

**TECHNICAL
BULLETIN**

BREEAM 2008

WHAT CREDITS CAN KINGSPAN KOOLTHERM[®],
KOOLDUCT[®] & THERMA[™] PRODUCTS ACHIEVE?



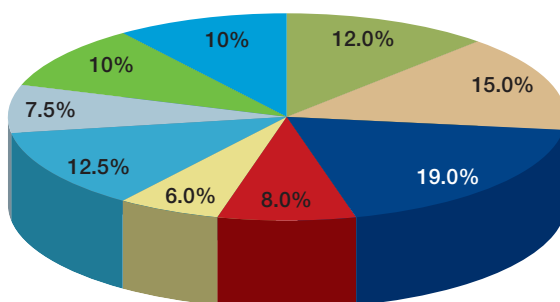
*Low Energy –
Low Carbon Buildings*

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 nine 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 2008.

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

- management (Man 1 – Man 8);
- health & wellbeing (Hea 1 – Hea 13);
- energy (Ene 1 – Ene 9);
- transport (Tra 1 – Tra 6);
- water (Wat 1 – Wat 4);
- materials (Mat 1 – Mat 7);
- waste (Wst 1 – Wst 6);
- land use & ecology (LE1 – LE6); and
- pollution (Pol 1 – Pol 8).

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 6.

Ene 1 - Reduction of CO₂ Emissions

Up to 15 credits are available for a building's operational CO₂ emissions. The number of credits achieved is determined by comparing the building's CO₂ index (EPC Rating), taken from the Energy Performance Certificate (EPC), with the table of benchmarks below:

| BREEAM Credits | CO ₂ Index (EPC Rating) | |
|-------------------|------------------------------------|---------------|
| | New Build | Refurbishment |
| 1 | 63 | 100 |
| 2 | 53 | 87 |
| 3 | 47 | 74 |
| 4 | 45 | 61 |
| 5 | 43 | 50 |
| 6 | 40 | 47 |
| 7 | 37 | 44 |
| 8 | 31 | 41 |
| 9 | 28 | 36 |
| 10 | 25 | 31 |
| 11 | 23 | 28 |
| 12 | 20 | 25 |
| 13 | 18 | 22 |
| 14 | 10 | 18 |
| 15 | 0 | 15 |
| Exemplar credit 1 | <0 | ≤0 |
| Exemplar credit 2 | True zero carbon building | |

Clearly, thermal insulation and ductwork air-tightness are two of the most effective ways to reduce a building's operational CO₂ 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 - Materials Specification (Major Building Elements)

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 |
| 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 2008 "Materials" section Mat 6.

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 6 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 6 - Insulation

Mat 6 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:

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

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 6 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 or 3 described in the table below.

| Tier level | Points available per element | Examples of compliant certification schemes |
|------------|------------------------------|--|
| 1 | 3 | FSC, CSA, SFI with CoC, PEFC, Reused materials |
| 2 | 2 | There are currently no schemes allocated to this tier |
| 3 | 1.5 | Timber: MTCC, Verified, SGS, TFT Other materials: Certified EMS for the key Process and Supply Chain Recycled Materials with certified EMS for the Key Process |
| 4 | 1 | Certified EMS for key process stage |

The level that relates to thermal insulation materials is level 3.

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 5, 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 6

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

The BRE has assigned **Kingspan Kooltherm**® Duct Insulation and all products in the **Kingspan Kooltherm**® K-range a 2008 Green Guide rating of A+ as shown in the table on page 5. **Kingspan KoolDuct**® Panels have been assigned a 2008 Green Guide rating of A as shown in the table on page 5.

Ecoprofiles, certified by BRE Certification to the 2008 BRE Environmental Profiles Methodology, have been created for most of the products in the **Kingspan Therma**™ range produced at Kingspan Insulation's Pembridge manufacturing facility.

The BRE has assigned all foil faced **Therma**™ products a 2008 Green Guide rating of A+ and all certified **Therma**™ products with other facings have been assigned a 2008 Green Guide rating of A as shown in the table on page 5.

