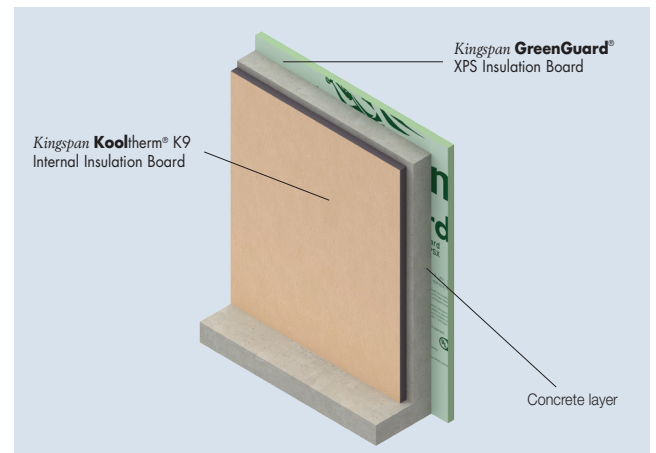


Figure 3

K9 Insulation Applied Direct to Interior Space Concrete Wall with Stud Wall and Exterior XPS Insulation

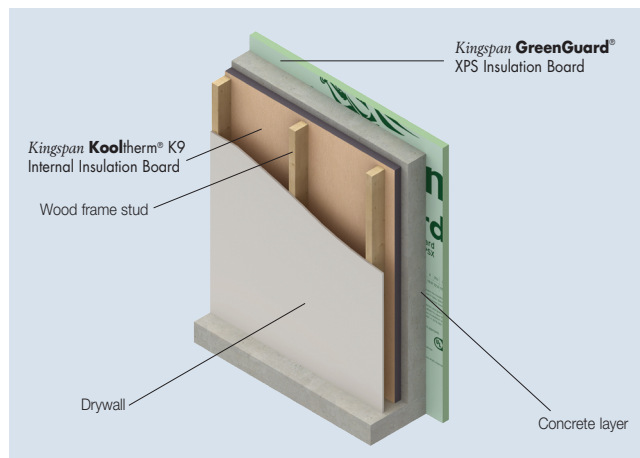


Figure 4

The Facings

Kingspan Kooltherm[®] K9 Internal Insulation Board has a glass tissue based facing, adhesively bonded to the insulation core during manufacture.

The Core

The core of *Kingspan Kooltherm*[®] K9 Internal Insulation Board is a premium performance rigid thermoset fiber-free phenolic insulant manufactured with a blowing agent that has zero Ozone Depletion Potential (ODP) and low Global Warming Potential (GWP).



Standard Dimensions

Kingspan Kooltherm[®] K9 Internal Insulation Board is available in the following standard size(s):

Nominal Dimension	Availability	
	(in)	(mm)
Width	47.244	1,200
Length	89.370	2,270
Insulant Thickness	Refer to Product Data table	
Custom length available	Made to order	

Standards and Approvals

Kingspan Kooltherm[®] K9 Internal Insulation Board is manufactured to the highest standards under a management system certified to ISO 9001: 2008 (Quality Management Systems. Requirements), ISO 14001: 2004 (Environmental Management Systems. Requirements), OHSAS 18001:2007 (Occupational Health & Safety Management Systems. Requirements), and CCRR 1066.

Durability

If correctly installed, *Kingspan Kooltherm*[®] K9 Internal Insulation Board can have an indefinite life. Its durability depends on the supporting structure and the conditions of its use.

Resistance to Solvents, Fungi & Pests

The insulation core is resistant to short-term contact with petroleum and with most dilute acids, alkalis and mineral oils. However, it is recommended that any spills be cleaned off fully before the boards are installed. Ensure that safe methods of cleaning are used, as recommended by the suppliers of the spilt liquid. The insulation core is not resistant to some solvent-based adhesive systems, particularly those containing methyl ethyl ketone. Adhesives containing such solvents should not be used in association with this product. Damaged boards or boards that have been in contact with harsh solvents or acids should not be used.

The insulation core and facings used in the manufacture of *Kingspan Kooltherm*[®] K9 Internal Insulation Board resist attack by mold and microbial growth, and do not provide any food value to pests.

Product Data

Property	Test Method	Result
Nominal Thickness (in / mm)		Stock*
		1.57 in / 40 mm
		1.97 in / 50 mm
		2.36 in / 60 mm
		2.95 in / 75 mm
		3.94 in / 100 mm
Standard Dimensions		
	Width (in / mm)	47.244 / 1,200
Length (in / mm)		89.370 / 2,270
Compressive Strength, Min. (psi)	ASTM D1621	17.5
Water Absorption, Max. (% by volume)	ASTM C209	1.21
Density, Min. (lb/ft ³)	ASTM D1622	2.0
Closed Cell Content (% of cells closed)	ASTM D6226	94.67
Air Permeance (L/S/m ² / (cfm/ft ²))	ASTM E2178	0.001 / 0.000
Water Vapor Permeance, Max. (perm) ¹	ASTM E96	0.79

¹ Permeance shown is for 25mm thick board. Permeance typically decreases as board thickness increases.

