

PROCTORGEO[®]
ENKA[®] VENT
SPACER MATS

TECHNICAL NOTE 7
Temperature and
UV Resistance





Background

In 2023, Proctor Group Australia was appointed the local distributor in Australia and New Zealand for Freudenberg EnkaVent and was able to transition from the ProctorGeo HC9, manufactured from Polypropylene (PP) to the HC8 EnkaVent product manufactured from Polyamide (PA6).

This technical note presents key research from Freudenberg laboratories and field validations about the ProctorGeo HC8 and HC20 EnkaVent with respect to UV stability and durability both during installation and for the life of the roof.

Although the original 350gsm ProctorGeo HC9 made from PP was suitable when installed as per our installation guide, with the ProctorGeo EnkaVent we can now offer an even more durable product with less restrictive installation conditions.

Applications

ProctorGeo EnkaVent represents a breakthrough in roofing underlayment technology. It is a three-dimensional multi-use mat, made of continuous nylon filaments fused at their intersections. The product can be used in metal and ballasted roofing applications where spacing of the roof will provide the ventilation and drainage needed for a long service life. The nylon filaments do not fail under the load of the roof and the rigors of the construction environment, including construction foot traffic. The space between the roof membrane/weather barrier underlayment and the ballast/metal roof will allow moisture to flow away or evaporate, resulting in an increased lifetime of the roof and the roof structure.

Exceptional Durability

Polyamide (PA6) spacer mats are known for their high tensile strength and durability, making them suitable for long-term use in building applications.

PP spacer mats may become brittle over time when used outside the recommended UV exposure and temperature conditions. Below is a photo of our previous HC9 product made from PP, that was left stored outdoors in Australia for an extended period and had to be replaced.



Fig 1. PP mesh left exposed far beyond the recommended allowable UV exposure period.

Temperature Resilience

The ProctorGeo EnkaVent operational temperature range is conservatively declared as -30°C to +100°C. This outperforms PP products which may deform under extended exposure above 80°C.

In Australia & New Zealand, the temperature of unventilated dark colour roof sheets could exceed 80°C. The higher temperature resilience of PA6 products prevent thermal sagging under heat and the material also maintains flexibility in cold conditions.

UV Resistance

ProctorGeo EnkaVent contains carbon-black additives that block >99% UV radiation, to manage polymer chain degradation. Carbon-black nano-particles absorb UV photons, dissipating energy as heat before polymer oxidation occurs.

ProctorGeo EnkaVent retained 90% tensile strength after 3,000 hours of QUV accelerated weathering (per EN 12224:2000) equivalent to approximately 2.5 years exposure in Central Europe. By comparison, our recommended maximum exposure period of four months is very conservative.

Field testing where the product was externally exposed for 5 years at a laboratory in Hungary, found that the tested material still retained 82% of the original tensile strength. Under 2kPa pressure, the exposed sample maintained 94% of the original tested thickness.

Flexibility & Comfortability

Polyamide PA6 spacer mats are very easy to distinguish from PP product by touch alone, as the material feels noticeably softer.

With 40% greater elongation at break than PP, the material enables seamless installation on complex roof geometries such as domes & vaults. The material also self-adapts to small substrate irregularities without creasing or bridging.

Key points

- High temperature operational range up to 100°C
- Low temperature operational range down to -30°C
- Evidence of durability after accelerated QUV exposure testing and field exposure testing.

