

**Hanson**

# Proof is in the performance

Early thin surfacings were predicted to last up to 10 years but some have now been trafficked for more than a decade – and are still going strong.

To the average motorist the 3.4km section of the M4 between Capel Llanilltern and Miskin is no different from any other stretch of motorway in the UK. But it is probably one of the most significant in terms of asphalt

innovation, according to Hanson, because it is the birthplace of its thin surfacing products.

ARC, as Hanson's UK business was then known, resurfaced the motorway in June 1993 using a specially developed porous

asphalt mix bound with BP's bespoke polymer modified Tuffgrip binder. Experience gained during completion of this scheme led directly to Hanson's development of the Tuffgrip thin surfacing range which could be laid thinner than its predecessors.

The thinner laying of the material has significant cost benefits but many industry traditionalists expressed concern at the time that the reduced thickness could compromise durability. Now the early thin surfacings are proving these fears to be unfounded and many are actually performing better than even the material's advocates expected.

"It took several years to develop the mix that we used on the M4 and we worked closely with BP to refine the design. In essence, the asphalt we used then was what we would today call a 'thick' thin surfacing. It had a 20mm open texture which was laid 50mm deep," says Hanson Product Development Manager Steve Southam. "The material was predicted to last for up to 10 years at the time but it is still in good condition after more than 11 years and looks as if it still has plenty of life left."

Confidence in the long term durability of thin surfacings is growing and some highway maintenance experts predict that such materials could last for up to 25 years. "If this is the case, then thin surfacings actually offer significantly better value than was previously assumed," says Southam.

A longer life span also means that thin surfacings can directly compete with more traditional hot rolled asphalt material in terms of durability and whole life costs. However, HRA cannot compete with thin



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surfacing when it comes to low noise generation and reduced spray characteristics.

The beneficial properties of thin surfacings have not changed since they were first launched in the UK. For this reason, the basic engineering principles of Hanson's Tuffgrip thin surfacing are still the same today as they were 10 years ago. "We have built on and enhanced the original design over the years and can now offer a full range of thicknesses and aggregate grades to suit a range of applications," says Southam.

"Creating and maintaining texture depth is the key to Tuffgrip's success. Our early thin surfacing mixes used 14mm nominal sized aggregate with a very open grading and achieved texture depths of up to 3mm – double that which was specified by our clients. We later introduced mixes which used smaller aggregate sizes which could be laid thinner still. We then modified the 10mm and 14mm aggregate mixes to create 'medium' texture surfacings which actually proved to be better for sites where high stress resistance was essential."

One of Hanson's latest Tuffgrip innovations uses a 6mm nominal size aggregate to create a material which can be laid very thin indeed. The asphalt has a lower texture depth but is aimed at preserving stocks of high PSV aggregate

and Hanson believes that the material is ideal for use as an overlay on urban roads. The same mix is currently being used in a Highways Agency trial on the A259 in East

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Sussex where the 6mm Tuffgrip and a number of other materials have been laid directly over the existing concrete surface. Result are expected next year.

"We are looking to minimise use of high PSV aggregates on other roads too," Southam says. "Our current research centres around mixing together aggregates which have different PSVs. Initial results suggest that this technique does give good levels of skid resistance and could help reduce consumption of high PSV aggregate."

According to Southam, a very effective way of preserving the remaining reserve of high PSV aggregate will start to emerge in the next few years. "Some of the early thin surfacings will start to reach the end of their design life by the end of this decade," says Southam. "Then there will be a big market to recycle these premium materials and put them back as 'new' thin surfacings.

"We have started to develop a technique for hot recycling of such materials, but accurate planing will be essential to ensure the integrity of the recycled asphalt. Our

current knowledge allows up to 50% recycled material to be incorporated into our base courses. So far we have managed to create a thin surface course which includes up to 10% of recycled thin surfacing but there is plenty more untapped potential which will enable us to increase this level."

Thin surfacings and the confidence engineers now have in them has advanced considerably since they were first laid on the UK's roads just over a decade ago. They have revolutionised the road maintenance market, but what is the future for further development? Southam says: "There is still plenty of room for more evolution. Most sites have their own specific challenge which needs to be addressed and the only way to meet this need is through bespoke design which is the driver for further innovation."

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