

Low Pitched Roof Installation of Clearline fusion Roof Integrated Solar

Viridian Solar has collaborated with manufacturers of specialist low-pitch roofing membranes to confirm compatibility and allow the installation of Clearline fusion roof integrated solar panels to roofs with pitch angles down to 14 degrees.

1.0 The Risk of Water Ingress at Low Pitch Angles

Clearline Fusion has been tested to and passed the water ingress test for MCS012 at a minimum pitch angle of 20° in accordance with PD CEN/TR 15601:2012.

At low roof pitch angles capillary action increases the risk that flashing around roof integrated solar PV panels may leak, a risk that is increased further in exposed locations prone to extreme conditions of wind-driven rain.

Capillary action occurs when a liquid flows through a narrow space without any external force driving it, or against an external force holding it back, for example gravity. It can be observed in action when an object such as a paper towel or sponge is dipped into water and is the result of surface tension acting between the liquid and the material creating the gaps through which the liquid flows.

For roofs at lower pitches maintaining weathertightness against capillary action is more of a challenge. Between lapped roofing elements, water can advance further against gravity because the accompanying height gain is lower than that for steeper roofs.

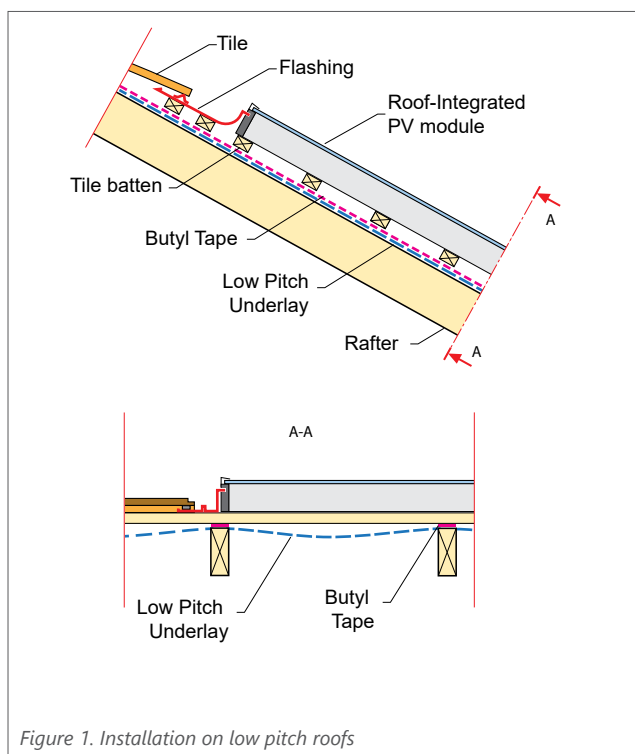


Figure 1. Installation on low pitch roofs

2.0 Low Roof Pitch Installation

Replacing the standard roofing underlay with a specialist low pitch underlay provides protection against leakage at roof pitches below the standard minimum of 20°. This detail may also be considered for roofs close to the minimum pitch (below 25°) and subject to additional risk factors such as a highly exposed location or older, uneven (non-planar) roofs.

The following products have been tested and the manufacturers approve of use with Clearline fusion roof integrated solar PV.

2.1 Low Pitch Membrane Options

	Tyvek Supro	Delta Exxtrem
Manufacturer	DuPont	Doerken
Minimum Pitch Angle	15°	14°
Temperature Range	-40°C to +100°C	-40°C to +80°C 8 hour max 150°C
Reaction to Fire	EN 13501-1 Class E	EN 13501-1 Euroclass B-s1,d0
Ventilation Class	LR (Low Resistance)	LR (Low Resistance)
Manufacturer Guarantee	15 years	30 years
Link to Datasheet	https://bit.ly/4kN5E5m	https://bit.ly/4bJBqLS

2.2 Installation

The membrane should be installed in accordance with the manufacturer's instructions.

These require that the membranes are installed with a drape and a proprietary butyl tape applied along the rafters to seal penetrations made when nailing the tile battens and fixing the Clearline fusion rafter brackets.

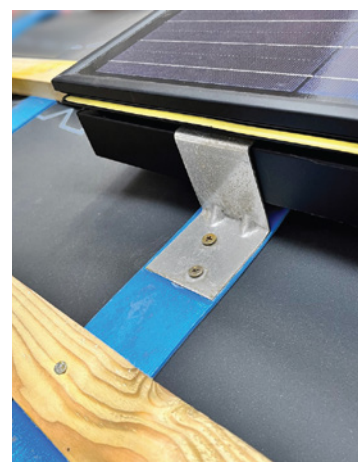


Figure 2. Clearline Fusion rafter bracket and proprietary butyl tape