

Total Bitumen

Investment and innovation underpin specialist supply

Total Bitumen's supply of high performance materials and technical support for customers is underpinned by a commitment to investment and innovation – focused in the UK at Preston.

Four train loads of standard pen grade bitumen are delivered from Total Bitumen's refinery at Immingham each week to the company's Preston production facility. Every tonne of each consignment is then processed before being supplied to customers as specialist product from Preston. This is a vital part of Total's UK operations, the centre of its work on innovative products and as such, the facility is receiving a great deal of investment.

The focus is on operational efficiency as well as technical expertise. The railhead at Preston opened in 2004, immediately lowering transport costs; and a multi million pound investment in a network of electronic control rooms came next for safety and quality control. Meanwhile, Total has been developing the technical support and the specialist products it can offer from Preston.

"We do everything here, except straight run bitumen and we are taking the challenges faced by the paving sector very seriously," says Total's Marketing & Business

Development Manager Allan Grossart. "Technical support and expertise in developing materials are vital, considering for instance, the need to reduce carbon emissions and energy consumption. We are very well set up for this with our fully equipped Technical Centre here at Preston and the Total Centre for Research at Solaize (CReS) near Lyon."

Total offers a product range reflecting its pan-continental operations: Brands including Total's Styrelf and Evatech PMBs (Polymer Modified Binders), its Modulotal EME (Enrobé à Module Élevé) binders and the Emulsis range of bitumen emulsions have been developed in France, Germany and Britain.

Notwithstanding regional variations on preferred paving materials, the main issue for bituminous product developers throughout Europe is now sustainability. Products are being developed to reduce quantities of carbon emitted and energy consumed; whether the materials are for highly durable pavements that reduce maintenance, lower

temperature asphalt mixes, or ideally, products and processes that combine both.

"Our innovations include Styrelf, our unique PMB range of products that is totally unlike those of our competitors, imparting enhanced performance characteristics to asphalt," says Grossart. "We also have significant experience with cold emulsions and have developed Emulsis MG for recycled base course asphalts."

Emulsis MG has dual characteristics: A partial 'break' is activated on mixing to produce an ambient temperature asphalt mix that can be stored for four to five weeks; and a final break occurs on application when

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Allan Grossart

compaction of the asphalt starts its progressive strength development.

"Use of Emulsis MG is going well, plus we have a surface course cold emulsion developed in France that we are bringing to the UK market," Grossart says. "Asphalts produced in France with this material contain virgin aggregate and are used on low category roads. There are not yet cold mix equivalents to hot mix asphalts in terms of equal performance, but the challenge is working with customers to further material developments through product trials."

'Warm mix' asphalt is more comparable to

Preston is the centre of Total's technical operations for supply and development of innovative products





A bespoke high performance asphalt was developed at Total's Technical Centre in Preston and laid on the lower deck of Newcastle's High Level Bridge

TOTAL EXPERTISE APPLIED AT HIGH LEVEL IN NEWCASTLE UPON TYNE

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Total Bitumen's materials expertise has overcome a technical challenge on Newcastle's High Level Bridge in partnership with Tarmac. The 160 year old rail and road double decked bridge over the River Tyne reopened in May 2008. This followed a major strengthening and refurbishment project, including resurfacing of the lower deck by Tarmac National Contracting. Tarmac and Total developed a bespoke asphalt mix for the particular demands.

"The challenge was to produce an asphalt pavement that could exhibit the necessary flexibility and durability as the bridge deflects under the weight of bus traffic, in an asphalt thickness of only 100mm on a deck of wooden sleepers with limited weight of compaction equipment allowed," says Total's Marketing & Business Development Manager Allan Grossart.

"We developed a binder rich Hot Rolled Asphalt to provide durability and resistance to deformation,

with our specialist Styrelf 15/60 polymer modified binder to create the flexibility."

Asphalt mix testing was carried out at Total's Technical Centre in Preston, matched to simulate the level of compaction allowed on the bridge.

"Wheel tracking tests showed results well within the limits and the deck's asphalt surface has performed well ever since – demonstrating the benefits of a partnership approach," says Grossart.

hot mix. According to Total's UK Technical Manager Gary Schofield, an emulsion has been developed in the CReS laboratories that allows asphalt to be mixed at 80-90°C (in comparison to conventional hot mix temperatures up to 180°C).

"Warm mix asphalt containing this variation of Emulsis is giving very good long term properties. Application is at ambient temperatures and the mixes can contain up to 40% recycled aggregate," Schofield says.

A Europe wide Total initiative is behind the company's product development. Key stakeholders in each country of Total's operations have been interviewed to gather regional and sector-specific priorities for sustainable development. The outcomes are

driving Total's product research accordingly, for each sector and region.

"Such a major consultative exercise shows how seriously we are taking this," says Schofield. "We are committed to innovation, for our own business and for the needs of our customers. To give another example, we have designed a computer model for carbon footprint and energy calculations. We are frequently being asked to quantify the environmental impacts of different products and the benefits of cold and warm mix asphalts are being borne out," Schofield says.

Leading suppliers are pushing research in similar directions, although Total has developed unique innovations at Preston, such as its Emulsis Ultra binder for surface

dressing at lower temperatures and the patented Emulsis Chip Clean process. This removes all the dust from left over chippings, allowing their reuse and reducing waste for contractors and cutting water consumption from quarries' washing operations.

"The time was right for Chip Clean. It uses only a very small volume of emulsion but provides a valuable benefit for contractors and quarries by cutting their waste for relatively little cost," Allan Grossart says. "It is also used to prepare chippings for top quality dressings; just one part of packages of products and processes we have to offer."

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