

SIG Roof Lines



Part of the scenery

The subterranean construction of a Devon home used Rhepanol hg to protect the structure from the tonnes of earth above it

When a London couple chose to make their 1970s holiday bungalow retreat in Devon a permanent home, they decided an upgrade in the quality of the accommodation was also in order. But sited as it was in the Dartmoor National Park, their initial proposal for an expanded family home was flatly turned down. Exasperated, they turned to local architect Van der Steen Hall. Fully aware of the limitations on this highly sensitive site, the practice proposed a more imaginative approach: digging down into the slope rather than building up from it. The result is a highly bespoke home appearing as part of the landscape, its Devon granite and fully glazed facade growing out of the hillside below an expansive grass roof, which sensitively hides the home in the Dartmoor scenery.

Limited access to the site, along a narrow bridle path, dictated the choice of materials and logistics: the building constructed from

what could be best moved along it: concrete blocks, thick and deep oak beams, and a simply applied SIG Rhepanol hg single-ply membrane to protect the structure from the tonnes of earth above it. 'The roof was conceived as a concrete structure,' says practice partner Peter Hall. 'But with trucks precluded, we opted for heavy oak beams with square-edged boards above them and the Rhepanol hg on top. We'd tested out the use of heavy timber roofs when restoring some of Devon's Palmerston forts. There we had to use asphalt on screed, but here the use of a Rhepanol hg membrane seemed appropriate, robust and certainly cost-effective.'

With the house procured under the Intermediate Form of Contract, and the architect specifying the 250m² of roofing with a no 'similar approved' proviso, Hall needed to ensure the specification was robust and that structural deflections were

minimised. 'Basically, he told us 'sheep, yes, but cows, no,' recalls Hall, speaking of the additional loads that might be exerted on the roof. 'Performance was paramount – at the time we had a rep come over from Germany to help us develop the design. Rhepanol hg wasn't just specified on the roof either, but on the heads and cills of all the windows.' SIG provided 15-year warranties on the material, but not on the workmanship, says Hall, so the time spent with SIG's technical team proved invaluable when it came to ensuring the roof specification was, in all senses, watertight.

With the owners now happily settled in, Hall says the house and its roof are performing well – so much so that he has since specified Rhepanol hg on two other projects. He still seems to rue the toning down of his initial concept, however. 'The design was rather more wildly troglodytic than it ended up,' he says, 'much to the client's eventual delight...'

Single ply roofing

Seven top tips on successfully specifying a single-ply roof membrane

Get a single-ply roof membrane right and no one notices. But get it wrong, and it's another, very costly, story. Steve Cleminson, technical manager at SIG Design & Technology, gives his top tips on the art of specifying a successful single-ply roof membrane.

Take a holistic approach

Choosing the actual product is only part of the story. You can investigate the difference between the products themselves all you like, but it's the whole, holistic story that matters from the start to finish, including the availability of trained contractors and suitable support on site. That's 10 times more important than simply choosing the single-ply roof membrane system itself.

Interrogate the brief

Be clear about what you're trying to achieve with the product in terms of fire rating, u-values, warranty periods, third-party accreditations, environmental considerations and aesthetics. Ensure you address these key issues in your specification, and that the implications for not meeting any of them are understood. Investigate site conditions such as the nature of the deck and whether you can have a loose-laid, bonded or mechanically fixed installation, and produce clear and concise NBS specification for main contractors to go out to tender with.

Educate yourself on compliances

I never fail to be amazed by how some architects seem more interested in the colour

of the toilet walls than complying with best practices. The BS 6229 code of practice for flat roofs states that no part of the finished roof should have a fall of less than 1:80. Getting the falls right is a common pitfall, especially when there are third parties involved. Even if non-compliance isn't picked up by building control or third-party insurers, poor design regarding falls can lead to increased maintenance requirements, accelerated ageing of roof finishes and dangerous conditions for roof access routes.

