

**Shell Bitumen**

# Raising the standards bar in mastic asphalt

Shell Bitumen's S Grade binders allow lower production and application temperatures in asphalt mixes, benefiting also the mastic sector.

**A**sphalt mixes can be produced and laid at lower temperatures when using Shell S Grade binders, giving surfacing contractors greater flexibility when paving roads and runways (see Modern Asphalts 21). Products with the same properties are now also making their mark in the mastic asphalt sector.

Shell S Grade binders enable mastic asphalts to be manufactured and laid at temperatures up to 30°C lower than traditional mixes, offering contractors improved workability, reduced energy costs and safer working conditions.

Typical mastic applications include outdoor sites, where temperature becomes a challenge. Shell Bitumen Technical Development Manager Dr Richard Taylor explains: "Shell S Grade binders are more viscous than reference binders at

temperatures below 100°C. However, at temperatures above 115°C the binders exhibit lower viscosity and thus better flow and coating behaviour. On high buildings, roofing contractors might have to lift up mastic asphalt mixers by cranes and the material inside can cool considerably. Mixes containing Shell S Grades give the contractor more flexibility because the material can be applied within a larger temperature range."

Shell has estimated that using Shell S Grade binders, plants can not only manufacture but also store and mix asphalt at temperatures 20–30°C lower than normal. This reduction in temperatures could generate savings in the order of 7.5%, approximately 0.5kg of fuel per tonne of asphalt produced.

"Energy is the third major cost to an asphalt manufacturer – after plant and

labour, so any reduction that can be made is certainly good," says John Blowers, director of the Mastic Asphalt Council (MAC), the trade association for the UK mastic asphalt industry

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Shell S Grades, however, do not solely bring economic benefits to the industry. The reduction in temperature could also represent an improvement in health quality for workers. Currently there is no legislation dictating the temperature at which mastic asphalt can be applied but in the UK, 230°C is deemed to be a safe handling temperature. This could all change with the full implications of Europe's new REACH (Registration, Evaluation & Authorisation of Chemicals) regulations.

The aim of REACH is to improve the protection of both human health and the environment by better and earlier identification of the intrinsic properties of chemical substances. Companies whose products have a chemical composition are currently in the process of registering those products on a central database – a process that is set to take many years.

Stricter rules governing the use of

Additives in Shell S Grade binders enable mastic asphalts to be produced up to 30°C lower than traditional mixes





Asphalt produced using Shell S Grade binders gives much greater flexibility to contractors and has been used with much success across the board

chemical products are likely to follow once the registration process is complete and maximum laying temperatures for mastic asphalts could be among them. "Under REACH regulations there will be legal condition under which you can use all substances, and this will also apply to bitumen. Limiting temperature will be the best way to control any potential exposure

and so lowering bitumen temperatures during mixing and application will be the most sensible approach," says Taylor. "The rules may not come into force for some time, but it is important that the industry moves in this direction ahead of any potential legislation."

Another driver behind the potential new legislation is the desire to reduce fumes,

especially during manufacturing processes and also to benefit contractors working with mastic asphalt indoors (whilst laying floors for example). There are already tight standards regulating acceptable levels of fumes in the atmosphere, but lower temperature binders will help improve standards further. "We manufacture well within the standards, but if you can bring that down, so much the better," says John Blowers.

Shell initially developed S Grades in Germany for the mastic asphalt market, but it was the road sector that latched onto its benefits at the outset. When the asphalt is laid at lower temperatures, traffic can run on it sooner after it has been laid. As Modern Asphalts reported previously, asphalts containing Shell S grade binders have been used with great success at Frankfurt Airport and, more recently, on the M4 motorway.

The current interest within the UK mastic asphalt market marks a trend in awareness of both energy and health and safety issues, as well as the possibility of forthcoming legislation. However, Shell has no intention of resting on its laurels, and is looking at ways of reducing asphalt temperatures still further.



Using Shell S Grade binders has many benefits including reducing energy costs and emission of fumes