

RMC

Specifying asphalt containing crushed glass for road building and repair could help local authorities meet recycling targets and put to good use a waste product in abundant supply.

Glass for roads gives recycling more bottle

Crushed glass could soon feature in the construction and maintenance of many highways if the development and use of a new recycled asphalt mix continues to gather pace. Glasphalt is crushed recycled glass, conventional aggregate and bitumen binder which can be specified for use in base course or road base construction.

The use of Glasphalt in place of a traditional macadam reduces primary aggregate consumption by up to 30%. This is good news not just for the environment but for local authorities keen to put to good use stockpiles of glass whose supply outstrips recycling demand. Many millions of used jam jars, beer and wine bottles are disposed of at recycling banks every week but all this glass, especially green glass, has a limited market.

Glasphalt has been developed by RMC Aggregates and the product gives local authorities a better chance of meeting statutory recycling targets and avoiding costs of disposing of glass at landfill.

Also, the Government has indicated that recycled and secondary aggregates should make up 25% of total aggregate consumption by 2006 – the figure currently stands at 17%. Authorities with surplus stocks of glass which specify Glasphalt could help the industry meet this recycling target in time.

This summer the material was specified for use in the construction of a new road in Stratford upon Avon for Warwickshire County Council. The material was laid on 1km of road at the Bishopton Lane industrial development over three consecutive days in August by RMC Surfacing. A second contract in Nottinghamshire was completed in August.

For the Stratford contract, around 2,500t of Glasphalt incorporating 600t of crushed glass was brought to site for use in the construction of the road base and base course.

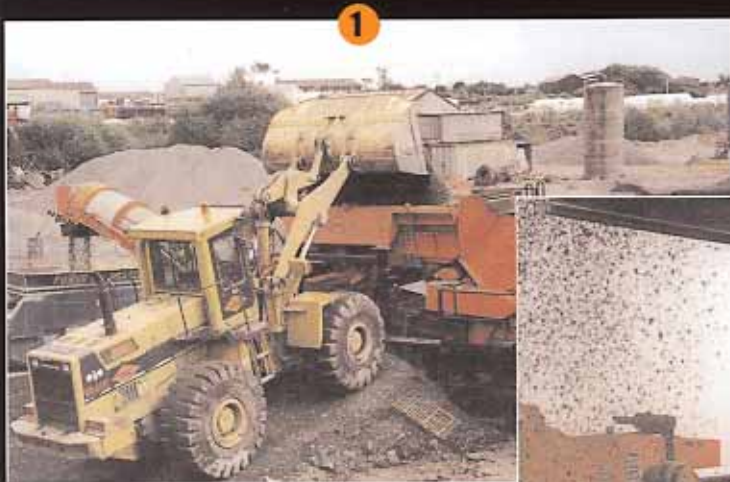
The carriageway is expected to be used by hundreds of heavy vehicles every day and RMC Surfacing's Technical Manager Richard Thorpe is confident that Glasphalt will stand up to the test. "The new road will have a life span similar to a road laid using conventional material and the Glasphalt was laid and compacted using conventional plant."

The development of Glasphalt followed a two year programme looking at a number of alternative options for recycling glass bottles in London. A system of collecting the glass and producing Glasphalt has already been established.

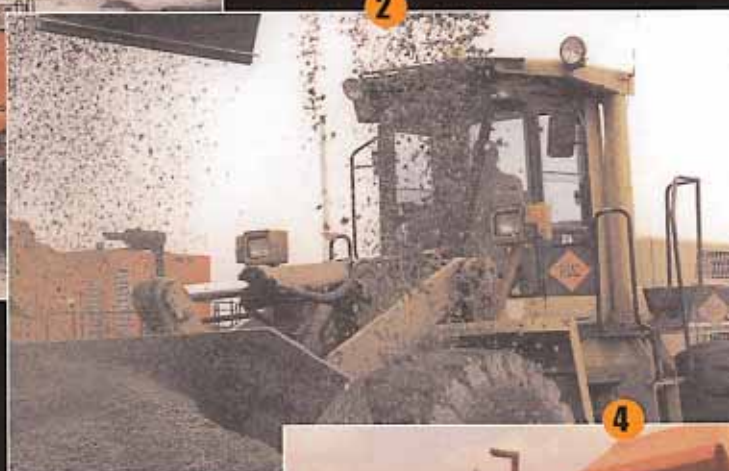
The glass is fed into an asphalt granulator to reduce it to 'pellets' of a nominal size of 20mm. The material can then be screened to remove paper labels and impurities from the mix such as clothing, bottle tops and corks.

The glass is then taken to RMC's Dagenham plant in Essex where a sophisticated computer control system oversees its mixing with conventional aggregate before it is coated with bitumen. RMC's Asphalt Manager Arthur Hannah explains: "The blended aggregate is passed through feed hoppers and screened into six sizes."

One of the biggest challenges to the widespread use of Glasphalt is how well the product stands up to rigorous tests set by the Highways Agency. The Agency, which oversees the maintenance of the UK's trunk road network, has a five stage approval procedure for evaluating new materials such as asphalt mixes. Glasphalt successfully completed the third stage in the series, a pilot scale trial on an industrial road, at RMC's Washwood Heath Depot in December 1999. Throughout this process RMC has worked closely with the Transport Research



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1. Crushed glass is loaded into an asphalt granulator to reduce the size of the glass particles.
2. Recycling targets can be met more easily if authorities specify Glasphalt in base course or road base construction.



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3. Glass deposited at recycling banks can now be put to good use in roads.

4. Glasphalt being laid at Mansfield in Nottinghamshire this summer.



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Laboratory, which has held a watching brief on the development of Glasphalt.

Glass and limestone were mixed using a Braham Millar T150S asphalt plant with a 2.5t mixer and laid and compacted on one half of a road before a control macadam mix was laid alongside. Cores were later taken from both mixes to determine the density and compaction of the Glasphalt mixture and results showed that the material had been well compacted with an air void content complying with the desired specification.

In addition, particles of glass were extracted from the road to evaluate how well the binder had coated the material.

Tests for wheel tracking showed no significant difference between the Glasphalt mix and the control mix, and Glasphalt was judged to be slightly

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Nicky Gavron Deputy Mayor of London

more workable than the control mix.

Following this industrial road test, a full scale trial of the material began on 1km of newly constructed, lightly trafficked road in Milton Keynes on 25 June 2000. This test forms stage four of the Highways Agency's five stage procedure and although early signs are good, it will be two years before the performance of Glasphalt can be fully judged.

One leading political figure gave the product a huge boost this summer by endorsing the use of the material by local authorities throughout the capital. Deputy Mayor of London Nicky Gavron said that

Glasphalt could consume 1000t of recyclable glass every month in London alone.

"I want London highways authorities and local authority cleansing officers to work together to make this venture a success," she said. "Recycling should be the preferred method of disposal as waste is not a problem, but a resource. We have to be inventive about how waste can be used and Glasphalt can help boroughs achieve their targets of recycling waste."

John Lay is RMC's Technical Services Manager who has been overseeing the process of introducing Glasphalt into RMC's operating companies nationwide. He said: "This product provides an ideal opportunity for a waste material with very few alternative beneficial uses to make a significant contribution to boosting the use of recycled and secondary aggregates in construction products."