Understand the products

Single-ply roof membranes are flat, synthetic polymer-based roofing materials manufactured in a single waterproof sheet. All may look very similar but their base

compounds and chemistry are very different (see right). They are often wrongly considered a drab solution, rarely specified to look pretty, but favoured for their longevity, ease of installation and the peace of mind that they will stay waterproof. However, with many systems offering a range of colours, coatings and decorative profiles, quite striking results can be achieved. Make sure you understand what the warranty is covering, and what maintenance requirements are set out in the warranty documents.

Think carefully about sustainability

Identifying the greenest choice is a minefield. The more cost-effective PVC option has traditionally been seen as less green because of its chemistry. It can, however, have advantages if, say, it is manufactured locally compared to the implications of importing other products from abroad. TPO and TPE can claim some enhanced green credentials compared to PVC, but if sustainability is the top priority, specifiers often choose PIB. The product choice will depend on what the architect wants to achieve for its client. There is an element of compromise since, generally, the greener the product, the more expensive it is.

Get the sequencing right

Ensure roofing suppliers are involved early on, or expect heartache and cost later. Always ask suppliers how readily available stock is, to avoid long lead times causing delays. Sequencing and the design of interfaces is imperative – for example, early consideration of a balustrade post, which may avoid someone later on sticking a bolt through the membrane and affecting the waterproofing. Most problems are due to a lack of coordination. If you do it wrong, you have to backtrack and pay more or end up with a very weak detail, which will cause problems later on.

Choose your installer carefully

Every product is only as good as its installer. If you go for a cheaper option and end up with a contractor who isn't fully familiar with a particular system's requirements, you could end up in trouble. Instead, identify suitably trained, registered and monitored contractors who are supported by suppliers that comply with Single Ply Roofing Association (SPRA) guidelines and training regimes. Always ask your supplier how they monitor the quality of their installers, and check they have technical design support available for the installers.

FIVE MAIN SINGLE-PLY ROOF MEMBRANE TYPES

PVC (Polyvinyl Chloride) Accounts for around 80% of the UK market. Available in a wide range of colours. Contains plasticisers and chlorine. Requires isolating layer for use with bitumen. Durable, partially recyclable and UK-made.

PIB (Polyisobutylene) First developed in the 1930s, PIB is long-lasting, 100% recyclable, and the only membrane with a full life cycle assessment to ISO14040 standards. Available in grey and with a copper paint finish. A self-sealing edge makes it simple to install.

TPE (Thermoplastic Polyolefin Elastomer) 100% recyclable and simpler to weld and install than TPO. Small punctures can be resealed using heat. UK manufactured.

TPO (Thermoplastic Polyolefin) Often seen as a more environmentally friendly alternative to PVC because of its lack of plasticisers. However, it can require a solvent to clean it before heat welding. Popular for civil engineering uses. Only available in greys. Partially recyclable.

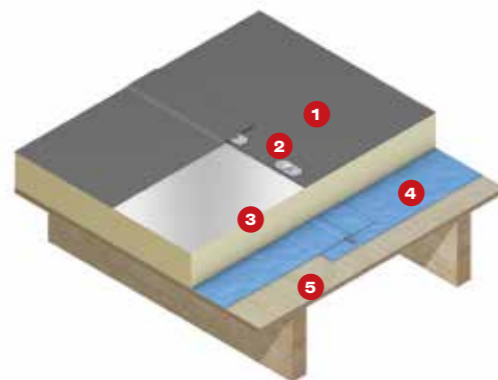
EPDM (Ethylene Propylene Diene Monomer) Elastic, synthetic rubber roofing membrane, which is popular for domestic projects though it can be hard to detail. Only available in black. Not recyclable, although the membrane can sometimes be reused. Often the cheapest option.

Left Whichever single-ply roof membrane you choose, your product is only as good as the skill of the installer.

