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PERFECTING THE BOND

UTILISING ITS VAST GLOBAL EXPERIENCE IN POLYMER MODIFIED BITUMEN (PMB) BLENDS, SRIPATH HAS DEVELOPED A BRAND-NEW PRODUCT FOR THE MARKET, WHICH AIMS TO TACKLE A LEGACY INDUSTRY PAIN-POINT.

Polymer modified bitumen (PMB) has played an essential role in ensuring the robustness, performance, and longevity of transport infrastructure across the country.

That being said, PMB hasn't done this alone. Several additives and methods, used in conjunction with the application of PMB, have helped to further future-proof major intersections, urban roads, and bus lanes. All of which are subjected to heavy traffic, straining and fatiguing pavement surfaces which can result in them rutting, ravelling or suffering other failures.

Crosslinking is just one method that's been used to strengthen the bond between polymers and bitumen during the PMB production process to enhance durability, elasticity, and resistance to rutting.

Crosslinking bonds polymer chains with bitumen to form a connected network. These bonds, created between polymer and bitumen molecules, have proven to be essential in extending pavement life and delivering performance.

Traditionally, sulfur has been used as a crosslinking agent. But sulfur has its drawbacks, says Deepak Madan, Chief Operating Officer – Sripath Technologies.

Crosslinking agents can vary greatly in chemistry, reactivity, and dosage requirements, but the vast majority contain sulfur powder, a component that can prove to be counter-intuitive due to dustiness, handling difficulties, poor PMB thermal stability, and the release of hazardous H₂S (hydrogen sulfide) emissions.

For these reasons, Sripath created a new product designed to overcome these issues by improving PMB performance, increasing efficiency, reducing emissions, and offering safer handling.



Above, L to R: ButaPhalt is one of Sripath's newest and most innovative additives; The unique formulation of ButaPhalt greatly increases crosslinking connectivity, as well as production efficiency.

THE BIRTH OF BUTAPHALT®

In May 2025, Sripath Technologies acquired ButaPhalt Products and the related Buta Business.

Part of this portfolio was the ButaPhalt patent, an innovative crosslinking additive specifically engineered to improve performance friendly by allowing sulfur to more effectively crosslink with the polymer during the production of PMB.

Madan says it's important to note that Sripath's ButaPhalt does not exclude sulfur. Instead, it's a formulation that greatly improves upon productivity and provides better thermal stability compared to traditional crosslinkers.

He says ButaPhalt expands on proven methodology, while improving the downfalls of conventional products.

"We went out there to look for different additives that could be part of this formulation. We reached out to different sectors and industries to see what knowledge existed, and how we could bring that into this technology," he says.

"In addition to sulfur, we've added other ingredients that actually make the

crosslinking reaction more effective. It ties up the sulfur very quickly in the reaction, that way it's not hanging around to create high levels of H₂S."

"As an additional benefit, you can get a much higher performance for a PMB, as well as increased productivity. All of this can help contribute to lower operating costs."

Ravi Rajagopalan, General Manager – Sripath Asia-Pac, adds that ButaPhalt also improves productivity and provides better PMB thermal stability compared to traditional crosslinkers.

"There's tremendous opportunity across Australia and the Asia-Pacific region for a new generation of crosslinkers. Producers here are looking for solutions that move beyond the limitations of traditional sulfur systems, such as materials that can improve PMB stability, streamline production, and boost productivity without compromising performance," he says.

"ButaPhalt delivers on all three, giving producers the flexibility they need to meet regional demands and evolving performance standards."

This is in addition to glaring safety and sustainability benefits. By reducing the concentration, emission and “nasty odour” of H₂S, ButaPhalt provides reduced environmental, health, and safety impacts across the board.

Such performance capabilities were recently put to the test. H₂S emissions were measured during the production of PMB using FH58 binder plus 3.5 per cent SBS (styrene-butadiene-styrene) and 0.15 per cent crosslinking additives.

When sulfur was used as the crosslinker, H₂S levels rose sharply within the first 50 minutes and reached a cumulative emission of approximately 1261 ppm (parts per million). In contrast, a conventional crosslinker generated moderately lower emissions (≈ 919 ppm).

