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Recycled coffee grounds could make roads smoother and greener

Have road builders got a latte on their minds?

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By Alice Klein

Your morning pick-me-up could make your drive smoother. Engineers have turned coffee grounds into building materials for roads.

The global coffee industry produces millions of tonnes of used grounds annually, with most ending up in landfill. But [Arul Arulrajah](#) at Swinburne University of Technology in Melbourne, Australia, believes that this material should not go to waste.

“One of my hobbies is drinking coffee,” he says. “One time when I saw my barista throwing the used grounds in the bin, I thought, why not look at this material from an engineering perspective?”

Arulrajah and his colleagues collected soggy coffee grounds from the bins of a local café and dried them in a 50°C oven. They mixed seven parts coffee grounds with three parts of a waste product from steel manufacturing called slag and added an alkaline solution to bind everything together.

Then they compressed the final mixture into cylindrical blocks, which were strong enough for use as the layer of road that sits under the surface and provides foundations.

“We estimate that the coffee grounds from Melbourne’s cafés could be used to build 5 kilometres of road per year,” says Arulrajah. “This would reduce landfill and the demand for virgin quarry materials.”

The research reflects a trend towards using [green construction materials](#), says [Caroline Baillie](#) of the University of Western Australia. “Even ordinary companies are starting to develop recycled building materials – it’s not just the crazies anymore.”

A key next step will be ensuring that the energy required to create coffee-based building materials is not so high that it outweighs the recycling benefits, says Baillie.

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