* Contact Kingspan Insulation for available non-stock sizes

Fire Performance

The *Kingspan Kooltherm*® K9 Internal Insulation Board, when subjected to the ASTM E 84/UL 723 (Standard Test Method for Surface Burning Characteristics of Building Materials) has achieved the below results.

Flame Spread	Smoke Developed
5	5

Kingspan Kooltherm® K9 Internal Insulation Board can be left exposed without a thermal or ignition barrier on the walls or ceilings of interior habitable spaces, basements, crawlspaces and attics. This application is in compliance with the International Building Code (IBC) and the International Residential Code (IRC) through testing to the NFPA 286 (Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth). *Kingspan Kooltherm*® K9 Internal Insulation Board can be installed up to a maximum thickness of 75mm (3-inches) in exposed applications.

It is important to note, while it can be left exposed on walls or ceilings, it cannot be installed on both walls and ceilings in the same application. For more information regarding the exposed application of Kooltherm Insulation Board please see our Dr.J Engineering Technical Evaluation Report Certification on the *Kingspan Kooltherm*® K9 website at the link below. Scroll down to the drop down box titled “Code Compliance” and click on the document titled “Technical Evaluation Report 1601-07 NFPA 286-Kooltherm Insulation Board”:

<http://bit.ly/1601-07-NFPA-K9>

Further details of the fire performance of Kingspan Insulation products may be obtained from Kingspan Insulation.

Thermal Resistance

The R-values detailed below are quoted in accordance with ASTM C518 (Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus).

Thermal resistance (R-value) varies with thickness and is calculated by dividing the thickness of the board.

Insulant Thickness		Thermal Resistance
(in)	(mm)	(R-value)
1.18	30	10.0
1.57	40 •	13.5
1.97	50 •	16.5
2.36	60 •	20.0
2.76	70	23.5
2.95	75 •	25.0
3.15	80	26.5
3.54	90	30.0
3.94	100 •	33.5

• Stocked Items



Design Considerations

Sustainability & Responsibility

Kingspan Insulation has a long-term commitment to sustainability and responsibility.

A report covering the sustainability and responsibility of Kingspan Insulation Ltd's British operations is available at www.kingspaninsulation.co.uk/sustainabilityandresponsibility.

Specification Clause

Kingspan Kooltherm® K9 Internal Insulation Board should be described in specifications as:

The wall insulation shall be *Kingspan Kooltherm*® K9 Internal Insulation Board ____ mm thick: comprising a premium performance rigid thermoset insulation core faced on both sides with a glass tissue based facing. The product shall be manufactured: with a blowing agent that has zero Ozone Depletion Potential (ODP) and low Global Warming Potential (GWP); under a management system certified to ISO 9001: 2008, ISO 14001: 2004, BS / I.S. OHSAS 18001: 2007 and ISO 50001; by Kingspan Insulation Limited; and installed in accordance with the instructions issued by them.

Sitework

General

Cutting

- Cutting should be carried out either by using a fine toothed saw, or by scoring with a sharp knife, snapping the board over a straight edge and then cutting the facing on the other side.
- Ensure accurate trimming to achieve close butting joints and continuity of insulation.

Daily Working Practice

- At the completion of each day's work, or whenever work is interrupted for extended periods of time, board edges and joints should be protected from inclement weather.

Packaging and Storage

- The polyethylene packaging of Kingspan Insulation products, which is recyclable, should not be considered adequate for outdoor protection.
- Ideally, boards should be stored inside a building. If, however, outside storage cannot be avoided, then the boards should be stacked clear of the ground and covered with an opaque polyethylene sheet or weatherproof tarp. Boards that have been allowed to get wet should not be used.

Health and Safety

- Kingspan Insulation products are chemically inert and safe to use.
- A Safety Data Sheet for this product is available from the Kingspan Insulation website www.kingspaninsulation.us

Warning – do not stand on or otherwise support your weight on this product unless it is fully supported by a load bearing surface.

Fastening Directly to Foundation Interiors

- Insulation boards should be installed with joints tightly butted.
- A minimum of 4 mechanical fasteners, with a minimum head diameter of 1 3/8 in, are required to secure the insulation board to the foundation. Alternatively, insulation adhesive can be used to adhere the board to the foundation wall.**
- Insulation boards can also be fitted by a shot fired fastening method which can result in significantly faster installation times. All of the guidance above still applies.