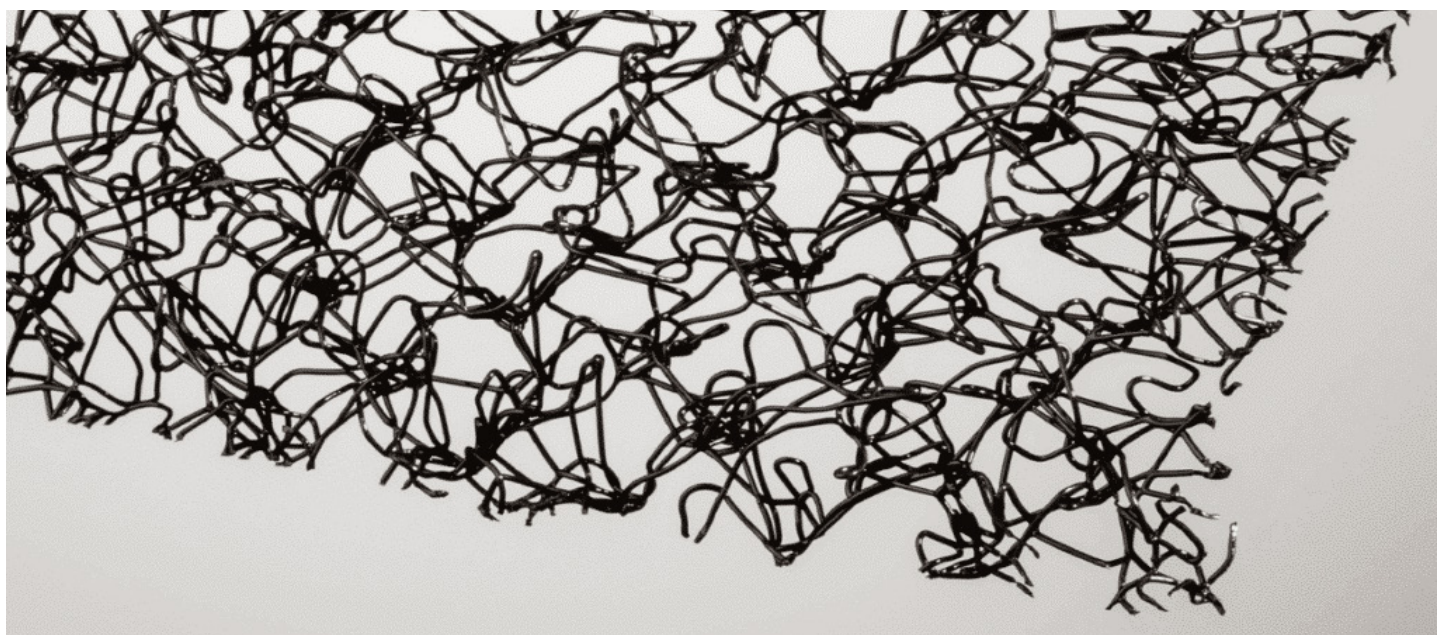
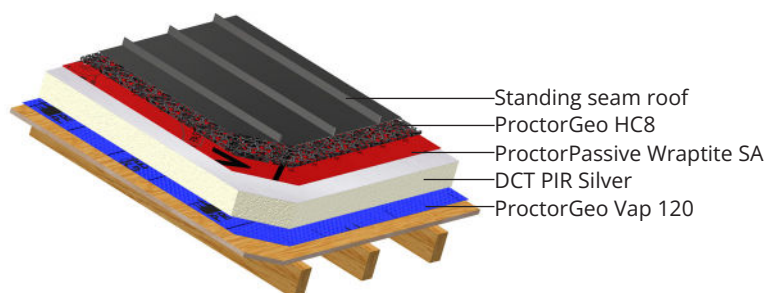


Fig 2. Three dimensional shaped mesh of polyamide mono-filaments, tangled and fused together.



DCT-R07-1

STANDING SEAM EXTERNALLY INSULATED METAL ROOF (PIR)

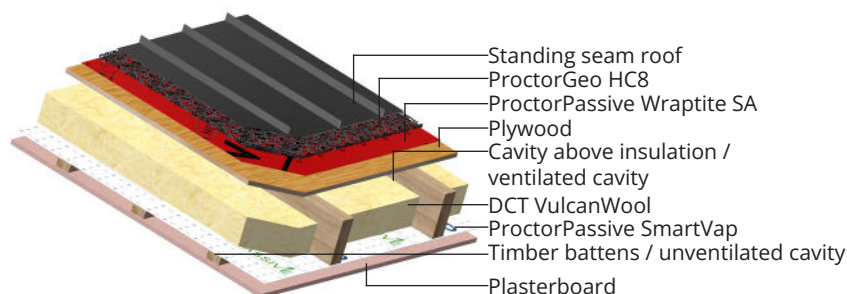


A “warm roof” design continuously insulated by a rigid PIR insulation installed above the roof sheathing board. The ProctorGeo HC8 drainage mat installed directly below the standing seam roofing, and above the self-adhered vapour permeable Wraptite SA sarking, provides for drainage and acoustic attenuation of rain noise.



