

RMC

How long do thin surfacings last? Conclusive answers are hard to come up with, but RMC Aggregates' Divisional Technical Manager Gordon Lemon has been trying to provide at least a partial response.

Positive outlook for thin surfacings

"Thin surfacings have taken the UK roads market by storm. From being a specialist and rarely used application as recently as a couple of years ago, thins in their various guises have come to dominate the market. Seldom has a product come so swiftly to this prominence in a market so supposedly conservative in outlook.

The types range from porous to dense mixes, thin to thick layers. All are called thin surfacings. There are many brands, types and techniques in common use. Some use porous and some use dense mixtures; but all are marketed as thin surfacings.

Some have HAPAS certificates, some are Highways Agency approved and some have neither of these advantages. All claim reduced noise properties and good resistance to deformation. With all these attributes, the case for these materials is strong. It is time though to ask if the UK's original concept for construction of durable roads – the use of hot rolled asphalt – is eroded by the use of thin wearing course layers.

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There is no direct answer to the question, but to investigate thin surfacings it may be time to compare what we did in the past with what we do now. What I have to say only concerns RMC's Viatex thin surfacing product (see box), because that is the only one I have direct knowledge of.

Traditional surfacing used 40mm to 50mm rolled asphalt wearing course with coated chippings superimposed onto the surface to provide texture. This was universal on flexible major roads since about 1955.

Hot rolled asphalt can suffer deformation. In recent years due to the increase in traffic it started to deform more frequently and earlier in its life. Even given the increase in traffic though, it appears that a well constructed rolled asphalt wearing course has a life of some 17 years. There are a number of known reasons why it should be so durable. First, it has a high bitumen content; second the air voids are less than 5%, and third it has an excellent bond with the underlying course. The result is a layer which is impervious to both air and water.

It is not possible to compare traditional HRA and thin surfacings directly in terms of durability as HRA has its texture superimposed on the top of the layer. Viatex on the other hand has an in built negative texture from its high coarse aggregate content.

Comparing the relative volumes of constituents gives a more meaningful assessment. In the case of Viatex compared to 35/14 asphalt the volumetric analysis displayed in the charts on the following page apply.

Although there is less bitumen in Viatex than in traditional asphalt, the volume in relation to the fines content indicates a very rich mortar constituent which gives an almost double binder film thickness. Use of small quantities of cellulose fibre in the mix prevents the binder from draining out of the mix by increasing the surface area to which the binder can adhere. The result is a thick, durable mortar which fills most of the voids between the interlocking coarse aggregate particles.

The other parameter to examine is the bond with

What is Viatex?

Viatex is RMC's well established low noise, highly durable SMA surfacing (see Modern Asphalts No 3). It was launched as an alternative to HRA after RMC invested several years of effort to re-engineer a product originally designed for the German market into one suitable for UK use. It was one of the first of the new generation asphalts brought forward as a result of the Highways Agency's relaxation of recipe based specifications in favour of a performance basis for specifications.

The product was found to be more durable on heavily trafficked high speed and urban roads; have improved resistance to wheel tracking; and could be used in thin layers to smoothly surface rutted or uneven roads. It also proved to have significantly reduced noise and spray characteristics.

Highways Agency type approval was granted and RMC uses a sophisticated array of equipment to monitor performance of Viatex on locations throughout the country. Steady and sustained improvement in the material's performance is pursued through a continuing research and development effort. RMC Aggregates has received approval under the British Board of Agrément/Highways Authorities Product Approval Scheme for both 10mm and 14mm Viatex. This succeeds the Highways Agency's scheme and represents an exacting and rigorous test of a material's performance capabilities.

the underlying surface. Rolled asphalt relies on a high binder content for adhesion and also saves the lower layers from water damage. Viatex has an equally high binder content but specifies the use of a bond coat for adhesion and to prevent ingress of water and air.

Only two basic comparisons have been made for this article, but the comparison needs to be done at this level to enable a prediction to be made about the likely life of thin surfacings. When assessed this way, and they display these attributes, we can say that the outlook for the life of these products is very positive. One key is how much bitumen is in the material - in the case of Viatex there is a lot. Viatex is similar to HRA in some respects and good thins will last as long as HRA."

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1

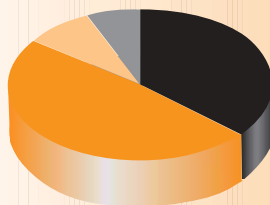


1. Gordon Lemon is Divisional Technical Manager of RMC Aggregates

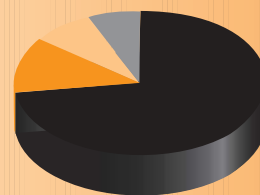
2. Life expectancy predictions require direct comparison of HRA content to that of a thin surfacing

2

Life Expectancy Predictions



35/14 HRA - % By Mass

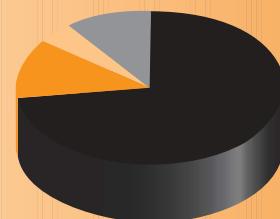


14mm Viatex - % By Mass

- Coarse Aggregate
- Fine Aggregate
- Filler
- Binder



35/14 HRA - % By Volume



14mm Viatex - % By Volume

3

3. Viatex is RMC's proprietary thin surfacing material

