

# BREEAM 2011

WHAT CREDITS CAN KINGSPAN KOOLTHERM<sup>®</sup>,  
KOOLDUCT<sup>®</sup> & THERMA<sup>™</sup> PRODUCTS ACHIEVE?



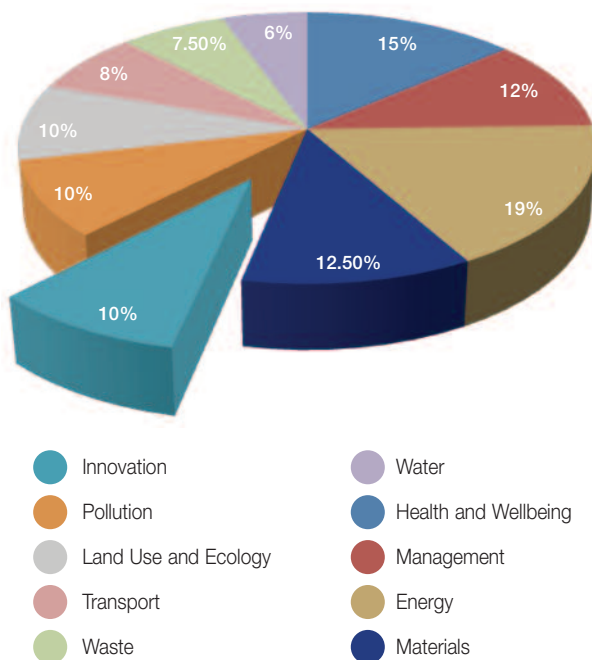
*Low Energy –  
Low Carbon Buildings*

## Introduction

BREEAM (the Building Research Establishment's Environmental Assessment Method) is the world's leading and most widely used environmental assessment method for non-residential buildings. Credits are awarded in ten sections according to performance. These credits are then added together to produce a single overall score on a scale of Pass, Good, Very Good, Excellent or Outstanding. The current version of BREEAM is BREEAM 2011.

The process of determining a BREEAM rating is outlined below.

1. For each BREEAM section a number of credits are awarded.
2. The percentage of the total number of credits available in each BREEAM section that have been awarded is calculated.
3. The percentage of total credits awarded is then multiplied by the corresponding BREEAM section weighting to give a section score. The diagram below shows the section weightings for BREEAM. The percentages reflect the relative importance of the different sections.



4. The section scores are then added together to give the overall BREEAM score.
5. The relevant BREEAM rating (i.e. Pass, Good, Very Good, Excellent or Outstanding) is achieved based on the overall BREEAM score.

Each of the ten sections of which BREEAM comprises is broken up into subsections and these are shown below:

- management (Man 1 - Man 5);
- health & wellbeing (Hea 1 - Hea 6);
- energy (Ene 1 - Ene 9);
- transport (Tra 1 - Tra 5);
- water (Wat 1 - Wat 4);
- materials (Mat 1 - Mat 5);
- waste (Wst 1 - Wst 4);
- land use & ecology (LE 1 - LE 6); and
- pollution (Pol 1 - Pol 5).

Furthermore, ten additional credits are available for:

- Innovation (Inn 1).

**Only two of these sections, energy and materials, offer credits related directly to thermal insulation products. The relevant subsections are Ene 1, Mat 1 and Mat 4.**

## Ene 1 - Reduction of CO<sub>2</sub> Emissions

Up to 15 credits are available for a building's operational energy demand, energy consumption and CO<sub>2</sub> emissions. The number of credits achieved is determined by comparing the building's Energy Performance Ratio for New Construction (EPRNC) with the table of benchmarks below:

BREEAM Credits	EPR <sub>NC</sub>	Minimum Requirements
1	0.05	Requires a performance improvement
2	0.15	progressively better than the Target
3	0.25	Emission Rate (TER) required for Building
4	0.35	Regulations approval.
5	0.45	
6	0.55	BREEAM Excellent level (≥6 credits):
7	0.59	Requires a CO <sub>2</sub> parameter for the EPRNC
8	0.63	calculation of 0.22. This is equivalent to a
9	0.67	25% improvement on the TER
10	0.72	BREEAM Outstanding level (≥10 credits):
11	0.75	Requires a CO <sub>2</sub> parameter for the EPRNC
12	0.79	calculation of 0.30. This is equivalent to a
13	0.83	40% improvement on the TER
14	0.87	
15	0.90	Requires a CO <sub>2</sub> parameter for the EPRNC
		calculation of 0.38. This is equivalent to a
		100% improvement on the TER i.e. zero net
		CO <sub>2</sub> emissions.

