



LINZMEIER

Insulate with system

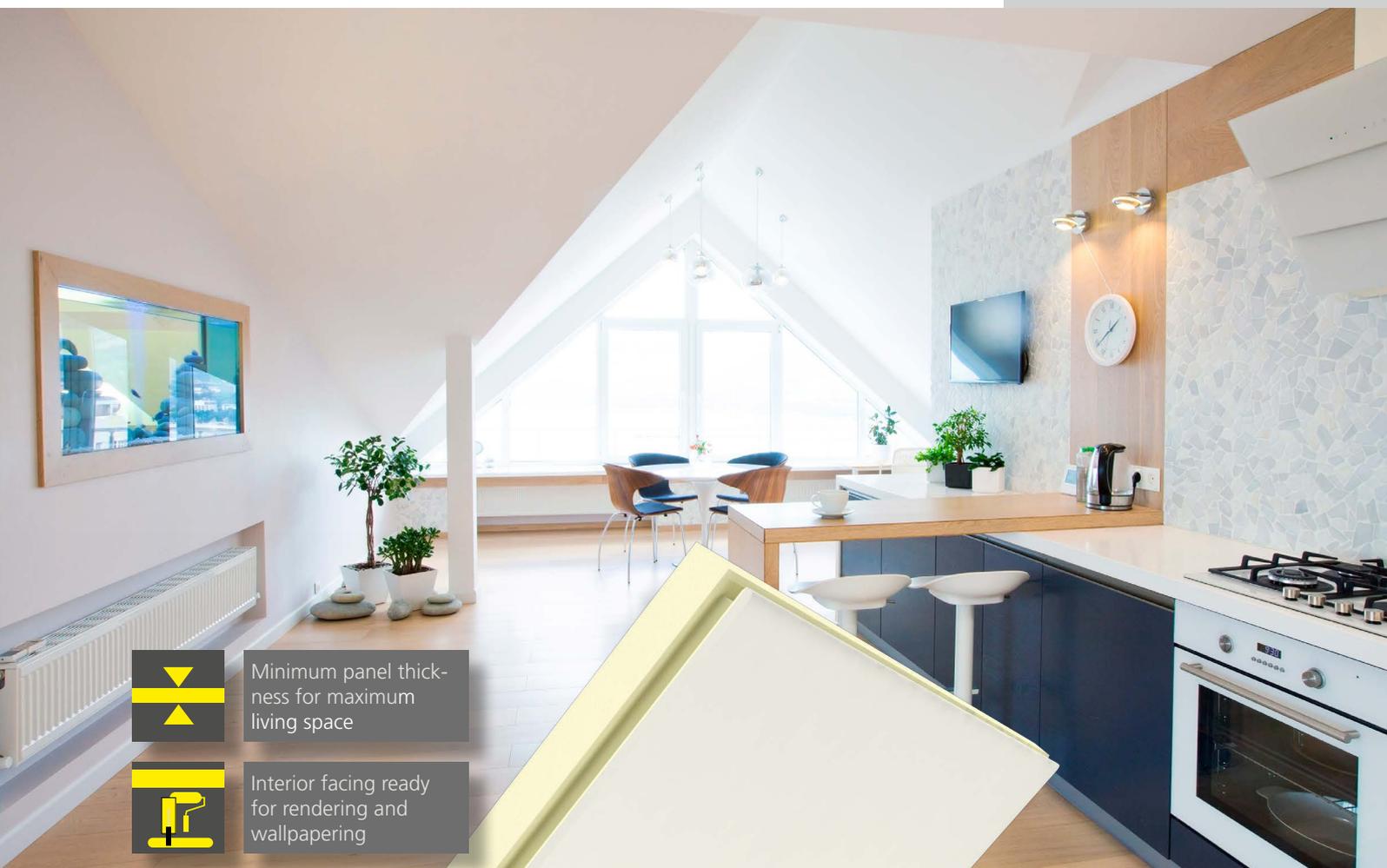
Interior work

LINITHERM®

PAL GK

The slim interior insulation for more living space under the roof

Perfect protection from chill and heat. For new or old buildings



Minimum panel thickness for maximum living space



Interior facing ready for rendering and wallpapering

For installation under the rafters and collar beams

Full-face, homogenous thermal insulation – λ_D 0.022 W/(mK)

With integrated vapour barrier

No additional battens required

Protect from electrosmog

Structural-physical correct construction
biocide free – no gas emissions

www.Linzmeier.de

In winter and summer, cosy rooms under the roof – with LINITHERM PAL GK



Benefits for builders and renovators:

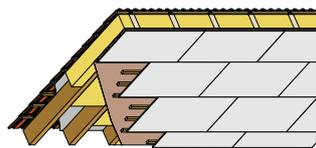
- Additional living space due to slim construction
- Aluminium coating protects from electrosmog
- Safe, perfect construction from a structural point of view
- Time-saving and cost reduction due to fewer work steps
- Easy handling and processing
- Interior surfaces ready of rendering and wallpapering
- Also as F30B construction
- New buildings: Lower material costs due to smaller rafter crosssections
- Old buildings: Rafters do not have to be doubled up and the »old« insulation between the rafters and old facings need not be removed and disposed of