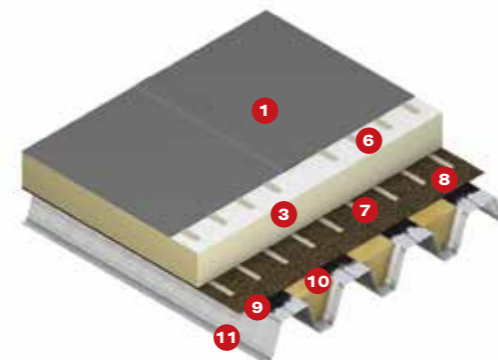
Single ply roofing membranes

- 1 Single ply roof covering
- 2 Mechanical fixing and washer (thermally broken)
- 3 Insulation
- 4 PE vapour control layer
- 5 Timber deck
- 6 Membrane adhesive
- 7 Insulation adhesive
- 8 Bitumen vapour control layer
- 9 Primer
- 10 Acoustic infills
- 11 Metal deck
- 12 Round washed ballast
- 13 Paving slab
- 14 Paving slab support pad
- 15 Fleece layer
- 16 PE layer
- 17 Copper paint
- 18 Standing seam
- 19 Gripfix strips
- 20 Thermally broken insulation fixing

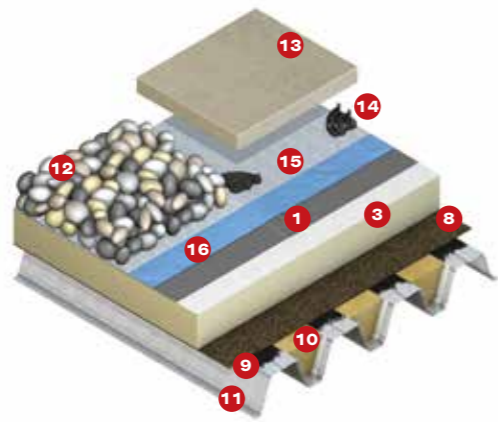
Warmroof, mechanically fixed



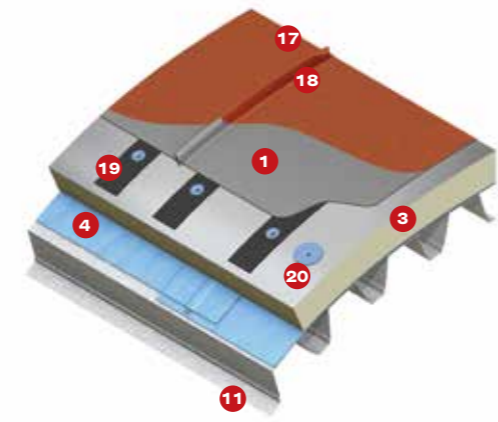
Warm roof, bonded



Warm roof, ballasted



Warm roof, decor profiles



8 steps to
the perfect
roof

1
The Right
Products

2
Design
Expertise

3
Meet the
Regulations

4
Confidence
in Supply

5
Experienced
Contractors

6
Monitored
Installation

7
Full
Guarantees

8
Planned
Maintenance

Find out
more at
singleply.
co.uk/
perfectroof

Copper here in spirit

Replacing stolen copper at a crematorium while respecting visitors' sensitivities led Guildford council to look for a membrane equivalent



Despite a 50% fall in incidents of copper theft – a result of Operation Tornado, which demands authentic photo ID from those selling to scrap metal dealers – the crime still costs the UK economy over £1bn a year. This was made painfully aware to Guildford City Council when its crematorium facility and Chapel of Remembrance on the outskirts of the town was targeted by thieves in 2011, and completely stripped of its long strip standing seam roof.

When it came to replacing the stolen copper, the council thought long and hard about its options for a facility that was never going to have a 24-hour security presence. The problem was strangely more complex than just changing the material for a cheaper one, such as zinc. 'We were conscious of the fact that this was a place visited regularly by bereaved family and friends,' recalls Guildford City Council project manager Tommy Parkes. 'It was important to respect the fact that they might be sensitive to any radical changes. While it wasn't part of the business case, we were keen to maintain the aesthetic, but had to minimise the chance of future theft.'