ButaPhalt stood above the rest, demonstrating a substantial reduction in total cumulative H₂S emissions, limited to about 430 ppm.

Such trials validate ButaPhalt’s ability to minimise hydrogen sulfide release during PMB manufacture, helping to improve workplace safety and environmental performance compared to traditional sulfur-based systems.

Additional trials have also compared the reaction kinetics of PMB blends prepared with sulfur and ButaPhalt as crosslinking agents.

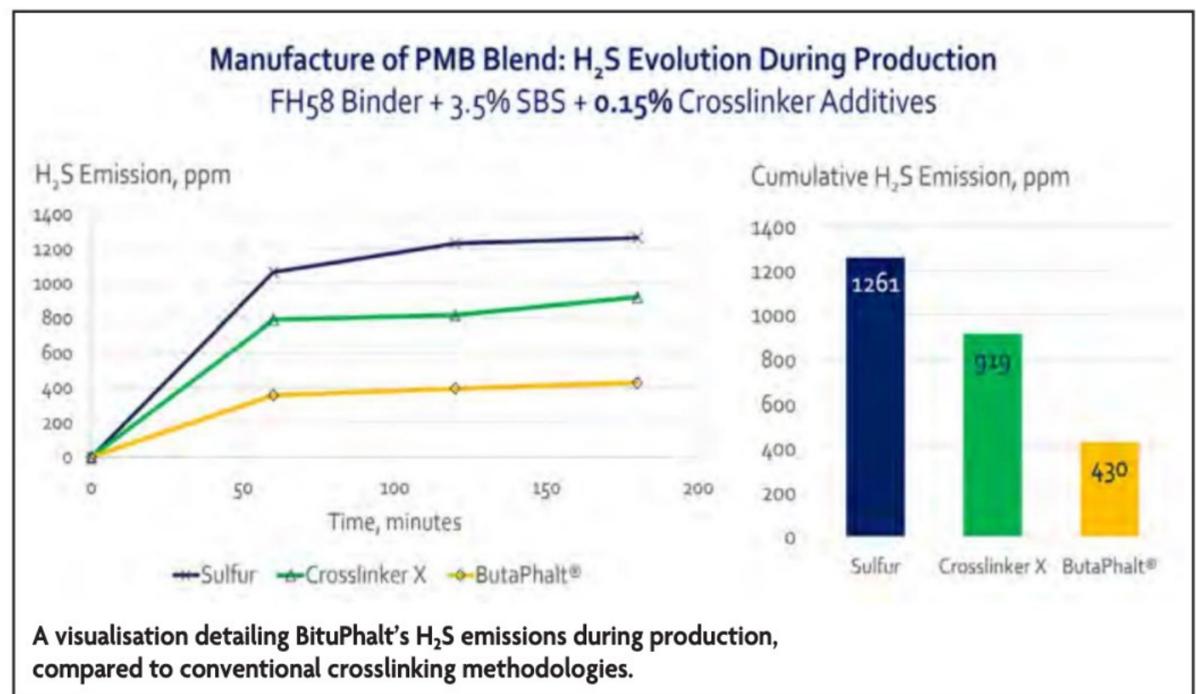
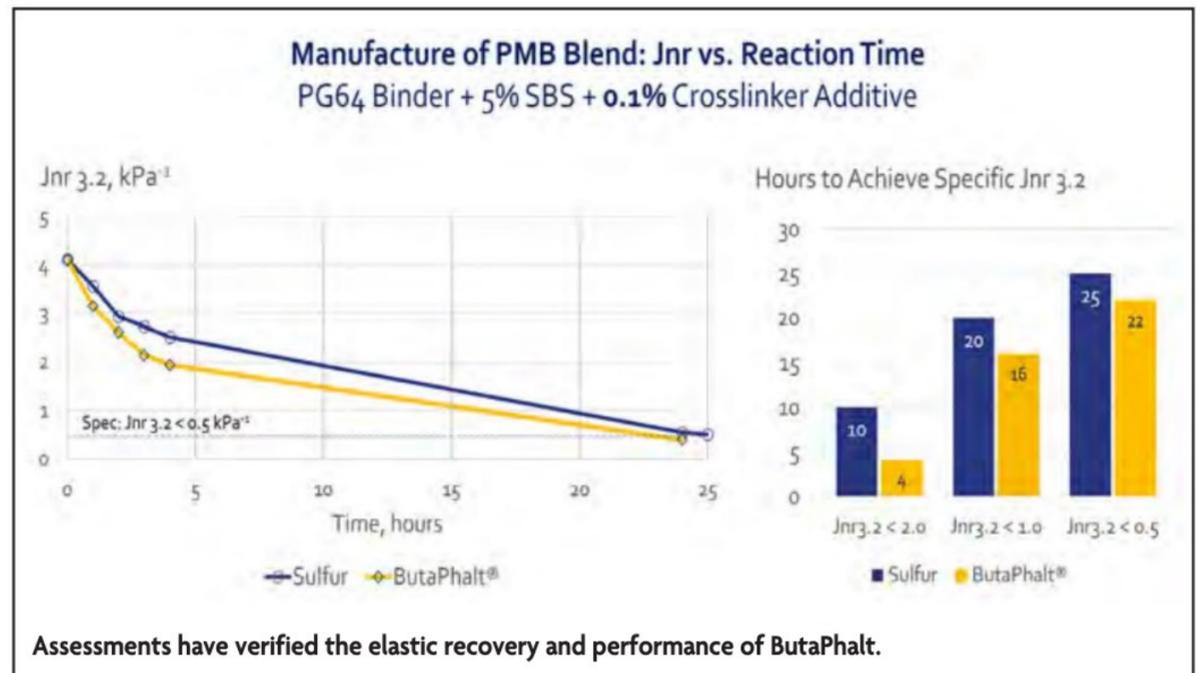
Using PG64 binder with five per cent SBS and 0.1 per cent crosslinker additive, the parameter Jnr 3.2 (kPa⁻¹), an indicator of resistance to permanent deformation at high temperatures and traffic loads, was monitored over 25 hours.

