

Slating & Tiling

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alternatives to lead sheet flashings

With astronomical demand on world markets for metals, fuelled by the growth in the Chinese economy, metals such as lead – the preferred material for forming a flashing on a pitched roof – are in short supply and have increased the cost of most roof works. Specifiers and contractors are therefore looking for alternatives.

The UK is the main user of lead sheet in Europe, as most countries consider it a poison. Lead is poisonous when ingested, so all health and safety recommendations need to be complied with when working with the material.

Lead has many qualities, the most obvious being resistance to atmospheric corrosion. It will last for 100 years-plus – provided it's installed correctly – and is almost maintenance-free. Installed incorrectly it can fail within five years (which is very rare).

Lead is easily cut, bent and stretched, but, being soft, needs to be fully supported, as it is not able to support its own weight. Lead sheet is heavy, often making it difficult to lift by one man. This weight is good at resisting wind uplift forces, but, once lifted, it will bend easily.

Lead expands and contracts more than most metals and, therefore, unless there are adequate laps and lengths, it will try and move and, if restricted, result in material failure. Unless coated with patination oil, it will oxidize and develop a white lead oxide powder on the surface, which can stain a roof.

Overall, lead has to be treated with respect, needs skill and time to install correctly, but is versatile. The downside is that it can be easy to steal. So what are the alternatives?

GRP

Glass reinforced polyester has been used to form preformed lengths of inclined valley, secret gutter and bonding gutter, which are lighter and quicker to install than lead. Angled soakers and side abutment flashings are also avail-

able in GRP. Like all resin made products the cost is relative to the cost of oil. While GRP has a good life expectancy, it is not as good as lead. However, it is more rigid and therefore, generally, self-supporting and needs less or, in some instances, no additional support. It has no scrap value.

Rubber

With the abundance of scrap vehicle tyres and the need to recycle the material, there is a great potential for this material for forming flashings. However, the available use of rubber is concentrated into forming stepped cones to fit around pipes. The rubber is then bonded onto other materials such as aluminium or lead, as rubber has insufficient rigidity to resist wind uplift. It has no recycle value at present.

Aluminium

Aluminium is light and plentiful, but it is also soft and cannot be stretched as easily as lead. It is also not easy to weld. To make flashings, long extruded lengths with lapped joints are used, which can make them more difficult to fit on site. Aluminium is found in many proprietary products, such as Flashband, a thin aluminium foil with a sticky bitumen backing. Unfortunately, over time the bitumen leaches out and becomes detached, making the joint look untidy. Also, the material is restricted to set widths. Aluminium foil is also used with some ridge and hip roll flashings in the form of a crimped material that is adhered to a fleece such that as it stretches, the crimps unfold and allow the rolled material to follow an undulating surface. Roof windows use preformed aluminium flashings to



form gutters around them. Provided the aluminium is not part of a composite, it is recyclable.

Thermoplastics

Thermoplastics such as polyethylene terephthalate and polyacetylene are available in rolls reinforced with an aluminium expanded metal to allow the sheet material to be stretched and maintain its new shape. Thermoplastics soften when hot and become rigid when cold. While easy to use, they are not self adhesive, so have to be lapped in the same way as lead. While they are durable, they will not last as long as lead and, being composite, are not recyclable, and therefore have no scrap value.

Zinc

Zinc was used for many years as a cheap alternative to lead for inclined valleys. Being relatively brittle and susceptible to environmental decay, it was not seen as a long-term solution. It is often used as a coating on other metals, such as steel and aluminium, making them corrosion resistant. Zinc is recyclable and not poisonous, so seen as more environmentally friendly than other metals.

Stainless Steel

While stainless steel is expensive, it has been used to form inclined valleys and other simple cappings. It is very corrosion resistant, long-lasting and recyclable. But, being very rigid, it is impossible to form into complicated shapes on site.

Conclusion

There is no one material that can perform better, or for longer, than lead for roof flashings. Other materials can emulate lead in certain situations, and they need to be understood and used within their capabilities. Pure materials such as aluminium and zinc can be recycled – provided they are not part of a matrix – and are recyclable, but it makes them vulnerable to vandalism.

Products that contain oil-based materials are subject to the price of oil. Plastics should only be used where they can demonstrate resistance to ultraviolet light and can be easily replaced at a later date when they fail, which they will, long before the tiles or slates.

Tips

- Avoid plastic-based materials in locations that would be difficult to change at a later date, such as an inclined valley or a change of pitch in a slate mansard roof. Select a flashing material that will last as long as the roof covering it is being used with.
- Lightweight materials may be easier to install, but unless they have additional fixings, will be easier for the wind to rip off.
- In future, all materials will need to be recyclable; therefore, certain composite materials may become environmentally unfriendly, regardless of their performance in use.

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