

OPTIM-R®

Next Generation Insulation Solutions with Next Generation High R-values



OPTIM-R®

Next Generation Insulation Solutions

Description

Kingspan OPTIM-R® is an optimum performance next generation insulation solution from Kingspan Insulation.

Kingspan OPTIM-R® comprises a rigid vacuum insulation panel with a microporous core which is evacuated, encased and sealed in a thin, gas-tight envelope, giving an outstanding thermal resistance, with the thinnest possible solution to insulation problems.

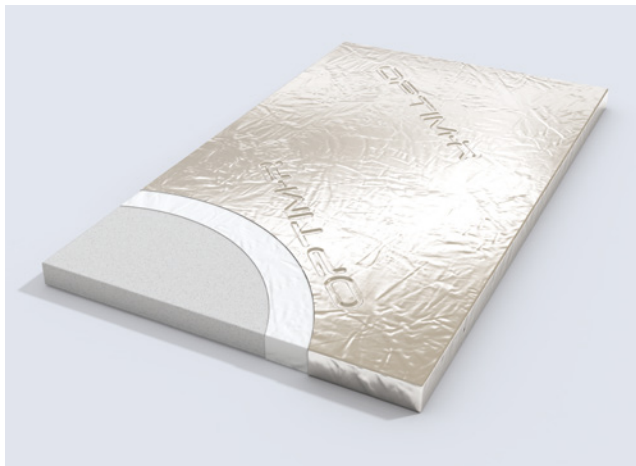


Figure 1: Kingspan OPTIM-R®

General

The Kingspan OPTIM-R® is an optimum performance next generation insulation solution from Kingspan Insulation. It comprises of rigid vacuum insulation panels with a micro-porous core which is evacuated, encased and sealed in a thin, gas-tight envelope, giving outstanding thermal resistance, with the thinnest possible solution to insulation problems. The vacuum insulation panels are accompanied with insulation infill panels which can be cut to fit around problem areas such as sky lights or other roofing penetrations.

In retrofit applications Kingspan OPTIM-R® provides solutions for areas that previously would have remained un-insulated because of insufficient space available.

In new construction Kingspan OPTIM-R® can significantly enhance U-values / R-values in areas that would otherwise be accepted as diminishing the overall thermal performance.

The high level of thermal efficiency with minimal thickness, achieved with Kingspan OPTIM-R® provides solutions for applications where a lack of construction depth or space is an issue.

Applications

Kingspan OPTIM-R® can be used in a number of different applications and is available in a range of systems:

- Kingspan OPTIM-R® Single Ply Roofing System
- Kingspan OPTIM-R® Inverted Roofing System
- Kingspan OPTIM-R® Balcony & Terrace System

Kingspan OPTIM-R® panels should be accompanied with rigid insulation which can be cut to fit around problem areas.

Design Service

Each Kingspan OPTIM-R® system comes with a supporting design service which ensures the ratio of the Kingspan OPTIM-R® to the infill insulation maximizing each project. The panel layout will be designed quickly and effectively, ready for client approval. Each layout will illustrate the size, number and location of the Kingspan OPTIM-R® panels. For more details please contact the Kingspan Insulation Technical Service Department.

Standards & Approvals

Kingspan OPTIM-R® is manufactured to the highest standards under a management system certified to ISO 9001: 2015 (Quality Management Systems. Requirements), ISO 14001: 2015 (Environmental Management Systems. Requirements), ISO 45001: 2018 (Occupational Health and Safety Management Systems. Requirements) and ISO 50001: 2018 (Energy Management Systems. Requirements).



CERTIFIED TO:
ASTM C1667
ASTM C165
ASTM D2126

Intertek



FM Approved for certain waterproofing membrane systems. For more details, please visit the online FM RoofNav Directory or consult the Kingspan Insulation Technical Services Department.

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Product Data Table

Property	Test Method	Result
General		
Nominal Thickness (in / mm)		0.79 - 1.97 / 20 - 50
Standard Dimensions		
Width (in / mm)		11.8 - 23.6 / 300 - 600
Length (in / mm)		11.8 - 47.2 / 300 - 1200
Nominal Panel Mass (lbs per sq. ft. / kg per m)		
20 mm thickness		0.82 / 4
25 mm thickness		1.02 / 5
30 mm thickness		1.23 / 6
35 mm thickness		1.43 / 7
40 mm thickness		1.64 / 8
Compressive Strength, Min. (psi) @ 10% deformation	ASTM C165	23
Dimensional Stability	ASTM D2126	
20 mm (0.79 in) - 50 mm (1.97 in)	Length max Width max	0.5 % 0.6 %

* Contact Kingspan Insulation for available non-stock sizes.

Density

The density of Kingspan OPTIM-R® falls within the range of 10.6 - 13.10 pcf / 170 - 210 kg/m³ when tested to BS EN 1602: 2013 (Thermal insulating products for building applications. Determination of the apparent density).

Durability

If installed correctly and protected from damage and penetration, Kingspan OPTIM-R® will provide reliable long-term thermal performance over the lifetime of the building.

Resistance to Solvents, Fungi & Rodents

Kingspan OPTIM-R® should not be used in direct contact with solvent-based adhesive systems. Damaged panels or panels that have been in contact with solvents or acids should not be used.

The insulation core and facings used in the manufacture of Kingspan OPTIM-R® resist attack by mould and microbial growth, and do not provide any food value to pests.

Thermal Resistance

ASTM C1667 (Standard Test Method for Using Heat Flow Meter Apparatus to Measure the Center-of-Panel Thermal Transmission Properties of Vacuum Insulation Panels) is the only test method designated by ASTM to be used specifically for testing center panel thermal resistance of Vacuum Insulated Panels. ASTM C1667 further states that Vacuum Insulated Panels fall outside the scope of test method ASTM C518. All of the below stated thermal resistance values are based on Certified ASTM C1667 testing.

Thermal resistance (R-value) of the Kingspan OPTIM-R® panels of the Roofing System varies with thickness and is calculated by dividing the thickness of the panel by its thermal conductivity.

ASTM C1667 Center Panel Thermal Resistance Properties		
Insulant Thickness		Thermal Resistance (R-value)
(in)	(mm)	ft ² ·°F·hr/Btu
0.79	20	26
0.98	25	32*
1.18	30	37*
1.57	40	49*
1.97	50	60

Refer to Kingspan Insulation for current stock and non-stock sizes.

*These values are based on linear interpolation of test results for 20mm and 50mm Optim-R boards.

Calculated Edge Effect Thermal Resistance Properties*		
Insulant Thickness		Thermal Resistance (R-value)
(in)	(mm)	ft ² ·°F·hr/Btu
0.79	20	22
0.98	25	28
1.18	30	33
1.57	40	46
1.97	50	57

* Based on ASTM C1667 Thermal Resistance Values. Edge effect R-values vary based on panel size. The listed edge effect R-values in the table are based on the average edge effect R-values from six of the most commonly used panel sizes. Refer to Kingspan Insulation for current stock and non-stock sizes.

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