

Bituchem

Long term value solved and sealed

New developments in surfacing technology have arrived from North America, including a bitumen emulsion that will seal and preserve asphalt against the effects of ageing.

Innovative solutions are available to help highway authorities overcome challenges of deteriorating road condition during times of static or decreasing budgets. The bitumen technology specialist Bituchem has several products on offer to help, including a newly launched, environmentally beneficial and very cost effective material – FortSeal.

This a specialist fast setting emulsion that when spray applied to an asphalt or surface dressed road surface, covers small cracks and surface voids; sealing and preserving the pavement. The condition of treated carriageway is effectively fixed at the time of application of FortSeal and at a cost of only 80p per square metre.

“In comparison, relaying a road of fairly low classification costs about £12/m² and every individual area of patching is £7 to £8,” says Bituchem director Roger Lord. “Local authorities had greater funds available 10 or even five years ago and now their budgets are likely to reduce further. FortSeal is relatively

cheap and holds road surface together at least for the next five years when FortSeal should be reapplied and it is the cheapest option available for doing this.”

FortSeal is also a water based emulsion, adds Lord, and therefore has the edge in environmental terms on similar pavement preservatives that derive from solvents. “Compared to digging up and resurfacing roads, FortSeal saves a lot of energy costs and emissions. Use of the preservative is not going to fix defects in road condition, but a very good approach can be pothole filling or patching followed by application of FortSeal with a hand held spray gun to make road repairs last much longer,” says Lord.

“It is usually the joints between road surfaces and in-laid patches that are vulnerable to water getting in and causing premature or repeat failures. FortSeal helps to seal joints and surfaces. Long term studies have shown early treatment of the preservative on a newly laid road surface, before deterioration has become significant, gives a life expectancy four times that usually expected.”

Bituchem’s preservative was developed in North America where a substantial weight of evidence of the material’s performance has built up over a period of 40 years. In Kansas in the United States, for instance, a county road surfaced with a bituminous surface course in 1969 was treated in part a year later with the preservative – known then as General Pavement Management – before being tested for deterioration over the next seven years.

Core samples were taken from treated and untreated sections after which the bitumen was extracted and analysed using standard methods at Iowa State University. Tests showed viscosity was increasing at a far

greater rate in untreated sections which were therefore oxidising and ageing more rapidly. Likewise, penetration values remained higher in treated areas, confirming that over a seven year period, where applied, the preservative had extended the life of the surfacing (see graphs, right).

“A lot of performance testing of roads treated with this preservative has been carried out in the US,” says Lord. “Also backing up the test results is the visual appearance of carriageway surfaces five to seven years after treatment. Sizeable cracks and potholes do not appear because the binder in the road surface has not become brittle.

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“Minute cracking may start to appear at this stage in the pavement’s life but with another application of FortSeal the voids are resealed and the bitumen ageing is slowed again. It is the binder in asphalt surfaces that fails as it ages, but with a simple and inexpensive preservative treatment, problems with potholes, repeat failures and disintegrating road structures can be prevented.”

Bituchem is applying FortSeal in association with one or two UK highway authorities and their contractors this year, including Surrey County Council which is hoping to see its



The FortSeal preservative provides a finished surface that will last longer and looks good



Bituchem's FortSeal preservative has been proven over a period of 40 years in North America, to protect asphalt surfaces from the effects of ageing

carriageway assets protected over a longer term than conventionally seen. "Ideally we would like to see it written into tenders that all new road surfaces will have application of preservative to protect the surface from ageing," says Lord. "Highway authorities

invest large sums of money in their networks and have more reason than ever to want to see that money go further over the long term. It makes perfect sense to seal in the investment."

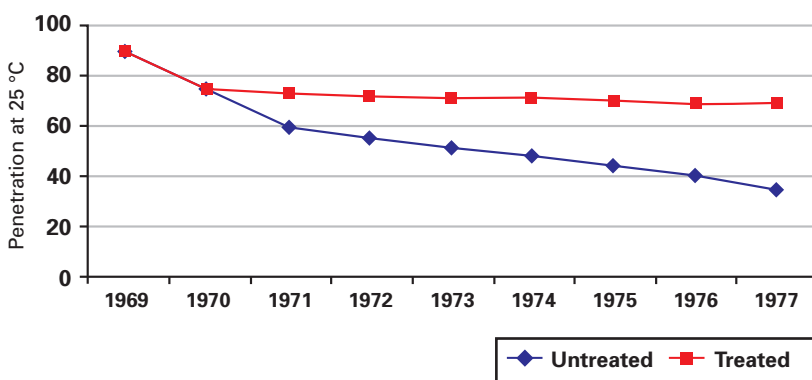
There is more to come from Bituchem

including an innovation that allows 'sweepings' to be used in new applications of surface dressing. This is another bitumen emulsion developed and proven in the US and being used in the UK this year. It answers the question of what to do with 'dirty' chippings that would otherwise be considered and stockpiled as waste; promising significant savings in costs for highway authorities.

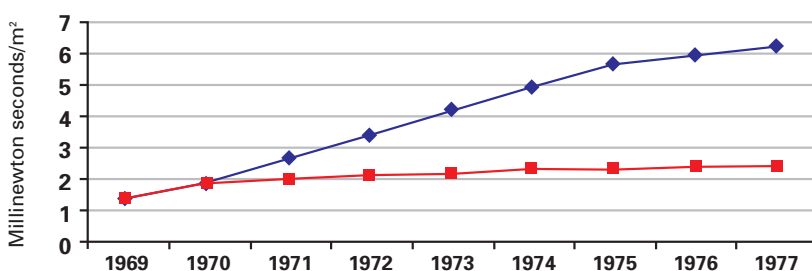
"Surface dressing is likely to account for a greater proportion of road surfacing treatments carried out over this and coming years as budgets get tighter and authorities look to seal carriageway surfaces," Lord says. "Opening up use of recycled aggregates and sweepings in surface dressing will be a significant step forward for efficiency, as will use of FortSeal on surface dressings, which is how a lot of preservative is used in the US.

"Authorities in the States like to spray preservative on new dressings to hold chippings in place and to show a nice black finish. Public perception is always an issue with surface dressing, mostly due to loose chippings and the generally unimpressive stone coloured end product," Lord says. "The low cost of applying FortSeal is worth paying for a surface that looks good and attracts a positive response, and lasts much longer."

Penetration over time in treated and untreated roads



Viscosity of bitumen extracted from treated and untreated roads



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