**Clearly, thermal insulation and ductwork air-tightness are two of the most effective ways to reduce a building's operational energy demand, energy consumption and CO<sub>2</sub> emissions. Insulation and air-tight ductwork do not achieve any specific credits under this BREEAM subsection, but their use can contribute enormously to the achievement of a large number of credits.**

## Mat 1 - Life Cycle Impacts

Up to six credits are available, based on the Green Guide ratings of a building's major elements i.e. external walls, windows, roof, upper floor slabs, internal walls, and floor finishes / coverings. Each element is awarded points according to its Green Guide rating as shown in the table below.

Green Guide Rating	Points
A+	3
A	2
B	1
C	0.5
D	0.25
E	0

The total number of points for all elements is converted in to BREEAM credits as in the table below.

Total Points	Credits
2	1
4	1 (2 for industrial)
5	2
8	3
10	4
12	5
14	6

The Green Guide assesses the environmental impacts of building elements assuming they contain a "generic average" insulation material, except where the insulation provides a significant additional function or where the insulation is incorporated into the construction offsite e.g. in structural insulated panels.

Where the insulation does not provide a significant additional function or where the insulation is not incorporated into the construction offsite, the environmental impacts of the "specific" insulation materials used in a project are assessed in the BREEAM 2011 "Materials" section Mat 4.

Where the insulation provides a significant additional function or where the insulation is incorporated into the construction offsite, the "specific" insulation is listed in the building element description and its environmental impacts are included in the assessment of the environmental impacts of the building element in question. For the purposes of section Mat 4 the "specific" insulation is assumed to have a Green Guide rating of A+.

**For thermal insulation, Mat 1 is therefore only relevant if the thermal insulation is incorporated into a system and in this case a specific Green Guide rating will be required for the building element of which that system forms the basis. Mat 1 does not cover HVAC ductwork.**

## Mat 4 - Insulation

Mat 4 affords two credits relevant to thermal insulation products: to recognise and encourage the use of thermal insulation which has a low embodied environmental impact relative to its thermal properties and has been responsibly sourced.

### First Credit – Embodied Impact

One credit is available for the area and thermal resistance (R-value) weighted average of the Green Guide ratings of the insulation products used in a building’s roofs, external walls, floors and services.

For each type of thermal insulation, an area and thermal resistance weighting is calculated by the formula:

$$\begin{aligned} \text{weighting} &= \text{area of insulation (m}^2\text{)} \times \text{thermal resistance (m}^2\text{·K/W)} \\ &= \frac{\text{area of insulation (m}^2\text{)} \times \text{thickness (m)}}{\text{thermal conductivity (W/m·K)}} \end{aligned}$$

The weighting for each insulation material is then multiplied by the relevant point(s) from the following table:

Green Guide Rating	Points
A+	3
A	2
B	1
C	0.5
D	0.25
E	0

An Insulation Index is then calculated by dividing the sum of these values by the sum of the weightings. Where the Insulation Index for the building insulation is the same as or greater than 2, the credit is awarded. An Insulation Index of 2 or greater means that the weighted average Green Guide rating of the insulation is an A or A+.

**For thermal insulation products, their BRE Green Guide Rating will determine whether or not Mat 4 credits are achieved.**

### Second Credit – Responsible Sourcing

The second credit is available if the insulation products used in a building’s roofs, external walls, floors and services, are responsibly sourced.

At least 80% by volume of the thermal insulation used in these building elements must be certified in accordance with tier levels 1, 2, 3, 4, 5 or 6 described in the table below.

