

Aggregate Industries

Bardon Citipave represents a new generation of ultra quiet and ultra thin surfacings which can quickly turn failed urban roads into high quality, durable surfaces.

Thinner surfacings: the next generation

Aggregate Industries originally planned its ultra thin Bardon Citipave surfacing to compete within the surface dressing market but the product has developed into a class of its own. Citipave surfacing can be laid directly over a failed road surface in layers as thin as 15mm to create a smooth, quiet and aesthetically pleasing pavement which actively resists reflective cracking.

Research and development of Citipave began in early 1999 in response to increased demands from road users and people living near busy urban roads for quieter road surfacings. In line with public demand local authorities were also starting to call for surfacings which were not just quiet but highly durable and cost effective too.

"Citipave is a quick and easy to lay material which creates a long lasting, quiet running surface that can be trafficked almost immediately," says Aggregate Industries Product Development Manager Roger Warmington.

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Roger Warmington

It displays many advantages not least in the permanency of its remedial qualities, especially in comparison with the form of surfacing it was intended to compete with, surface dressing. "Local authorities have used surface dressing as a quick fix for failed road surfaces for years but in reality they are lining themselves up for repetition of the same problems," Warmington says.

Surface dressing techniques present a number of logistical problems in built up areas which include storage of chippings and the need for time consuming and disruptive sweeping. Citipave can be brought to site as it is needed and is laid under the same weather conditions as hot rolled asphalt. Surface dressing is normally limited to use during the summer months due to the atmospherically controlled binder hardening involved in the process.

Citipave has an extremely even surface while maintaining a good texture depth which gives the surface a high skid resistance. Almost uniformly sized aggregate is used in the material but it is the shape of the aggregate that is the key to the ride quality and texture profile.

Recent research by both Nottingham and Cambridge Universities has found that the smoothness of a road profile is an important factor influencing the life span of a road surface. The findings show that unladen heavy goods vehicles bounce more on roughly profiled roads which not only increases the noise emanating from the surface but also causes additional damage to the road structures in comparison to smoother surfacings.

"The binders used in Citipave have been carefully selected to resist reflective cracking which is often the cause of early failure in surface dressed roads," explains Aggregate Industries Technical & Development Director Paul Phillips.

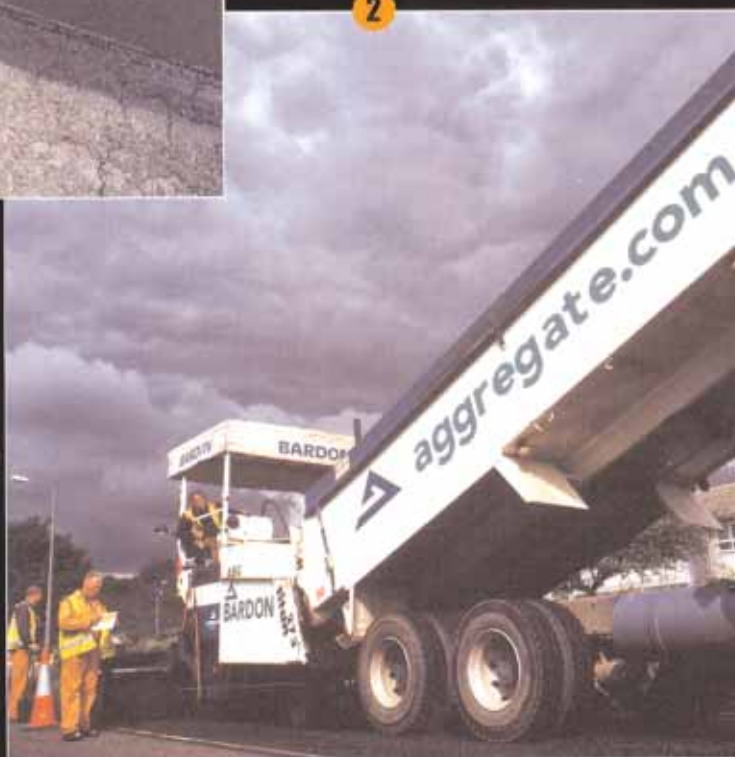
"Our research has shown several binders to be suitable for use in Citipave with the best performances produced from elastomeric and high viscosity binders. Increased resistance to reflective cracking allows the product to be used on any road with minimal preparation and makes resurfacing with Citipave a more long term and cost effective solution."



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1. Failed road surfaces can be directly overlaid by Bardon Citipave which has been designed to actively resist reflective cracking.
2. Bardon Citipave is quick to lay and can be trafficked soon after surfacing is completed.
3. Independent testing has shown Bardon Citipave to produce a highly durable and ultra quiet road surface.

Use of ultra thin, quiet surfacings can dramatically reduce the impact of a busy road on the surrounding area. Nonetheless, many road campaigners believe that local authorities, and even the Highways Agency (HA), are not making the most of the surfacing materials available to them.

John Nutt has been leading the battle to get part of the A34 near the village of East Ilsley resurfaced with a quieter wearing course for over 10 years. "We lived in the village when the bypass was built in the late 1960s but we later moved to France and returned to East Ilsley in the mid 1980s," explains Nutt.

"Increases traffic during our time away has had a tremendous and unacceptable impact on the village. Quieter thin surfacings have been widely used in road construction on the Continent for many years but the UK seems to be lagging a long way behind."

Aware of Aggregate Industries' expertise in quiet surfacings, Nutt consulted with them to gain an understanding of the materials and technologies involved.

According to Nutt the HA is paying lip service to quiet surfacings through under-funding and general lack of interest in the plight of people living near busy roads. He adds jokingly: "I am sure that the A34 near East Ilsley will only get resurfaced in a bid to remove a thorn from the HA's side."

"Citipave is one of a number of thin surfacing products selected by the CSS for inclusion in its survey. We understand that the CSS has completed its monitoring of the product and we are currently waiting to hear both the Citipave and the overall survey results."

Peterborough City Council and Lincolnshire County Council are currently conducting trials of Citipave on a variety of urban roads. Lincolnshire County Council Area Highway Manager for the Sleaford District Alan Aistrup says: "We have used Citipave to resurface a 750m length of Boston Road in Sleaford which forms one of the main access roads into the town from the east and passes through a residential area.

"Boston Road had previously been surfaced using surface dressing over the existing hot rolled asphalt surface but heavy traffic use was causing surface stripping. The surface was extremely unpopular with local residents because of the high levels of road noise and road users, in particular cyclists, disliked the ride quality.

"Aggregate Industries took just two days to lay over 250 tonnes of Citipave at Sleaford and has dramatically improved the road surface. Both residents and road users have been delighted with the new quieter, smoother surface."

Lincolnshire County Council and Aggregate Industries are presently working together to produce a residents and road users survey to accurately

gauge the response to the new surface. Lincolnshire County Council is also carrying out its own performance testing on the new surface and preliminary results show Citipave to be ideal for the job in hand.

Aggregate Industries is planning further noise level tests on the surface later this autumn. "We have booked the Transport Research Laboratory's TRITON noise tester to carry out close proximity noise tests," says Phillips. "Conventional noise tests use microphones placed close to the edge of the road but measurements are directly influenced by traffic volume, speed and weather conditions.

"The TRITON machine directly measures the noise produced from a tyre tracking over the surface from a series of microphones positioned around the tyre. The machine comprises a measuring wheel mounted on a lorry and tests carried out using the machine have been found to produce more accurate and consistent noise level results."

Further independent assessment of Citipave is being undertaken by the county surveyors' organisation CSS through its survey of early life skid resistance of thin surfacings. Warmington says: