

What is the difference between roof and cover boards?

A roof board sometimes called a 'roof substrate board', refers to substrates installed on top of roof decks and below the insulation layer. The term 'cover board' refers to substrates traditionally installed above the insulation layer, and below the waterproofing layer, of a flat roof system.

Roof boards are installed directly onto the structural deck. Depending on the material used to manufacture the board and the types of roof deck, they can be specified to help improve sound attenuation. They can also help slow or limit the spread of heat and fire from within the building. A roof board provides a good surface for a Vapour control layer to be fitted to, and it, in the instance where the deck is a fluted steel one, creates a flat surface making the following installation of products a little easier. Roof board application can also help improve wind uplift resistance by enhancing the stability of the fixing at both points where the two objects are fastened together.

Cover boards can be installed over all common types of insulation, and they act as a barrier that helps protect the insulation from compression and impact damage. The boards can improve sound performance and potentially increase the resistance of the building from external fire spread. Cover boards can help mitigate the puncture risks posed by accommodating foot traffic, allowing roof access for maintenance on the completed building. They also help increase the resistance to damage of some types of roof coverings, whether it is damage caused by an extreme weather event, flying debris, roof traffic or dropped tools. As is the case with a roof board, a cover board can help improve the wind uplift resistance of the roof build up as they enhance the stability of the fixing at both points that fasten the two objects together.

To achieve specific project objectives and desired building performance, in some cases, specification of both roof boards and cover boards may be required. It is not uncommon to see roof designs with multiple layers of a roof or cover boards or various combinations within the roof build.

What are the advantages and disadvantages of different types of roof and cover boards?

Different types of roof and cover boards bring different features, and some are more suited to particular applications than others. Timber is a traditional material used to manufacture roof and cover boards, but technological advances mean that various materials are now used to produce roof and cover boards for modern buildings. We will consider the roof board and cover board types and their characteristics. It is worth noting that even within each type of roof board and cover board, the performance may differ from one manufacturer to another:

Mat-faced gypsum core boards

What are they?

Mat-faced gypsum core cover boards are manufactured from natural or synthetic gypsum. The boards will have mat facers on one of the surfaces or both. Facers can be manufactured from materials such as coated glass facers or metallised polymer foil facers.

Advantages

- Fire resistance
- Compressive strength
- Wind uplift resistance
- Moisture and mould resistance
- Sound resistance
- Impact resistance
- Light and relatively easy to handle and install

Disadvantages

- Non-waterproof

Application

Flat roof build ups, especially in the commercial sector. Compatible with almost all roofing types.

Wood fibre, plywood, and oriented strand (OSB) board

What are they?

These traditional cover boards are manufactured from wood fibre combined with a resin binder. In the case of plywood and OSB, the layers are compressed. In some applications, the boards are primed with bituminous materials. Some manufacturers enhance wood fibre boards with fire and moisture retardants.

Benefits

- Compressive and flexural strength

Disadvantages

- Moisture sensitive
- It can rot and be a source of mould growth
- They can degrade faster than other types of cover boards
- Combustible

Application

Traditionally used in residential roofing as a substrate for installing the roof covering. Compatible with single ply, modified bitumen, and liquid applied roofs

HD ISO High-Density Polyiso boards

What are they?

HD ISO High-Density Polyiso can be used similarly to roof cover boards. They are composed of high-density polyisocyanurate with a coated glass mat layer to provide some of the protection of cover boards and added thermal performance benefits.

Benefits

- Lightweight for installation efficiencies
- Improved impact resistance (when compared to standard polyisocyanurate)
- Water and mould resistance
- Easy to cut (no special tools required)

Disadvantages

- Cost
- Relatively low strength when compared to alternatives
- Edges have the potential to curve
- When saturated, the board loses its thermal conductivity
- Combustible

Application

HD ISO High-Density Polyiso boards provide some of the protection of cover boards and added thermal performance benefits across various roof build ups.

Fibre cement boards

What are they?

As the name suggests, a fibre cement board is manufactured from a mixture of cement and water with added reinforcing fibres or particles. Like gypsum core boards, cement fibre boards can be enhanced with glass fibre mesh facers on one or both surfaces.

Benefits

- Fire resistance
- Mould resistant
- High compressive strength
- Impact resistance
- Wind uplift resistance
- Noise reduction

Disadvantages

- Heavy material
- More labour intensive than other cover boards
- Requires priming
- Most are not moisture resistant/can absorb water

Application

Commercial flat roof build ups. Compatible with almost all roof coverings.

Asphaltic core boards

What are they?

Asphaltic core boards are relatively new in roofing applications. They contain a mixture of minerals and asphalt with a fibreglass facer on both sides of the board. They are designed to use with hot applied asphaltic membranes and torch on systems and are compatible with asphaltic roofing systems. However, they may not be used with some single ply membranes as they may be affected by contact with the asphalt.

Benefits

- Dimensionally stable
- Moisture resistant
- Durable

Disadvantages

- Non-waterproof
- Low thermal resistance

Application

Flat commercial roofs. Compatibility with a single ply membrane needs to be explored prior to specification.

Perlite boards

What are they?

Perlite boards have been in use since the 1950s. They are traditionally composed of expanded perlite ore, cellulose fibres, asphalt, and starch binders. This type of board is designed for use with hot applied roofing membranes. Some perlite boards are coated with emulsion to prevent the absorption of asphalt.

Benefits

- Dimensionally stable
- Thermally resistant
- Fire resistant

Disadvantages

- High moisture sensitivity
- Lower strength than alternatives

Application

Flat residential roofing with some use in commercial applications. Compatibility with a single ply membrane needs to be explored prior to specification.

Glass-fibre and mineral-fibre boards

What are they?

This type of board is made by compressing fibres of glass or basalt rock bonded with resinous binders. Glass and mineral fibre boards come in different densities. The porous nature means they are often enhanced with mat facers for compatibility with hot applied modified bitumen membranes.

Benefits

- Glass fibres do not absorb water (the boards, however, allow for the passing of water and can become saturated)
- Dimensional stability
- Heat resistance

Disadvantages

- Structural integrity and thermal performance can be compromised through long term moisture exposure.

Application

Flat roofing. Compatibility with single ply and liquid applied membranes must be explored prior to specification.

Whilst there is a range of cover boards currently on the market, not all are suited for specification in commercial projects. Some have limitations in terms of compatibility with the various components of the roof build up.

What are the most common types of roof and cover boards used for commercial applications?

Mat faced gypsum core boards and cementitious boards have the least limitations and are most suited for commercial application. They can help the roof build-up offer greater protection against the weather and increase the robustness of the waterproofing layer. They can also provide an additional layer of fire resistance. Where roof boards and cover boards are specified together, this resistance can help against fires from both internal and external sources.