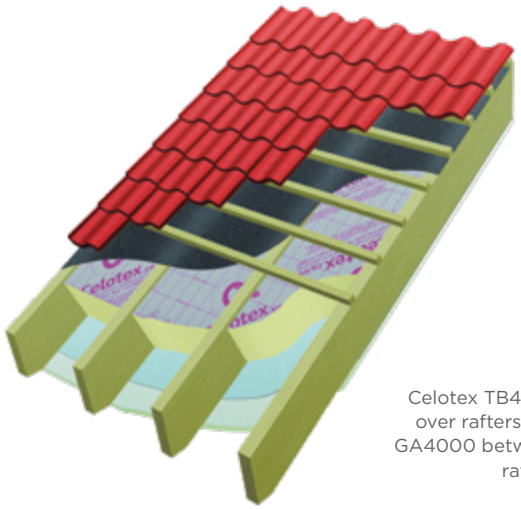
Insulation Between and Over Rafters - Pitched Roof

Celotex
SAINT-GOBAIN

Use Celotex TB4000, Celotex GA4000 or Celotex XR4000 high performance thermal insulation in pitched roof between and over rafter applications to minimise insulation thickness and give the following benefits:

- Ideal for use where headroom is limited
- Provides reliable long term energy savings for buildings
- Creates a warm, habitable roof space
- No need to insulate water pipes and tanks
- Suitable for new build and major refurbishment projects
- Minimised additional loading to the structure



Celotex TB4000 over rafters and GA4000 between rafters

Celotex GA4000 Technical Data

Thickness (mm)	R-value (m^2K/W)	Maximum Board Weight (kg/m^2)
GA4050	2.25	1.92
GA4060	2.70	2.26
GA4070	3.15	2.61
GA4075	3.40	2.78
GA4080	3.60	2.96
GA4090	4.05	3.31
GA4100	4.50	4.15

Celotex XR4000 Technical Data

Thickness (mm)	R-value (m^2K/W)	Maximum Board Weight (kg/m^2)
XR4110	5.00	4.54
XR4120	5.45	4.93
XR4130	5.90	5.32
XR4140	6.35	5.71
XR4150	6.80	6.10
XR4165	7.50	6.69
XR4200	9.05	8.06

Celotex TB4000 Technical Data

Thickness (mm)	R-value (m^2K/W)	Maximum Board Weight (kg/m^2)
TB4012	0.50	0.55
TB4020	0.90	0.79
TB4025	1.10	0.95
TB4030	1.35	1.10
TB4040	1.80	1.41

For product information for your project, please contact either our technical team or our specification team.

ENERGY ASSESSMENTS ...by Celotex

We have an experienced team of energy assessors who can carry out SAP calculations, water calculations, airtightness testing and much more. Contact us.

Celotex presents a comprehensive range of thermal bridging models featuring our PIR insulation products. This tool helps you identify the build-up required to reduce heat loss through a typical junction of elements or at openings. Sign up now.

Example U-value calculation: Between and Over Rafters

Construction	Thickness (mm)
Outside surface resistance	-
Tiling including batten space	-
Counter batten	38
Breather membrane	-
Variable layer	See below
Celotex TB4000 between rafters @ 400ctrs (11.7% brg)	40
Cavity (low emissivity) rafter space	110
Polythene 1000 gauge, VCL	-
Plasterboard	12.5
Inside surface resistance	-

Variable Layer	Thickness (mm)	U-value (W/m2K)
Celotex GA4000, over rafter	70	0.19
Celotex GA4000, over rafter	75	0.18
Celotex GA4000, over rafter	80	0.17
Celotex GA4000, over rafter	90	0.16
Celotex GA4000, over rafter	100	0.15
Celotex XR4000, over rafter	110	0.14
Celotex XR4000, over rafter	120	0.13
Celotex XR4000, over rafter	130	0.12
Celotex XR4000, over rafter	140	0.12
Celotex XR4000, over rafter	150	0.11
Celotex XR4000, over rafter	165	0.10
Celotex XR4000, over rafter	200	0.09

U-value

For U-values see variable layer list, or for more options, refer to our online U-value calculator at celotex.co.uk

Installation Guidelines

Celotex insulation boards should not be installed when the temperature is at or below 4°C and falling.

Insulation over the rafters

- Note that specific fixing requirements should be determined for each roof, taking into account roof design and location.
- Fix a treated timber stop batten equal in thickness to the Celotex insulation across the rafters at the eaves. Butt boards directly against this batten.
- Install Celotex insulation boards with both edges supported by rafters.
- Cut the boards using the Celotex Insulation Saw to rake and splay at ridge and verges to ensure close butted joints.
- Use large headed nails to temporarily fix board in place, until permanently secured by counter battens.
- Install a breather membrane over the insulation.
- Position a preservative-treated timber counter batten (minimum 38mm x 50mm) over the breather membrane and insulation on the line of each rafter. Nail the lower end of each counter batten directly into the stop batten.
- Calculate the length of the suitable fixings required by adding together the counter batten depth, the insulation thickness and depth of penetration required to the rafter (usually minimum 38mm).

Insulation between the rafters

- For optimum thermal performance the unprinted foil surface should face the rafter air cavity.
- Accurately measure the width to be filled between the inside face of the rafters, prior to cutting the board.
- Use the Celotex Insulation Saw to cut the Celotex board at a slight angle, making the board width slightly oversized on one surface to achieve a ‘friction it’.
- Push the board into the void between the rafters until it is tight against the underside of the first layer of insulation.
- To hold the boards in place, use battens along the side of the rafters.
- Tightly fit the insulation to the ridge plate and carry over and tightly butt the wall plate at eaves.
- A vapour control layer (VCL) should be installed to the underside of the rafters. A polythene sheet of higher vapour resistance is recommended for high humidity areas such as kitchens or bathrooms.
- Finish with plasterboard or other suitable sheet material, fixed to the rafters.
- NB: This solution is not suitable for exposed rafters. Where exposed rafters are required, please refer to pitched roof sarking application.

Where building regulation approval is required, you should take advice from your local building control authority and the building designer.

Certifications and accreditations

Celotex products GA4000 and XR4000 are covered by BBA Agrément Certificate No 17/5405. To download a copy of this certificate, visit the ‘literature’ pages on our website.

Further information

If you wish to contact Celotex, please do so through the ‘contact us’ page on our website. For information regarding storage, installation and handling of Celotex products, or for health & safety information, please refer to our online ‘literature’ pages.