



BASF

We create chemistry

B2Last[®]

The **chemical additive** for sustainable road construction



B2Last[®]

B2Last[®] is the
bitumen additive for
**sustainable road
construction.**

Be it an increasing heavy load traffic or more extreme weather conditions because of climate change – today, roads and streets must fulfill different requirements. Additives for bitumen play a decisive role in the durability of for asphalt pavement. At the same time, occupational health and safety, environmental protection and the reduction of CO₂ emissions are of high importance for road construction.

B2Last[®] is a low viscous additive that allows temperature reduction in order to produce warm mix asphalt. It crosslinks within the bitumen component, bind them together, to form a polymeric network. The interconnectivity provides an excellent asphalt mix workability and allows a higher content of reclaimed asphalt pavement. B2Last[®] will become one with bitumen, limiting the risk of phase separation. This new additive will bring the road properties to the next performance level, by prolonging its lifespan.



Your benefits at a glance

- Increased asphalt performance – Using B2Last® increases the hardness and elasticity of the asphalt. This increases the life span of the road.
- Saving primary resources – Using large amounts of Reclaimed Asphalt Pavement (RAP) is also possible at reduced laydown temperatures, while maintaining excellent workability of the asphalt mix.
- Reduced CO₂ emissions – 30-40 °C lower asphalt mix production and laydown temperatures (Warm Mix Asphalt). This saves energy and resources.

Environment Health and Safety

Bitumen aerosols and vapors (bitumen emissions)

B2Last® enables asphalt mix production and laydown temperatures below 140°C (warm mix asphalt) and thereby reduces bitumen aerosols and vapors by up to 65% (depending on measurement location) – Associated with other technical measures and solutions, B2Last® can provide further emissions reduction, without compromising on the pavement performances.

Product Safety

We value the health and safety of people above all else. Therefore, we will support our customers in their product development with B2Last® and provide the technical information required to handle our products safely. With more than 15 km of road paved out of B2Last®, we already monitored the emission related to our products and its impact on the health and the environment. B2Last® related emission level are far below the required occupational exposure limit.



Regional Roads on L50

B2Last® Hot Mix Asphalt (HMA) was supplied for a 500t binder and top course without RAP in a project in North Rhine Westfalia.

Parking area on the A96

B2Last® Hot Mix Asphalt (HMA) was supplied for a 300t binder course with 50% RAP. For a direct comparison, a PmB asphalt binder was paved next to the B2Last® road section.

City Highway A96

As follow-up project to the parking area trial on the A96, B2Last® Warm Mix Asphalt (WMA) was produced for a binder course with 50% RAP. Into this project frame, goal was to verify if asphalt made of bitumen modified with B2Last® can be workable at lower temperature, but also to reduce bitumen emissions.

RESULTS

B2Last® achieves similar performance like a typical polymer modified bitumen (PmB). The workability was improved during compaction and the material was less sticky on the surfaces of the machineries. And, thanks to lower asphalt mix temperature, a noticeable emission reduction of up to 65% can be measured.

One of our first large-scale trial in Germany on the D270 was realized during summer 2020. 4000 Tons of asphalt mixes for the binder and top layers were produced with 2,5% wt. of B2Last® with 50 and 30% of RAP respectively. Temperatures dropped down to reach a minimum of 120°C on the construction site and still permitting good compaction of the asphalt mix.

B2Last® reduces stickiness of the asphalt mix as well as the odor coming from sulfur components contained in bitumen.

B2Last® is the perfect chemical binding agent to improve bitumen and asphalt properties.

B2Last® can be used for heavy traffic loaded roads or highways that need to be replaced in short operation time without traffic disruption. Thanks to B2Last®, fast traffic reopening by using WMA mixes is possible without compromising on safety of the road users.



Your solution for Hot Mix and Warm Mix Asphalt

Availability

B2last® is globally available in different packaging types including drums, IBCs and tank container. You'll benefit of the well-established BASF global supply chain and fast delivery time. For your product development, smaller samples can be organized from our local bitumen laboratories.

Reactivity

We value the health and safety of people above all else. Therefore, we will support our customers in their product development with B2Last® and provide the technical information required to handle our products safely. With several kilometers of road paved out of B2Last®, we already monitored the emission related to our products and its impact on the health and the environment. B2Last® related emission level are far below the required occupational exposure limit.

Handling

New type of additive introduced into a specific industry always need a retrofit in terms of equipment, storage, environmental consideration in case of leakage. Because we take ownership in what we do, our team will organize specific training in laboratories to handle this chemistry.

Productivity at plant

B2Last® permits to modify bitumen on-demand to reach the degree of modification needed into bitumen, as well as road performances required. The addition of B2Last® at the asphalt mixing plant is rather simple and only required limited technical adjustments. In contrast to PmB, it will improve storage capacity and material availability, resulting in energy saving.

