



Surface cleaning of discoloured Sweet Chestnut cladding using a pressure washer

Putting cladding to the test

Uncoated cladding looks fantastic, but can have problems later in life.

Peter Kaczmar reports on a test to find out what can be done

Many buildings both domestic and commercial employ uncoated wood cladding as all or part of their exterior façade, and it's not difficult to see why.

Uncoated cladding requires little maintenance in service and provides a natural aesthetic that is not possible with man-made materials. On exposure to the elements the colour of wood normally changes predictably over the first few years' service, eventually attaining a silver-grey appearance. Indeed, many architects specify uncoated cladding precisely because they want the appearance of weathered wood to meet their design aims.

While most timber cladding achieves this look within a few years, occasionally problems with surface disfigurement arise that detract significantly from its aesthetic impact. Until now there has been no method to remedy disfigurement.

Recognising these issues, TRADA

funded a two-year programme of research to identify the causes of disfigurement of unfinished exterior cladding, establish suitable methods for remedial cleaning and develop strategies for its long-term prevention.

Research identified 42 sites where disfigured cladding was present, mostly through mould growth and extractive staining. Mould growth results in black discolouration of wide areas of cladding by black yeast fungi from the genera *Aureobasidium* or *Hormonema*.

This discoloration occurs on both newly exposed and weathered wood and was most prevalent on unprotected aspects exposed to high levels of solar radiation. It is much less of a problem on areas that are sheltered from direct sunlight and rainfall, such as areas beneath eaves, overhangs and canopies.

Extractive staining leads to a patchy discolouration of cladding surfaces. It is

caused by the movement of coloured, water-soluble extractives in response to cyclic changes in wetting and drying, sometimes referred to as tannin staining or water marking. The research indicated that this form of staining occurs at the surfaces of the cladding.

BM TRADA evaluated the effectiveness of the following treatments at restoring the appearance of the cladding:

- Bleach
- Sodium carbonate peroxyhydrate
- Sodium hydroxide
- Oxalic acid-based colour restorer
- Pressure washing with water.

The pressure washing proved to be effective, quick and easy for removing mould and extractive staining, and meant that large tracts of cladding could be cleaned with just a single pass of the water jet.

After cleaning, the cladding was allowed to dry and then treated with a number of



The cleaned Sweet Chestnut 14 months later, showing different levels of re-colonisation

colourless treatments, including commercial decking-protection treatment; penetrative water-repellent treatment; and water-borne preservative solution that has been approved for remedial protection of wood in service.

Some test areas were also left in their cleaned condition without treatment, to investigate whether any residual uptake of the cleaning products conferred any long-term protection against the re-colonisation of the surface micro-organisms.

The long-term effectiveness of these treatments at protecting against disfigurement was then assessed. The research showed that, although pressure-washing provided the best method to remove disfigurement, you still need to take care when it comes to positioning the water lance so that you do not mark softer species.

Also, despite the cleaning, significant re-colonisation by the yeast was found after 12 months. Treatment of the surface with a resin-based, decking-protection product yielded the best results in terms of preventing the re-emergence of surface discolouration after one-year.

Peter Kaczmar is a senior technical consultant at BM TRADA.

New uses for old cobbles

Timber decking is also at risk from disfigurement as a result of colonisation by fungi and movement of extractives in some decking species, writes Peter Kaczmar. In addition, near-flat surface deck boards are prone to accumulate detritus, which can lead to their surfaces becoming slippery at certain times of the year even when cleaned.

But a pendulum test BM TRADA has been using can assess slip resistance on wood surfaces, and was recently used to evaluate the slip resistance of timber cobbles manufactured using Welsh hardwoods such as sweet chestnut.

Dylan Jones, project manager at Coed Cymru, is working on a supply chain efficiency project funded through the Rural Development Plan for Wales that assesses potential markets for the small diameter timbers (180-300mm) that are a by-product of the thinning of managed Welsh woodland.

End grain timber cobbles were once in common use, but were gradually replaced

with cement-based materials and tarmac. So if there is to be any chance of them being accepted for commercial use again, they need to demonstrate an acceptable level of performance. One important property of trafficked surfaces outdoors is slip resistance.

BM TRADA tested the cobbles for slip resistance, including those that had been charred when dry and when they were wet. Initial testing has shown that, according to the HSE classification, all surfaces returned a low slip potential when dry and wet but that the slip resistance of the charred surface improved on wetting.

This work highlights what can be achieved when organisations combine expertise to develop and evaluate products. When marketed these cobbles have potential to add value to the Welsh timber resource while providing local employment and giving specifiers a unique, aesthetically pleasing walking surface.