ButaPhalt modified blend reached the target Jnr specification (Jnr 3.2 ≤ 0.5 kPa⁻¹) more rapidly than the sulfur-based systems.

ButaPhalt demonstrated faster reaction completion and improved productivity, pointing towards its enhanced PMB reaction kinetics, allowing reduced processing time and potentially lower manufacturing costs.

Jill McConaghie, Marketing Specialist – Sripath Technologies, says the product is one of many innovations, that – since leaving Sripath’s doors – have helped to establish a new standard across industry.

“At Sripath, our mission has always been to tackle the evolving challenges of the asphalt industry with practical, science-driven solutions,” she says. “ButaPhalt exemplifies this approach,



“AT SRIPATH, OUR MISSION HAS ALWAYS BEEN TO TACKLE THE EVOLVING CHALLENGES OF THE ASPHALT INDUSTRY WITH PRACTICAL, SCIENCE-DRIVEN SOLUTIONS.”

helping to enhance pavement performance while supporting more efficient, safer production. It’s a key part of how we are blending innovation and sustainability to help contractors, suppliers, and communities meet their goals.”

McConaghie further explained the traction ButaPhalt is experiencing, saying, “ButaPhalt was recently designated as one of the ‘Top 15 Products of 2025’ by AsphaltPro Magazine, a USA-based publication.”

Despite launching under the Sripath’s banner in September 2025, ButaPhalt’s track record can be traced back nearly two decades, having been used by PMB manufacturers in North America since 2007.

Dennis Krivohlavek, Business Development Specialist – Sripath Technologies, believes ButaPhalt will become a preferred crosslinking agent for decades to come.

“As polymer modified bitumen formulations continue to evolve, producers face growing challenges balancing performance, safety, and sustainability,” he says.

“ButaPhalt was developed to meet those challenges by offering reliable crosslinking performance while simplifying production and reducing H₂S emissions.”

“We believe this technology will help our customers achieve higher performance and greater efficiency for their PMB blends.” ■