DCT-R08-2

VENTILATED STANDING SEAM METAL ROOF INTERNALLY INSULATED (SMARTVAP)

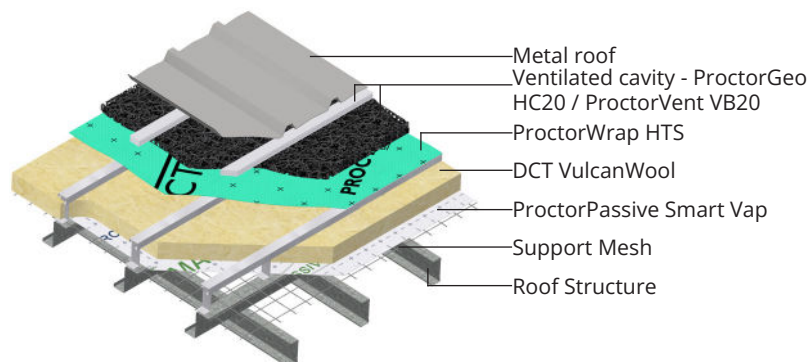


A “cold roof” design continuously ventilated from eaves to ridge below the roof sheathing board. The SmartVap intelligent air barrier membrane above the ceiling forms a continuous air and vapour control layer with ceiling insulation added between the rafters. The ProctorGeo HC8 drainage mat installed directly below the standing seam roofing, and above the self-adhered vapour permeable Wraptite SA sarking, provides for drainage and acoustic attenuation of rain noise.



DCT-R20-6

VENTILATED COMMERCIAL METAL ROOF WITH DCT VULCANWOOL INSULATION, PROCTORWRAP HTS VAPOUR PERMEABLE MEMBRANE, SMARTVAP VAPOUR RETARDER, PROCTORGEO HC20 SPACER MAT AND PROCTORVENT VB20 VENTED BATTEN



Commercial metal roof externally insulated with DCT VulcanWool and internal ProctorPassive SmartVap air and vapour retarder, supported by a safety mesh. The full thickness of the insulation is maintained using structural spacers at each purlin. The ProctorVent VB20 and the ProctorGeo HC20 spacer mat installed below the roof sheet, and above the Class 4 vapour permeable ProctorWrap HTS sarking, provides for drainage, ventilation, and acoustic attenuation, meeting the NCC 2022 deemed to satisfy 20mm requirement for a ventilated roof space.

Products



ProctorGeo HC8 EnkaVent



Vapour Permeable



Ventilation



Drainage



Sound Absorption

ProctorGeo HC8 EnkaVent Drainage Spacer Mat is a three dimensional shaped mesh of polyamide mono-filaments, tangled and fused together.

ProctorGeo HC8 EnkaVent is used to provide permanent drainage and air movement pathway between the roof sheeting and water resistant roofing underlay and permit the removal of such moisture. ProctorGeo HC8 EnkaVent also offers significant sound reduction from rain impact noise.



ProctorGeo HC20 EnkaVent



Vapour Permeable



Ventilation



Drainage



Sound Absorption

ProctorGeo HC20 EnkaVent Drainage Spacer Mat is a 20mm thickness, three dimensional shaped mesh of polyamide mono-filaments, tangled and fused together.

ProctorGeo HC20 EnkaVent is used to provide permanent drainage and an air movement pathway between the roof sheeting and roofing underlay to assist in removing moisture. ProctorGeo HC20 EnkaVent also offers significant sound reduction from rain impact noise. When used in conjunction with Proctor underlays and tapes, the HC20 EnkaVent offers a condensation management solution for commercial and residential metal roofing.

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