To meet both demands, the council opted for Rhepanol fk roofing membrane finished with its copper roof paint, which patinated in a matter of weeks to its characteristic green oxidised form. For the council it was a no-brainer. The £400,000 allocated to the works also involved additional insulation to internal areas, removal of asbestos and replacing



The use of Rhepanol fk roofing membrane finished with copper roof paint maintains the traditional appearance while dealing effectively with the threat of theft.

RHEPANOL SHINES IN THE TYROL

It's not all about theft. For some schemes, the specification of Rhepanol fk with its copper paint finish can be for aesthetic or other reasons. In the picturesque Austrian city of Salzburg, the recent refurbishment of a local government health building involved removing 1,000m² of its zinc sheet roofing, and replacing it with something more aesthetically pleasing and suited to its historic city centre context. A traditional copper standing seam roof would have meant increasing the roof pitch height from its existing 3° – precluded by the city's urban heritage planning guidelines. But the low roof pitch was no problem for roofing contractor Johan Bruckner, which specified Rhepanol fk and its polyisobutylene copper paint finish. Laid with standing seam profiles at 600mm centres with a 50mm seam overlap, the copper particle coating acted as a perfect way to complete the project while keeping the locals – and planners – happy.

courtyard walkway soffits – in total, upgrade works to about 1,000m² of roof. Parkes says that programme was all-important here. The work had to be carried out in three main phases over 18 months and at weekends to minimise disruption to a facility that, for obvious reasons, couldn't simply be closed down for a while.

As regards sustainability, the council was satisfied with Rhepanol fk's credentials. SIG Design & Technology project manager Christa Thompson explains: 'Rhepanol is a synthetic rubber, whose core polymer is Polyisobutylene based on Opanol, which is used as a constituent of many chewing gums. Also its BBA certified service life of 40 years is one of the longest available in the market place.'

Rhepanol fk also has good natural fire protection characteristics without resort to halogens such as bromine and chlorine.

Thompson explains that the council initially applied the material to back-of-house areas on the project to ascertain its suitability and to observe its patination characteristics. 'Once they were convinced that it worked as a standing seam material, it was then rolled out across the rest of the job,' says Thompson.

Eighteen months later, the council remains happy with its new roof. With walk boards, the roof can be easily accessed for cleaning, and there hasn't been a recurrence of the earlier theft. I ask whether there has been positive feedback from the public. 'In the day-to-day facilities management of the council's estate, you tend to be more worried by the projects that people talk about rather than don't,' remarks Parkes. And as is fitting for a place of final rest, the crematorium's visitors continue to visit, no more unduly perturbed than before the change.



TAKE THE RISK OUT OF ROOF DESIGN

8 STEPS TO THE PERFECT ROOF

1



The Right Products

Don't rely on a single manufacturer who will recommend their product for any application. Get independent support from an experienced supplier: make an informed choice.

5



Experienced Contractors

An experienced, accredited contractor knows the products and will integrate the roof system with your whole building so it performs well and looks great too.

2



Design Expertise

Don't risk uncoordinated design input from several manufacturers. Have your roof designed, specified and co-ordinated from the deck up by a single PI insured designer.

6



Monitored Installation

In many projects, buildability issues will crop up on site. Ensure your supplier will monitor the installation and provide quality field support for your contractors.

3



Meet the Regulations

Ensure you meet all the Statutory Requirements even if they change. Use an independent, expert design service and get full, free technical support until completion.

7



Full Guarantees

Don't fall between suppliers who may dispute responsibility. Have the roof designed, installed and guaranteed from the deck up by a single entity you can rely upon.

4



Confidence in Supply

A reliable supply chain is essential for profitability and performance. Choose a proven materials supplier with local availability, shorter lead times and high stock levels.

8



Planned Maintenance

A perfect roof is designed for appropriate, safe and efficient maintenance. A whole roof service, plus maintenance plan, will protect you and give your client confidence.

FLAT ROOFS



ZINC & COPPER ROOFS



GREEN ROOFS



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