Living space is in short supply particularly in cities, and therefore expensive. In many cases, the loft offers extra space. With +50° roof gradients, two floors can be accommodated under the roof. To protect your new ambience from summer heat and winter chill, and keep heating costs low, excellent insulation is worth every penny. Where above-rafter insulation is not possible, e.g., in listed buildings, or not wanted, LINITHERM PAL GK possess ideal properties for insulation under rafters:

- Outstanding insulation values with minimum panel thickness $\lambda_D = 0.022 \text{ W/(mK)}$
- Prevent heat loss in winter and keep out the heat in summer
- With vapour barrier against humidity

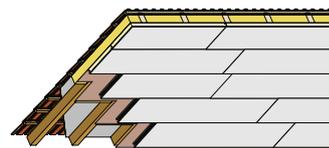
- An ingenious edge system for absolute sealing tightness
- Easy installation
- The board's stability allows a distance between rafter axes of up to 87 cm, eliminating the need for battens

- The LINITHERM PAL GK plasterboard can be plastered, painted or wallpapered
- Insulation core made from rigid PU foam that is manufactured in-house in a quality-monitored process, cannot decompose, has compression strength, is hard-wearing and odourless



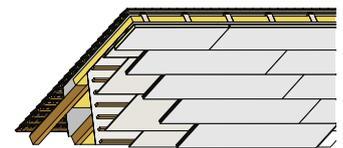
Overall construction when insulating without LINITHERM with deep rafters of 240 mm

Insulation between rafters:
240 mm mineral fiber (TCL 035)
Additional vapour barrier, battens, and plasterboard:
U-value = 0.18 W/(m²K)



Overall construction in new buildings with LINITHERM PAL GK with a rafter depth of only 180 mm

Insulation between rafters:
180 mm mineral fiber (TCL 035)
LINITHERM L+D Pro foil
LINITHERM PAL GK 39,5 mm with integrated vapour barrier under the rafters:
U-value = 0.18 W/(m²K)

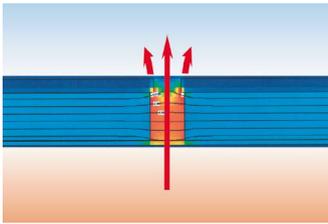


Overall construction in old buildings with LINITHERM PAL GK with an existing rafter depth of 140 mm

Intact existing insulation between rafters:
100 mm mineral fiber (TCL 040) eventually existing vapour barrier, battens, and plasterboard
LINITHERM PAL GK 49.5 mm upon existing structure:
U-Value = 0.23 W/(m²K)

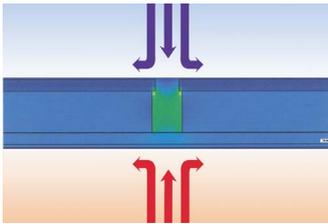
The combined thermal insulation with LINITHERM PAL GK for new buildings

Slimmer rafters and a streamlined insulation structure help you gain extra living space



Heat loss through the rafters

With insulation only between the rafters, thermal bridges exist due to the higher thermal conductivity of wood. For adequate insulation, larger rafter cross-sections are necessary. This leads to higher material costs and loss of space. Moreover, the additional battens and plasterboard facing reduce the living space even more.



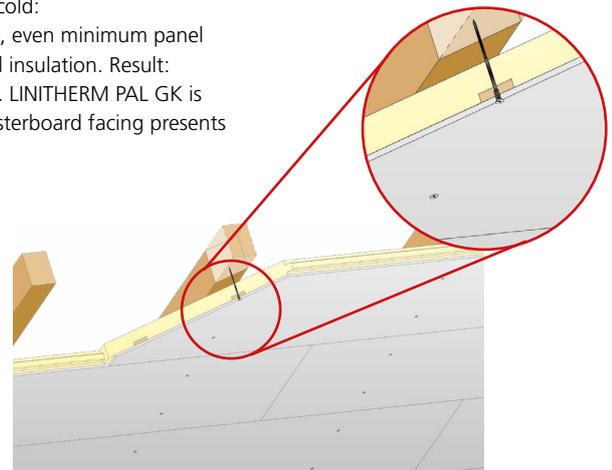
Gain additional space and cut building costs with LINITHERM PAL GK

With insulation between the rafters and LINITHERM PAL GK under the rafters, your attic is optimally protected from heat and cold: Due to the high-performance PU insulating material, even minimum panel thicknesses lead to an enormous increase in thermal insulation. Result: the rafter cross-sections can be considerably smaller. LINITHERM PAL GK is simply screwed into the rafters from below. The plasterboard facing presents a clean interior surface.



LINITHERM PAL GK with integrated battens

LINITHERM PAL GK is also available with integrated battens. Adjustment screws permit irregular rafter heights to be compensated and spaced.



Improved effectiveness in old buildings of existing insulation between rafters.