Details of all BRE Green Guide 2008 Summary Ratings are published in BRE's Green Book Live website. Go to www.greenbooklive.com/search/search.jsp?partid=10000 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 6

Kingspan Kooltherm® Duct Insulation, **Kingspan KoolDuct**® Panels and all products in the **Kingspan Kooltherm**® 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™ is manufactured under a management system certified to EN ISO 14001: 2004. The principle polymer components of the 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® TR27 LPC/FM and **Kingspan Therma**taper® 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 Kooltherm ® K3 Floorboard | 0.028 | 915320077 410j | – | – | A+ |
| Kingspan Kooltherm ® K5 External Wall Board | 0.028 | 915320077 410j | – | – | A+ |
| Kingspan Kooltherm ® K7 Pitched Roof Board < 70 mm thick | 0.028 | 915320067 410a | 0.025 ¹ | 915320068 410b | A+ |
| Kingspan Kooltherm ® K7 Pitched Roof Board ≥ 70 mm thick | 0.036 | 915320070 410d | 0.034 ¹ | 915320073 410f | A+ |
| Kingspan Kooltherm ® K8 Cavity Board < 70 mm thick | 0.028 | 915320067 410a | 0.024 ² | 915320069 410c | A+ |
| Kingspan Kooltherm ® K8 Cavity Board ≥ 70 mm thick | 0.036 | 915320070 410d | 0.032 ² | 915320074 410g | A+ |
| Kingspan Kooltherm ® K10 Soffit Board | 0.032 | 915320079 410k | – | – | A+ |
| Kingspan Kooltherm ® K12 Framing Board < 70 mm thick | 0.028 | 915320067 410a | 0.024 ² | 915320069 410c | A+ |
| Kingspan Kooltherm ® K12 Framing Board ≥ 70 mm thick | 0.028 | 915320070 410d | 0.032 ² | 915320074 410g | A+ |
| Kingspan Kooltherm ® K15 Rainscreen Board | – | – | 0.034 ³ | 915320076 410i | A+ |
| Kingspan Kooltherm ® K17 Insulated Plasterboard | 0.032 | 915320081 410l | – | – | A+ |
| Kingspan Kooltherm ® K18 Insulated Plasterboard | 0.032 | 915320082 410m | 0.028 ² | 915320083 410n | A+ |
| Kingspan Kooltherm ® Duct Insulation | 0.032 | 915320079 410k | – | – | A+ |
| Kingspan KoolDuct ® Panel | 0.054 | 915320072 410e | – | – | A |
| Kingspan Thermapitch ® TP10 | 0.042 | 915320060 409a | 0.038 ¹ | 915320061 409b | A+ |
| Kingspan Thermaroof ® TR21 | 0.052 | 915320065 409f | – | – | A |
| Kingspan Thermaroof ® TR26 LPC/FM | 0.045 | 915320063 409d | – | – | A+ |
| Kingspan Thermaroof ® TR27 LPC/FM | 0.055 | 915320064 409e | – | – | A |
| Kingspan Thermaroof ® TR31 | 0.042 | 915320060 409a | 0.038 ¹ | 915320061 409b | A+ |
| Kingspan Thermataper ® TT41 | 0.052 | 915320065 409f | – | – | A |
| Kingspan Thermataper ® TT46 LPC/FM | 0.045 | 915320063 409d | – | – | A+ |
| Kingspan Thermataper ® TT47 LPC/FM | 0.055 | 915320064 409e | – | – | A |
| Kingspan Thermawall ® TW50 | – | – | 0.036 ² | 915320062 409c | A+ |
| Kingspan Thermawall ® TW53 | 0.052 | 915320066 409g | – | – | A |
| Kingspan Thermawall ® TW55 | 0.042 | 915320060 409a | 0.036 ² | 915320062 409c | A+ |
| Kingspan Thermawall ® TF70 | 0.042 | 915320060 409a | – | – | A+ |

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:

UK – Tel: +44 (0) 1544 388 601
– Fax: +44 (0) 1544 388 888
– email: customerservice.uk@insulation.kingspan.com

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:

UK – Tel: +44 (0) 1544 387 384
– Fax: +44 (0) 1544 387 484
– email: literature.uk@insulation.kingspan.com
– www.insulation.kingspan.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:

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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:

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

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The National Insulation Association (NIA)



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