

# APPLICATION IN WARM MIX ASPHALT

## General information

**aspha-min®**, a synthetic zeolite (sodium aluminium silicate) is a synthetic mineral. It contains chemically bound crystal water at approximately 20% by weight, which is being slowly and continuously released at temperatures of above 85 °C.

## Delivery and storage

**aspha-min®** is available as fine granules (380 µm) and as a powder (3.5 µm). In addition to 500 and 1,000 kg big bags, meltable bags of 3 kg each are also available. The appropriate dosage method is to be determined in accordance with the technical properties at the mixing plant.

Depending on availability, both screw conveyors or pneumatic systems may be used for transportation within the plant. **aspha-min®** needs to be stored dry in order to ensure best conditions for dosage, but will not be affected by temperature fluctuations of between -15 °C and +70 °C. For further details, please check our voluntary safety data sheet (available separately for download).

## Production of warm mix asphalt

Depending on the binder content, 0.2 - 0.3 % by mass (2 to 3 kg per 1000 kg of mix) of **aspha-min®** is added to the asphalt mix. The additive is added directly into the mixer at about the time of injecting the binder.

Whereas processing temperatures of the binder remain unchanged, mixing temperatures can be reduced by up to 30 K by reduced heating of the aggregate. It is important to ensure that the exhaust gas temperature of the system does not drop below the dew point in order to prevent filter cloths from sticking together.

The addition of **aspha-min®** releases finely dispersed water vapour that leads to the creation of micropores in the binder. The resulting increase in volume has a positive effect on the viscosity of the asphalt mix. This significantly increases the workability of the mix at lower temperatures.

Any other parameters of the mixing process remain unchanged. The addition of **aspha-min®** in a separate weighing process does not require to extend the batch mixing time, so that the output of the asphalt mixing plant is maintained.

All binders commonly used in road construction can be used, such as bitumen, polymer bitumen or their mixtures.

## Paving

The calculated temperature reduction of the asphalt mix described above shifts the paving window. The controlled release of crystal water into the asphalt mix leads to a reduction in viscosity and allows an ease of compaction – even at lower temperatures (until about 100 °C). Although this requires no fundamental changes in handling by the paving staff, we are available at any time to provide a short training course. Please do not hesitate to get in touch.

## Quality assurance

Adding 3 kg **aspha-min®** per ton of asphalt mix replaces 2.4 kg of natural fines by an equal amount of synthetic mineral - without any alteration of the binder. Therefore, any aspect of the binder's rheology remains unchanged, which is particularly important with regard to quality monitoring, warranty investigations and subsequent recycling of the asphalt mix.

Warm mix asphalt with **aspha-min®** must always be regarded as technically equivalent to conventional mix designs in terms of its performance under traffic (see long-term study BAST, 05/2008).

**aspha-min®** is compatible with any type of bitumen, mix design or the rate of RAP. This allows it to be used in all layers of asphalt road construction.

## Laboratory

Lab information available separately.