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A comparison between alternative "single ply" materials: Dryseal GRP component based system vs. Thermoplastic membranes (i.e. PVC, CPE, TPO and TPE)

Aesthetics

Both Dryseal and other "single ply" materials can be supplied in appealing colours, with the standard product colours for each being light and dark (lead) grey. The supply of special colours for most single ply products requires a minimum production run of 2,000 m^2 of membrane.

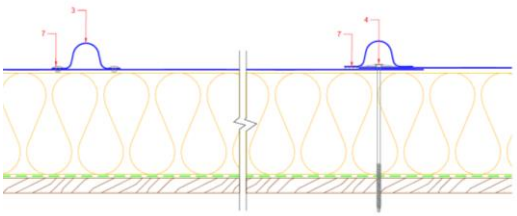
The advantage is held by Dryseal this instance as 25 kgs. is the minimum top coat special order, which equates to 50 m^2 of completed roof.

The ability of Dryseal to be fitted with "rolls" to simulate the appearance of panelled lead gives it an advantage over single ply systems as the single ply rib is distinctly dissimilar to the appearance of a lead roll, being intended to replicate a folded sheet metal joint.

The Dryseal GRP Component based system.

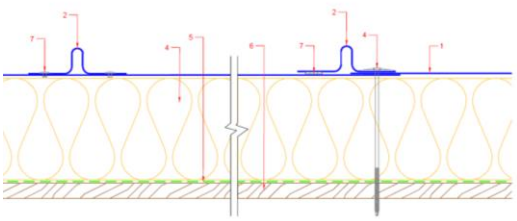
The PVC option.

With the Dryseal system, both types of trim option are available.



1. Dryseal flat sheet: HDL H 1250F
2. Dryseal trim: HDL H 0150 SR
3. Dryseal trim: HDL H 4030 R
4. Anti-corrosive fixings as required
4. Insulation
5. Vapour control layer
6. Substrate / Timber decking
7. Adhesive or rivet temporary fixing

Note: In-situ laminate over fixings and seams/joints omitted for clarity. Please see drawing no: JFD for more detail.



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Suitability for installation

Being a semi-rigid product, Dryseal can be fitted without bonding or further support to vertical or steep slopes using normal mechanical fixing methods. Other "single ply" products rely on adhesives to achieve this application, which may not be suitable on church roofs, due to most being close boarded timber. The possibility of membrane "sag" is not one that applies to Dryseal GRP sheet, especially in hot weather.

Dryseal is fitted as a completely mechanically fixed system, with the roof perimeter able to "breathe". This enables a Dryseal covered roof to draw out any residual moisture left within a roof construction following re-roofing work and, unlike with other single membrane roof coverings, there is no reliance upon adhesives, sealants and termination bars to secure perimeter detailing, a process which effectively seals the roof edge.

Product Technical Characteristics

Both types of product are light in weight, PVC type membrane generally being around 2 kgs. per m^2 and Dryseal being 3 kgs. per m^2. Compared with the weight of lead sheet of up to 36 kgs. per m^2 (for Code 8 lead), the lighter weight of both single membrane products will not adversely affect the building structure and may prove to be an advantage, especially if insulation needs to be introduced to the roof build up during re-roofing.

PVC roofing membrane would typically provide 15% elongation to breaking point and more than 200 Newton tear resistance. Resistance to impact is generally 500mm with dropped object of 10mm diameter. Resistance to a static load is typically 20 kgs. per m^2.

Dryseal GRP tensile elongation is 1.5%, inferior to PVC, but is perfectly sufficient to accommodate normal thermal expansion and contraction of the substrate. Expansion joints can be seamlessly incorporated into a Dryseal roof and fully laminated into the system.

Fire safety

Both types of product achieve Ext F.AC external spread of flame ratings or better under BS 476. Dryseal can be manufactured using materials which meet higher levels of fire retardation if the specification requires it. Unlike thermoplastic materials that melt under the application of heat, Dryseal achieves the Ext F.AC rating when laid directly onto combustible substrates such as timber, without needing to introduce fire retardant insulation. During the Dryseal installation process no naked flames or heat guns are used, considerably reducing the risk of fire.

Impact Resistance and Ease of repair

Punctures, damage and failures at joints in thermoplastic membranes are often difficult to locate by inspection and may require the use of specialist leak detection equipment. PVC membranes can suffer from polymer migration during their life, especially in an acidic environment like a city location, posing problems with heat-welded repairs after some years. Similarly, once vulcanisation has taken place, FPO and TPO membranes can be difficult to clean and prepare for the purposes of repair.

Dryseal GRP can be simply abraded and repaired with resin lamination in the same manner throughout its whole life. No degradation or loss of constituent chemicals occurs with Dryseal GRP. On a timber roof Dryseal GRP is in excess of 20 times more puncture and load resistant than PVC membrane.

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Environmental Impact

The harmful effects of PVC production are not widely known. PVC production employs carcinogens such as benzene and vinyl chloride. In addition, dioxins are one of the principal by-products of PVC manufacture. During the manufacture of Dryseal GRP, some styrene and other volatile organic compounds are released, however the industry standard of 4 kilogrammes per tonne of styrene used is huge by comparison to Hambleside Danelaw's miniscule 15 grams per tonne.

Once installed on a roof, Dryseal GRP has no environmental effect on potable water, as there is no chemical "leeching" from it. Some single ply membranes can, in time, suffer from polymer migration, which is inevitably discharged into the environment.

Due to Hambleside Danelaw's continued investment programme, a reduction in landfill waste of over 60% the last ten years plus a reduction of the company's carbon footprint by 70% over the last five years have contributed to it being awarded BS EN ISO 14001 accreditation and Planet Positive certification. Dryseal is fully recyclable and the manufacturing plant in Daventry is amongst the most environmentally advanced in Europe.

Life Expectancy and warranty.

In general, PVC, FPO and TPO/E membranes can be expected to last up to 30 years. Most carry a 20 year warranty on the product itself, with additional cost for an installation or insured warranty.

Dryseal carries a 20 year "leak free" guarantee which covers rectification of any defects, rather than supply of FOC goods. The installer separately guarantees his installation work for the first 10 years and the installation is covered by an insured warranty for the first 10 years, the cost of which is included in the product purchase price. Subject to normal maintenance and a re-application of top coat after 20 years, it is reasonable to expect the Dryseal GRP component based system to last for up to 50 years. It is not necessary to remove the Dryseal system to upgrade.

Summary

Overall, the facts stated above establish a strong argument for the use of Dryseal in preference to other "single ply" systems, on the grounds of cost, aesthetics, durability and environmental impact.

The Round House – Dryseal in Devon.