Safety

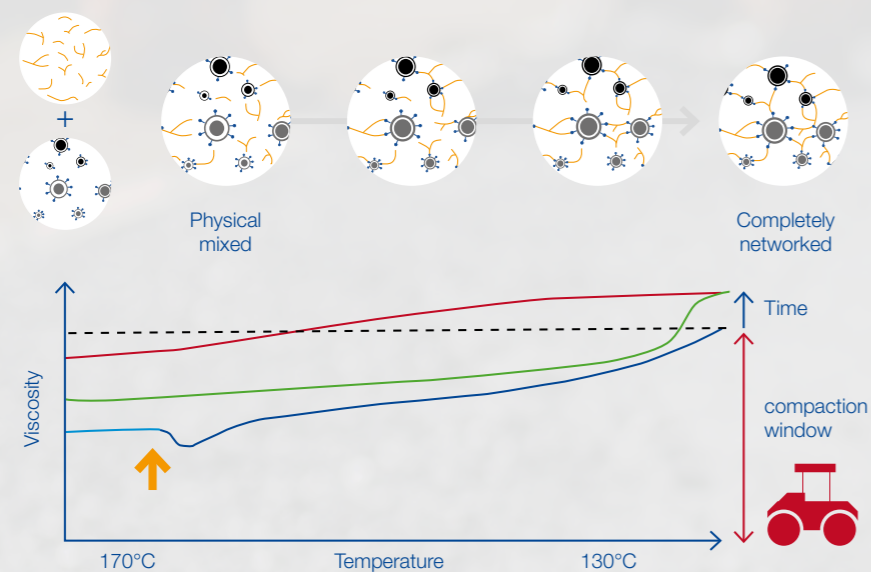
Safety is at the center of what we do and is one of the main important core value. Our team will stand your own product development and make sure that you will receive the suited safety training at the workplace to handle our additives in the best and safer way.

Sustainability

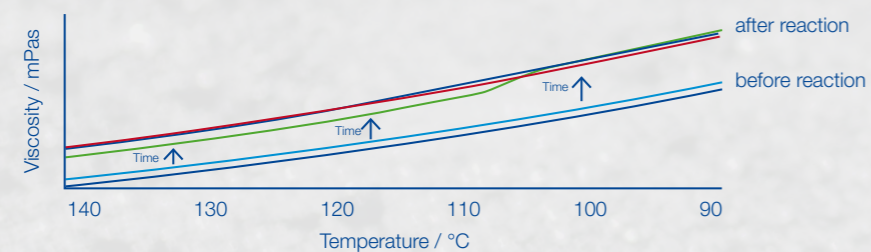
If you are looking at saving resources, lowering your CO₂ footprint for asphalt production and providing new materials that fulfill sustainability aspects, B2Last® can be the answer. By dropping down the viscosity of your modified binder, our new additives allows the production of WMA and at the same time provide performance of the pavement at a similar level like a typical PmB.

Influence on viscosity

Asphalt



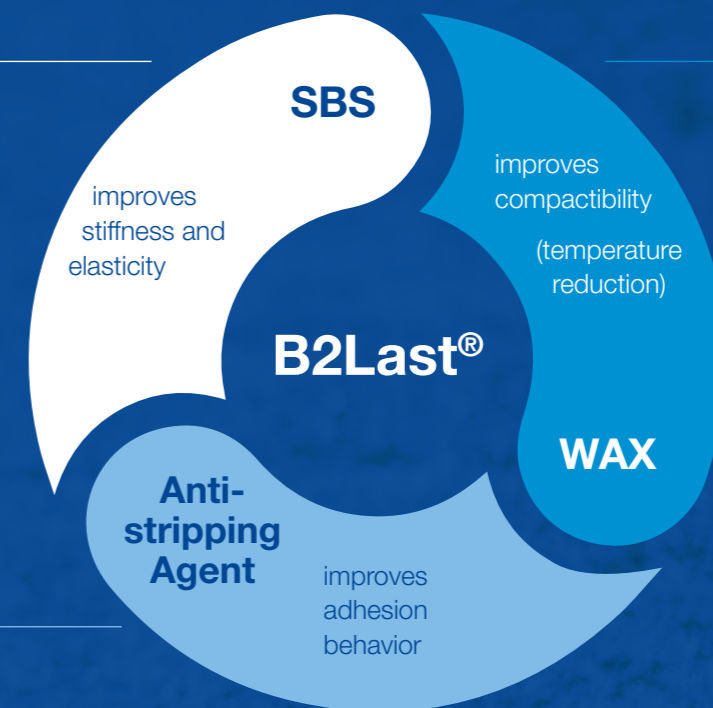
Bitumen



- Polymer modified bitumen (SBS)
- Polymer modified bitumen (SBS + Wax)
- Reactive modified Bitumen (B2Last®)
- Native bitumen
- ↑ Addition of B2Last®
- Bitumen polar phase bearing reactive groups
- ⊗ Bitumen from RAP with more reactive groups
- B2Last® and resulting polymeric network

WMA production possible due to low viscosities upon the whole process.

Combined advantages in one product



Through in-situ crosslinking in bitumen the stiffness and elasticity increase and B2Last® mimics the effect of SBS in terms of rutting performance and low temperature resistance in asphalt.

B2Last® provokes the formation of nitrogen-based bonding, resulting in an improvement of adhesion properties like typical amine-based antistripping agents.

The use of B2Last® allows to build-in asphalt at lower temperature like waxes. As a low viscous liquid, before the reaction occurs, B2Last® allows a viscosity drop of the bitumen binder. Through the build-up of the polymer chains in the bitumen, the viscosity will continuously increase over time until it is fully reacted.

B2Last® combined the effect of 3 additives.



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