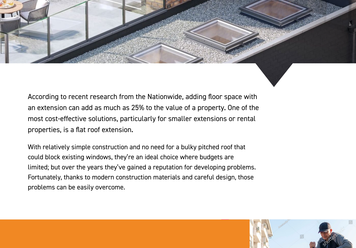
EVERYTHING YOU NEED TO KNOW ABOUT FLAT ROOF EXTENSIONS

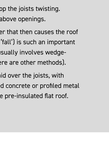
IT'S ON THE HOUSE WITH DAKEA

BLOG
Tuesday
13th March, 2025



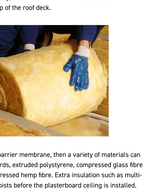
According to recent research from the Nationwide, adding floor space with an extension can add as much as 25% to the value of a property. One of the most cost-effective solutions, particularly for smaller extensions or rental properties, is a flat roof extension.

With relatively simple construction and no need for a bulky pitched roof that could block existing windows, they're an ideal choice where budgets are limited, but over the years they've gained a reputation for developing problems. Fortunately, thanks to modern construction materials and careful design, those problems can be easily overcome.



There are three main aspects to consider with any flat roof extension – structure, insulation and coverings.

ONE - Start with the structure



The construction of a flat roof is very similar to a floor – a series of joists with a timber deck on top. The size, type and spacing of the joists is crucial, and Building Regulations require a structural engineer's calculations to show the structure can support various loadings and resist wind uplift.

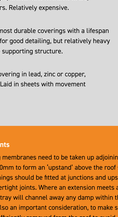
Usually the joists will be softwood – they can also be I-joists or Posi-joists or even concrete block and beam – and normally they're spaced at 400 or 600mm centres spanning the shortest distance between walls; for spans greater than 2.5m, extra struts will be needed to stop the joists twisting. Support usually takes the form of joist hangers, timber wall plates or lintels above openings.

One criticism that's traditionally levelled against flat roofs is pooling rainwater that then causes the roof to deteriorate faster – which is why getting the roof pitch (also known as the 'fall') is such an important part of the design stage. Regulations suggest a minimum fall of 1:40, which usually involves wedge-shaped tapered strips called 'firrings' along the top of the joists (although there are other methods).

Modern decks are usually of 18mm-thick sheets of marine plywood or OSB laid over the joists, with other options including timber and cement based 'woodwool slabs', reinforced concrete or profiled metal decking. Alternatively, structural insulated panels (SIPs) create a ready-made pre-insulated flat roof.

TWO - The importance of insulation

To meet Part L of the Building Regulations, a flat roof must have a U value of 0.15 W/m²K or lower – and to achieve that level of thermal efficiency easily, most use a 'warm roof' construction with insulation placed on top of the roof deck.



First the structure is sealed with a polythene vapour barrier membrane, then a variety of materials can be used as insulation – including 100mm-thick PIR boards, extruded polystyrene, compressed glass fibre or natural material such as wood fibre boards or compressed hemp fibre. Extra insulation such as multi-foil can also be fitted on the underside between the joists before the plasterboard ceiling is installed.

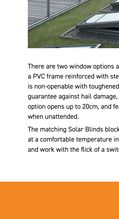
Before the protective roof covering is applied, it's usual to create a firm base by boarding over the insulation with 12mm plywood decking or 9mm OSB3.

THREE - The covering is crucial

Modern coverings are very different from those used in the past, with several options available. Don't be tempted to skimp on the quality though – specify a durable long-life covering with a guarantee, especially if the roof's fairly inaccessible, as any future remedial work will prove expensive.

Here are the main options;

- **Torch-on Felt Flat Roof** – modern felts are usually melted onto the roof structure in three layers with integral bitumen, available in a range of colours. Professional installations should have a lifespan of 20+ years if well maintained.
- **EPDM Rubberised Roofing** – EPDM is an artificial rubber supplied in cut-to-size rolls and installed in one single seamless piece to be leak-free. It's usually glued to the substrate and can last 30 to 50 years if applied well.
- **Fibreglass Glass Reinforced Plastic (GRP)** – a tough laminate of liquid polyester resin applied to mats of glass fibre, this is lightweight, strong, jointless and easily moulded. Relatively expensive, but guaranteed for 20 to 25 years.
- **Other Single Ply Membranes** – most common are PVC-based materials, which are lightweight, flexible and resistant to UV, with a lifespan of 30 to 50 years. Relatively expensive.
- **Mastic Asphalt** – one of the most durable coverings with a lifespan of up to 50 years. Applied hot for good detailing, but relatively heavy which has implications for the supporting structure.
- **Sheet Metal** – a traditional covering in lead, zinc or copper, but comparatively expensive. Laid in sheets with movement joints in between.



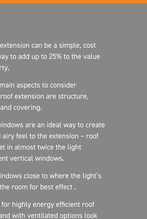
Other Elements

Roof covering membranes need to be taken up adjoining walls by at least 150mm to form an 'upstand' above the roof surface, and lead flashings should be fitted at junctions and upstands to create watertight joints. Where an extension meets a cavity wall, a cavity tray will channel away any damp within the cavity. Guttering is also an important consideration, to make sure rainwater is efficiently removed from the roof to avoid damp problems.

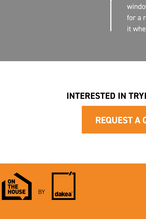
Incorporating roof windows

When you're considering the design of a flat roof extension, it's important to think about how to make it a light and airy addition to your existing space. Folding doors to the outside are all well and good, but the light source for the original space will still be further away from the room – which is when roof windows come into their own.

It's estimated that roof windows provide up to twice the light of an equivalent vertical window. And they're a perfect solution for helping light reach into every corner of large open plan spaces, dark corridors and awkward 'middle rooms' that sit away from a natural light source.



With a flat roof extension, you normally wouldn't need planning permission (although it's always wise to check). And in terms of design, symmetry should be secondary; instead, try to position your roof windows close to where the light is most needed to enhance the look and feel of the room.



The Ideal Choice

Dakea's Azure range of roof windows has been designed to be easy to incorporate into any flat roof project, for roofs with a pitch range of 5 to 15 degrees. On certain roof types, the window is fitted 30-45cm above the base roof level, with an additional kerb upstand to which the roofing membrane is fixed for a watertight installation.

There are two window options available – Fixed and Electric – and both offer high energy efficiency, a PVC frame reinforced with steel for minimal maintenance and a 10-year guarantee. The Fixed option is non-openable with toughened external glass with a special coating for easy cleaning and a lifetime guarantee against hail damage, and laminated internal glass for added safety. The matching Electric option opens up to 20cm, and features a rain sensor that automatically closes the window even when unattended.

The matching Solar Blinds block up to 51% of solar heat and exclude light completely, to keep the room at a comfortable temperature in summer months; they're solar operated too, so no wiring is needed, and work with the flick of a switch.

Talk to the Dakea Team

For more advice on which roof windows would be best for your project, talk to the expert Dakea team.

GET IN TOUCH NOW

KEY TAKE OUTS

- A flat roof extension can be a simple, cost effective way to add up to 25% to the value of a property.
- The three main aspects to consider with a flat roof extension are structure, insulation and covering.
- Flat roof windows are an ideal way to create a light and airy feel to the extension – roof windows let in almost twice the light of equivalent vertical windows.
- Position windows close to where the light's needed in the room for best effect .
- Always go for highly energy efficient roof windows, and with ventilated options look for a rain sensor to automatically close it when unattended.

INTERESTED IN TRYING DAKEA PRODUCTS?

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