Tier level	Points available per element	Examples of compliant certification schemes
1	4.0	There are currently no schemes allocated to this tier
2	3.5	BES 6001 - certified "excellent"
3	3.0	BES 6001 - certified "very good" Timber: CSA, FSC, PEFC or SFI CoC certification Reused Materials
4	2.5	BES 6001 - certified "good"
5	2.0	BES 6001 - certified "pass"
6	1.5	Recycled Materials with certified EMS for the Key Process Timber: MTCC CoC certification, SGS (TLTV) or Rainforest Alliance (VLO/MLC) Certified EMS for the Key Process and Supply Chain.

**For the type of thermal insulation products manufactured by Kingspan Insulation, this requires that there is a certified environmental management system for their manufacturing processes and their supply chains. The part of the supply chain identified as requiring a certified environmental management system is the manufacturing process of their principle polymer components.**

*NB Some Kingspan Insulation products combine insulation with thick facers comprising materials such as cork, plywood and plasterboard. The responsible sourcing of these thick facer materials is considered by BREEAM under section Mat 3, but is beyond the scope of this document. For further information, please refer to the Kingspan Insulation literature for the products in question.*

## Green Guide Ratings - Relevant to Mat 4

Ecoprofiles, certified by BRE Certification to the 2008 BRE Environmental Profiles Methodology, have been created for *Kingspan Kooltherm*<sup>®</sup> Duct Insulation, *Kingspan KoolDuct*<sup>®</sup> Panels, the insulation strips used in *Kingspan Kooltherm*<sup>®</sup> Cavity Closer and all products in the *Kingspan Kooltherm*<sup>®</sup> K-range, produced at Kingspan Insulation's Pembridge manufacturing facility.

The BRE has assigned *Kingspan Kooltherm*<sup>®</sup> Duct Insulation, the insulation strips used in *Kingspan Kooltherm*<sup>®</sup> Cavity Closer and all products in the *Kingspan Kooltherm*<sup>®</sup> K-range a 2008 Green Guide rating of A+ as shown in the table on page 6. *Kingspan KoolDuct*<sup>®</sup> Panels have been assigned a 2008 Green Guide rating of A as shown in the table on page 6.

Ecoprofiles, certified by BRE Certification to the 2008 BRE Environmental Profiles Methodology, have been created for most of the products in the *Kingspan Therma*<sup>™</sup> Range produced at Kingspan Insulation's Pembridge and Selby manufacturing facilities.

The BRE has assigned all foil faced *Kingspan Therma*<sup>™</sup> products a 2008 Green Guide rating of A+ and all certified *Kingspan Therma*<sup>™</sup> products with other facings have been assigned a 2008 Green Guide rating of A as shown in the table on page 6.

Details of all BRE Green Guide 2008 Summary Ratings are published in BRE's Green Book Live website. Go to [www.greenbooklive.com](http://www.greenbooklive.com) and search on the company name "Kingspan Insulation". Click on the appropriate Appendix No. and a copy of the relevant certificate will be displayed.



Environmental Profiles Scheme  
Certification Numbers ENP 409 & 410

## Responsible Sourcing - Relevant to Mat 4

*Kingspan Kooltherm*<sup>®</sup> Duct Insulation, *Kingspan KoolDuct*<sup>®</sup> Panels, the insulation strips used in *Kingspan Kooltherm*<sup>®</sup> Cavity Closer and all products in the *Kingspan Kooltherm*<sup>®</sup> K-range, produced at Kingspan Insulation's Pembridge and Castleblayney manufacturing facilities, are manufactured under a management system certified to BS EN ISO 14001: 2004. The principle polymer component of these products is also manufactured under a management system certified to BS EN ISO 14001: 2004.

*Kingspan Therma*<sup>™</sup> Range are produced at Kingspan Insulation's Pembridge, Selby and Castleblayney manufacturing facilities, under a management system certified to EN ISO 14001: 2004. The principle polymer components of these products are also manufactured under a management system certified to EN ISO 14001: 2004.