For details on fasteners refer to:

EJOT 262-612-3550

www.ejot-usa.com

SFS Intec 610-376-5751

www.sfsintec.ca

Rodenhouse Fastening Systems 616-454-3100

www.rodenhouse-inc.com/kingspan-kooltherm

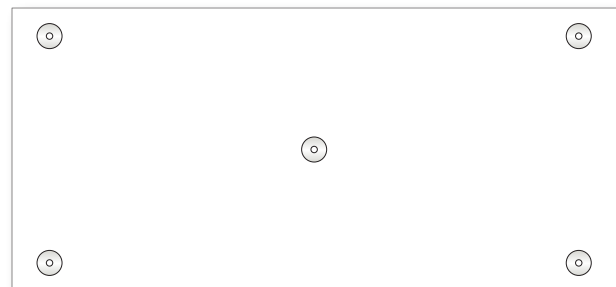
Recommended Fastening Pattern

- The images below show the recommended fastening pattern and the number of fasteners used. Can be installed vertically or horizontally depending on wall dimensions.

** See Technical Bulletin TB11.



4 Fasteners Per Board



5 Fasteners Per Board

Kingspan Insulation

Company Details

Kingspan Insulation LLC is part of the Kingspan Group plc., one of Europe's leading construction product manufacturers. The Kingspan Group was formed in the late 1960s and is a publicly traded group of companies headquartered in Kingscourt, County Cavan, Ireland.

Kingspan Insulation LLC, headquartered in Atlanta, GA, is a leading manufacturer in energy efficiency and moisture management products, offering high performance insulation, building wraps and pre-insulated HVAC ductwork.

Products & Applications

Kingspan Insulation LLC has a vast product range that includes optimum, premium and high performance rigid insulation products and moisture management products.

Kingspan Insulation LLC products are suitable for both new build and renovation in a variety of applications within both residential and non-residential buildings.

Insulation for:

- Flat Roofs (XPS & VIP)
- Green Roofs (XPS & VIP)
- Cavity Walls
- Solid Walls
- Wood and Steel Framing
- Insulated Cladding Systems
- Insulated Render Systems
- Below Grade
- Basement Walls
- Floors
- Soffits
- Ductwork

Further Solutions:

- *Kingspan* **Kooltherm**® Cavity Closer
- *Kingspan* **KoolDuct**® Pre-Insulated Ducting
- *Kingspan* **GreenGuard**® Building Wraps

Insulation Product Benefits

Product Overview

Kingspan **OPTIM-R**® Vacuum Insulation Panel (VIP)

- With an aged R-value of 28 per inch, these products provide an insulating performance that is up to five times better than other commonly available insulation materials.
- Provides high levels of thermal efficiency with minimal thickness.
- Over 90% recyclable (by weight).

Kingspan **Kooltherm**® K-range Products

- Higher R-value per inch than any commonly used insulation.
- Each product achieves the required fire performance for its intended application.
- Manufactured with a blowing agent that has zero ODP, low GWP, HCFC and CFC free.

Kingspan **GreenGuard**® Product Line

- Rigid extruded polystyrene insulation (XPS) for use as general purpose insulation for roofing, wall and foundation applications requiring a minimum compressive strength.
- R-value of 5.0 per inch of thickness.
- Continuous Insulation (Ci) for above grade walls, as well as below grade walls and floors.
- Provides an extra barrier against moisture infiltration.
- Each product achieves the required fire performance for its intended application.

All Products

- Unaffected by air infiltration – a problem that can be experienced with mineral fiber and which can reduce thermal performance.
- Safe and easy to install.
- If installed correctly, can provide reliable long term thermal performance over the lifetime of the building.

Contact Details

Sales and Technical Support

Tel 1 800 241 4402

Fax 1 678 589 7325

email info@kingspaninsulation.us

website www.kingspaninsulation.us

Kingspan Insulation LLC believes the information and recommendations herein to be accurate and reliable. However, since use conditions are not within its control, Kingspan Insulation LLC does not guarantee results from use of such products or other information herein and disclaims all liability from any resulting damage or loss. No warranty, express or implied, is given as to the merchantability, fitness for particular purpose, or otherwise with respect to the products referred to.

For more information on specific building product recommendations and product data, contact your Kingspan Insulation LLC representative.

For the most current installation guidelines and compliance information go to www.kingspaninsulation.us.



Kingspan Insulation LLC

2100 RiverEdge Parkway, Suite 175, Atlanta, Georgia 30328

info@kingspaninsulation.us

1-800-241-4402

www.kingspaninsulation.us

® Kingspan, the G Device and the Lion Device are Registered Trademarks of the Kingspan Group plc in the US, Canada and other countries. All rights reserved.

® GreenGuard, Kooltherm, KoolDuct and OPTIM-R are Registered Trademarks of the Kingspan Group plc in the US. All rights reserved.