

Roads

Asphalt invented with lower risk of potholes

By Klaus Jopp, 17th May 2010, 10:20 a.m.

The harsh winter has left its mark on our roads. Huge potholes in the asphalt are making driving difficult. But finally there's hope – a firm from Munich has invented an asphalt that can withstand the frost. Thanks to nanotechnology, the roads are more resistant to cold.

The impact of winter is still visible on many roads. The ADAC estimates that it will cost around Euro 3 billion to repair all the potholes in the asphalt. For Paolo Duiella, President of the Brenner motorway, it's a waste of money: "There is a method that we tried out with tremendous success on the Brenner motorway back in 2006, one which uses nanotechnology from a German company."

At the time, eight kilometres of the key north-south connection were renovated at top speed. Under the harshest conditions imaginable, asphalt was laid on the Brenner road that has, since this year, been available worldwide from NanoSky AG in Munich.

The company, which was founded at the end of 2009, specialises in research, development and nanotechnology processes, particularly in the fields of construction, corrosion protection and fire protection. The patented product Nanoterra soil (NTS) is consequently laid especially on roads and paths.

The aqueous, butadiene-based polymer dispersion with its microscopically fine silicon dioxide dust can hold together the base structures of roads as effectively as it can their upper layers – regardless of whether the roads are made from concrete or asphalt. The material seeps into the road's every pore, filling them with the nano-mixture.

The result is a water-repellent network that keeps frost and sunshine at bay. The water cannot penetrate, and the cold can no longer rip holes in the road.

The operators of the Autostrada del Brennero offer a glowing testimony to this innovative process: "NTS has a wealth of advantages – tremendous processing flexibility, excellent stability and a long service life, limited penetration of water and superb resistance to frost," says Duiella, recounting the properties of the additive which is added in small quantities – of around only one weight per cent.

Although the installation on the Brenner had to be performed at temperatures as low as minus twelve degrees Celsius, and up to 7,000 trucks thunder over the road every day, the fresh motorway road surface has remained intact even up to today. The method is relatively simple.

Dry cement is scattered over the holes in the road surface. The polymer additive, dissolved in water, is then poured into the crankcase of a large milling machine. The new asphalt mixture is constantly mixed and homogenised while the road surface is still being laid.

"Both the construction times and the costs are reduced by up to 30 per cent," says Duiella. The nano-asphalt dries quickly: after just two to four days, the roads are ready to be driven upon again.

NTS technology has meantime also become highly successful in Russia. This enormous country ranks in the Champions' League of road-building, in view of its climatic and geological conditions.

This is why certification is so useful for NTS: In the exacting studies performed by the Universities of Moscow and Tyumen (Siberia) on test roads built by ten companies from five countries, the German firm fared best.

Caption:

Many German roads look like a maze of potholes.

Photo: dpa/DPA