*NB please confirm the above information at the point of need by contacting Kingspan Insulation's Technical Service Department (see rear cover), from which copies of Kingspan Insulation and its suppliers' ISO 14001 certificates can be obtained along with confirmation of Kingspan Insulation's products' Green Guide ratings.*



**RSPB Environment and Education Centre, Rainham Marshes**

Designed to achieve BREEAM Excellent. This building was constructed with *Kingspan Therma*roof<sup>®</sup> TR27 LPC/FM and *Kingspan Therma*taper<sup>®</sup> TT47 LPC/FM on its roof.



## 2008 Green Guide Summary Ratings for Various Kingspan Insulation Products

Product	No Airspace		Airspace on One Side		2008 Green Guide Summary Rating
	Ecopoint Score	Element No. Appendix No.	Ecopoint Score	Element No. Appendix No.	
Kingspan <b>Kooltherm</b> ® K3 Floorboard	0.028	915320077 410j	-	-	<b>A+</b>
Kingspan <b>Kooltherm</b> ® K5 External Wall Board	0.028	915320077 410j	-	-	<b>A+</b>
Kingspan <b>Kooltherm</b> ® K7 Pitched Roof Board < 70 mm thick	0.028	915320067 410a	0.025 <sup>1</sup>	915320068 410b	<b>A+</b>
Kingspan <b>Kooltherm</b> ® K7 Pitched Roof Board ≥ 70 mm thick	0.036	915320070 410d	0.034 <sup>1</sup>	915320073 410f	<b>A+</b>
Kingspan <b>Kooltherm</b> ® K8 Cavity Board < 70 mm thick	0.028	915320067 410a	0.024 <sup>2</sup>	915320069 410c	<b>A+</b>
Kingspan <b>Kooltherm</b> ® K8 Cavity Board ≥ 70 mm thick	0.036	915320070 410d	0.032 <sup>2</sup>	915320074 410g	<b>A+</b>
Kingspan <b>Kooltherm</b> ® K10 Soffit Board	0.032	915320079 410k	-	-	<b>A+</b>
Kingspan <b>Kooltherm</b> ® K12 Framing Board < 70 mm thick	0.028	915320067 410a	0.024 <sup>2</sup>	915320069 410c	<b>A+</b>
Kingspan <b>Kooltherm</b> ® K12 Framing Board ≥ 70 mm thick	0.028	915320070 410d	0.032 <sup>2</sup>	915320074 410g	<b>A+</b>
Kingspan <b>Kooltherm</b> ® K15 Rainscreen Board	-	-	0.034 <sup>3</sup>	915320076 410i	<b>A+</b>
Kingspan <b>Kooltherm</b> ® K17 Insulated Plasterboard	0.032	915320081 410l	-	-	<b>A+</b>
Kingspan <b>Kooltherm</b> ® K18 Insulated Plasterboard	0.032	915320082 410m	0.028 <sup>2</sup>	915320083 410n	<b>A+</b>
Kingspan <b>Kooltherm</b> ® Cavity Closer Insulation Strips	0.047	1015320082 410o	-	-	<b>A+</b>
Kingspan <b>Kooltherm</b> ® Duct Insulation	0.032	915320079 410k	-	-	<b>A+</b>
Kingspan <b>KoolDuct</b> ® Panel	0.054	915320072 410e	-	-	<b>A</b>
Kingspan <b>Thermapitch</b> ® TP10	0.042	1115320003 409h	0.039 <sup>1</sup>	1115320004 409i	<b>A+</b>
Kingspan <b>Thermaroof</b> ® TR21	0.053	1115320008 409m	-	-	<b>A</b>
Kingspan <b>Thermaroof</b> ® TR26 LPC/FM	0.045	1115320006 409k	-	-	<b>A+</b>
Kingspan <b>Thermaroof</b> ® TR27 LPC/FM	0.056	1115320007 409l	-	-	<b>A</b>
Kingspan <b>Thermaroof</b> ® TR31	0.042	1115320003 409h	0.039 <sup>1</sup>	1115320004 409i	<b>A+</b>
Kingspan <b>Thermataper</b> ® TT41	0.053	1115320008 409m	-	-	<b>A</b>
Kingspan <b>Thermataper</b> ® TT46 LPC/FM	0.045	1115320006 409k	-	-	<b>A+</b>
Kingspan <b>Thermataper</b> ® TT47 LPC/FM	0.056	1115320007 409l	-	-	<b>A</b>
Kingspan <b>Thermawall</b> ® TW50	-	-	0.036 <sup>2</sup>	1115320005 409j	<b>A+</b>
Kingspan <b>Thermawall</b> ® TW53	0.053	1115320009 409n	-	-	<b>A</b>
Kingspan <b>Thermawall</b> ® TW55	0.042	1115320003 409h	0.036 <sup>2</sup>	1115320005 409j	<b>A+</b>
Kingspan <b>Thermafloor</b> ® TF70	0.042	1115320003 409h	-	-	<b>A+</b>