Quick restoration processes without any waste disposal costs

Only sufficient insulation lets you live in comfort

Frequently, »some kind« of insulation has already been fitted between the rafters. However, this insulation usually does not comply with current standards. Moreover, this insulation method creates thermal bridges, and does not protect from moisture damage. LINITHERM PAL GK will help you to improve the energy efficiency of your loft within short.

Simply screw LINITHERM onto your old cladding

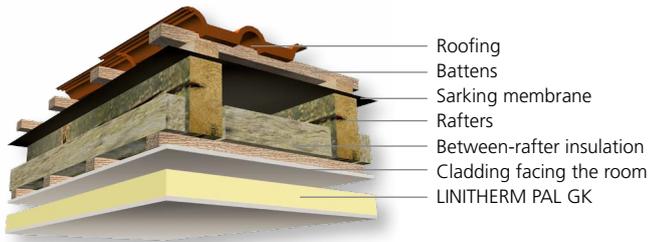
Normally, you can leave old, but intact insulation including battens and plasterboard or t&g boards, saving you labour and waste disposal costs. The slim LINITHERM PAL GK elements are simply screwed onto the rafters from below. The interior facing of plasterboard provides a smooth surface that can be rendered and wallpapered.



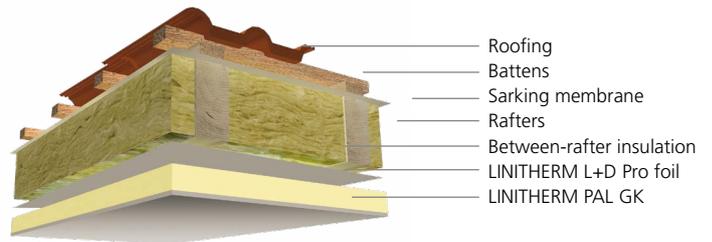
Listed buildings are quickly and easily made more energy-efficient with LINITHERM; the rooms under the roof provide excellent protection against heat and heat loss.



LINITHERM PAL GK for restoring old buildings with existing between-rafter insulation



LINITHERM PAL GK in new buildings with full-rafter insulation



LINITHERM PAL GK PH 21300020

Insulation core	PU rigid foam acc. to EN 13165, fire behaviour class E acc. to EN 13501-1, coated with aluminum film on both sides
Facing	Plasterboard facing on the inner side, 9.5 mm thick
Edge joints	Round about grooved for wooden tongue (included in delivery)
Overall dimension	2500 x 600 mm (= invoicing measurement)

Thickness mm total	Thickness mm PU	Thickness mm Plasterboard	Quantity per pallet Piece	m ²	λ _D W/(mK)	U-value* [W/(m ² K)]
39.5	30	9.5	45	67.5	0.022	0.65
49.5	40	9.5	36	54.0	0.022	0.50
69.5	60	9.5	26	39.0	0.022	0.34
89.5	80	9.5	20	30.0	0.022	0.26
109.5	100	9.5	17	25.5	0.022	0.21

Other thicknesses upon request.

LINITHERM PAL GKL with integrated battens PH 21300030

Insulation core	PU rigid foam acc. to EN 13165, fire behaviour class E acc. to EN 13501-1, coated with aluminum film on both sides
Facing	Plasterboard facing on the inner side, 9.5 mm thick
System	With integrated battens for compensating unevenness in the roof structure during installation with adjusting screws (no additional slat framework required)
Edge joints	Round about grooved for wooden tongue (included in delivery)
Overall dimension	2500 x 600 mm (= calculation measurement)

Thickness mm total	Thickness mm PU	Thickness mm plasterboard	Quantity per pallet Piece	m ²	λ _D W/(mK)	U-value* [W/(m ² K)]
49.5	40	9.5	36	54.0	0.022	0.55
69.5	60	9.5	26	39.0	0.022	0.37

Insulation values of the overall construction

LINITHERM PAL GK

under the rafters mineral fibers between the rafters

Mean U-value calculation with 625 mm rafter spacing and 80 mm rafter width

Thickness mm PAL GK	Thickness mm mineral fiber λ _D 0.040 W/(mK)	Overall mean U-value	Thickness mm PAL GK	Thickness mm mineral fiber λ _D 0.035 W/(mK)	Overall mean U-value
39.5	140	0.23	39.5	140	0.21
39.5	160	0.20	39.5	160	0.19
39.5	180	0.19	39.5	180	0.18
39.5	200	0.18	39.5	200	0.17
49.5	120	0.22	49.5	120	0.21
49.5	140	0.20	49.5	140	0.19
49.5	160	0.19	49.5	160	0.18
49.5	180	0.18	49.5	180	0.16
49.5	200	0.16	49.5	200	0.15
69.5	100	0.20	69.5	100	0.19
69.5	120	0.18	69.5	120	0.18
69.5	140	0.17	69.5	140	0.16
69.5	160	0.16	69.5	160	0.15
69.5	180	0.15	69.5	180	0.14
69.5	200	0.14	69.5	200	0.13

* Thermal conductivity coefficient U takes the thermal resistance (R_{si} = 0.1 m²K/W and R_{se} = 0.04 m²K/W) into account. Object-specific features according to EN ISO 6946 are not taken into account.

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