Recycled rubber paves the way for sustainable roads in South Africa

Mathe Group, a Hammarsdale-based company, recycles 1,000 radial truck tyres every day, transforming them into 45 tons of crumb rubber. This valuable material is then used by Tosas, a bitumen manufacturer, to create rubber-modified bitumen. The ecofriendly product is being used extensively for major road upgrades across the country, including the N1 in Gauteng and the N2/N3 corridor leading from Durban.

Rubber bitumen being applied for a spray seal application

The partnership between Mathe Group and Tosas began in 2016, shortly after Mathe Group relocated to its current, larger facility. Since then, crumb rubber production has increased significantly, reflecting the growing demand for sustainable road construction solutions.

"Tosas has always been at the forefront of technological advancements in the bitumen industry," said Deon Pagel, managing director of Tosas.

"We are proud to offer one of the most advanced bitumen testing laboratories in Southern Africa and are continually developing new products like rubber-modified bitumen."

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Rubber-modified bitumen is created by combining 20% crumb rubber with 80% bitumen and extender oils. This not only offers a solution for waste tire disposal but also boasts superior performance characteristics.

"It's a win-win," said Pagel. "We get a stronger, more durable road surface while also promoting environmental sustainability."

Gaining traction with government agencies

The success of rubber-modified bitumen has led to its widespread adoption by government agencies and road authorities throughout South Africa.

Mathe Group rubber crumb processing plant

Mathe has collaborated with Tosas to design and develop a second plant utilising new crumb Rubber Technology (NCRT). This process involves coating the rubber crumb with special waxes and aromatic oils, resulting in a pre-swollen product that offers even greater longevity and requires lower mixing temperatures during road construction.

"We are confident that Mathe Group can meet the growing demand for crumb rubber in various applications," said Dr Mehran Zarrebini, CEO of Mathe Group.

The company is currently planning to expand its production capacity by installing a new line that will double output at the Hammarsdale factory.

That recycling plant is designed for flexibility, allowing them to produce various crumb rubber particle sizes for different end uses. The finer crumb rubber is ideal for rubber-modified bitumen, while coarser grades find applications in artificial turf infill, sports surfacing, and non-slip paints.

Rubber bitumen in a typical asphalt overlay application on the N2 near Gamtoos River.

'Significant potential'

"There's significant potential for growth in the use of crumb rubber in road construction," said Zarrebini. "This depends on continued infrastructure investment from government agencies like Sanral."

Mathe Group has committed to continuous improvement and has invested heavily in upgrading its machinery to enhance production efficiency. These efforts will ensure the company remains a leader in sustainable crumb rubber solutions for South Africa's road infrastructure needs.