1 in a roof with a min. 13mm unventilated airspace one side  
 2 in a wall with a min. 20mm unventilated airspace one side  
 3 in a wall with a ventilated airspace to one side

# Contact Details

## Customer Service

For quotations, order placement and details of despatches please contact the Kingspan Insulation Customer Service Department on the numbers below:

Tel: +44 (0) 1544 388 601  
Fax: +44 (0) 1544 388 888  
email: [customerservice@kingspaninsulation.co.uk](mailto:customerservice@kingspaninsulation.co.uk)

## Literature & Samples

Kingspan Insulation produces a comprehensive range of technical literature for specifiers, contractors, stockists and end users. The literature contains clear 'user friendly' advice on typical design; design considerations; thermal properties; sitework and product data.

Available as a complete Design Manual or as individual product brochures, Kingspan Insulation technical literature is an essential specification tool. For copies please contact the Kingspan Insulation Marketing Department, or visit the Kingspan Insulation website, using the details below:

Tel: +44 (0) 1544 387 384  
Fax: +44 (0) 1544 387 484  
email: [literature@kingspaninsulation.co.uk](mailto:literature@kingspaninsulation.co.uk)  
[www.kingspaninsulation.co.uk/literature](http://www.kingspaninsulation.co.uk/literature)

## Tapered Roofing

For technical guidance, quotations, order placement and details of despatches please contact the Kingspan Insulation Tapered Roofing Department on the numbers below:

Tel: +44 (0) 1544 387 383  
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email: [tapered@kingspaninsulation.co.uk](mailto:tapered@kingspaninsulation.co.uk)

## Technical Advice / Design

Kingspan Insulation supports all of its products with a comprehensive Technical Advisory Service for specifiers, stockists and contractors.

This includes a computer-aided service designed to give fast, accurate technical advice. Simply phone the Kingspan Insulation Technical Service Department with your project specification. Calculations can be carried out to provide U-values, condensation / dew point risk, required insulation thicknesses etc... Thereafter any number of permutations can be provided to help you achieve your desired targets.

The Kingspan Insulation Technical Service Department can also give general application advice and advice on design detailing and fixing etc... Site surveys are also undertaken as appropriate.

Please contact the Kingspan Insulation Technical Service Department on the numbers below:

Tel: +44 (0) 1544 387 382  
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## General Enquiries

For all other enquiries contact Kingspan Insulation on the numbers below:

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*Kingspan Insulation Ltd. reserves the right to amend product specifications without prior notice. Product thicknesses shown in this document should not be taken as being available ex-stock and reference should be made to the current Kingspan Insulation price-list or advice sought from Kingspan Insulation's Customer Service Department (see above left). The information, technical details and fixing instructions etc. included in this literature are given in good faith and apply to uses described. Recommendations for use should be verified for suitability and compliance with actual requirements, specifications and any applicable laws and regulations. For other applications or conditions of use, Kingspan Insulation offers a Technical Advisory Service (see above), the advice of which should be sought for uses of Kingspan Insulation products that are not specifically described herein. Please check that your copy of this literature is current by contacting the Kingspan Insulation Marketing Department (see left).*

Kingspan Insulation Ltd is a member of:  
The National Insulation Association (NIA)



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