

AT A GLANCE

For Warm Mix Asphalt:

- Energy savings
- Improved working conditions
- Quicker availability for traffic
- Reduced thermal aging of the binder
- Less wear and tear to both asphalt plant and equipment

For Hot Mix Asphalt:

- Extended time frame for paving under adverse climatic conditions
- Improved workability and compaction with demanding binders, thin layers or manual laying
- Expansion of the distribution range

General advantages:

- No chemical alteration of the binder (softening point)
- No extra wet mixing time
- Easy handling and storage
- No additional bitumen tanks needed

TECHNICAL DATA

Chemical characteristics: aspha-min[®] is a synthetic zeolite). The percentage of crystal water is 20% by weight.

Appearance: aspha-min[®] is available as fine granulate with an average particle diameter of 380 µm

Packaging: Big bags, meltable bags or bulk

Color: White

Specific mass: 2.0 g/cm³

Compaction density: ~ 500 g/l

pH-Value: 10 - 11

Water solubility: None

Thermal behavior: Crystallized water will almost entirely be released within a temperature range of 85 °C to 180 °C (185 °F to 356 °F).

Classification: aspha-min[®] is not considered a dangerous substance.

Storage: In the temperature range of -15 °C to +70 °C (5 °F to 158 °F) no changes occur. Avoid humidity.

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TEMPERATURE REDUCTION VISCOSITY REDUCTION



Definition

aspha-min® is a finely granulated, synthetic zeolite-based additive designed for the production of warm mix (WMA) or low-viscosity hot mix asphalt (HMA). Using **aspha-min®**, both production and laying temperatures of asphalt mix can be reduced by about 30 K.

Application and Virtue

aspha-min® contains approximately 20% chemically bound (crystallised) water. When introduced directly into the mixing process, this water is gradually released and vaporised, creating micro-pores within the asphalt binder. This controlled foaming effect temporarily increases the effective binder volume and reduces binder viscosity, keeping the asphalt mixture supple, workable, and compactable, even at reduced temperatures.

Depending on binder content, 0.2% to 0.3% by weight of **aspha-min®** is added to the asphalt mix. In principle, any dosing or metering system capable of handling low feed rates, such as fibre feeders commonly used for stone mastic asphalt (SMA), is suitable for **aspha-min®**.

aspha-min® can be used with all types of road bitumen (standard bitumen, polymer modified bitumen and such composites). Asphalt manufacture with **aspha-min®** does not require extra wet mixing time and therefore ensures full production capacity of the mixing plant.

Since **aspha-min®** is delivered in big bags or meltable bags on pallets, it is easy to handle and store. **aspha-min®** withstands temperature fluctuations between -15°C and $+70^{\circ}\text{C}$ without any material deterioration. This means no extra investment in costly bitumen tanks – only dry storage is needed.

Improved Workability and Compactability (HMA)

Aside from the classical application in the production of WMA, **aspha-min®** is highly effective as a workability and compaction aid in conventional hot mix asphalt.

With rising quality standards in asphalt road construction, thin layers, high modulus mixtures and stiff or heavily modified binders have made paving operations increasingly demanding. Construction windows are becoming shorter, night paving more frequent, and the risk of penalties due to insufficient compaction has increased. At the same time, achieving target compaction is critical to pavement performance and longevity.

When used in hot mix asphalt, **aspha-min®** significantly improves the workability of the mix. This reduces compaction risks with demanding mix designs and under unfavourable weather conditions. **aspha-min®** effectively extends the compaction window, which can be decisive under such circumstances.

aspha-min® has proven particularly suitable for hand placed asphalt, for example in confined urban environments such as between tram rails, where improved workability and ease of compaction are essential.



Warm Mix Asphalt (WMA)

aspha-min® allows asphalt to be mixed and paved at significantly reduced temperatures, resulting in a decrease in energy consumption and reduced thermal stress on both the binder and equipment.

Lower consumption of fossil fuels leads to a significant reduction in emissions of carbon dioxide (CO_2), nitrogen oxides (NO_x), and volatile organic compounds (VOCs) during asphalt production.

At the paving site, reduced asphalt temperatures notably improve working conditions by decreasing odour, vapour, and aerosol exposure.

Other advantages of warm mixed asphalt are apparent: Warm mix paving with **aspha-min®** allows quicker availability for traffic. **aspha-min®** accelerates highly time-critical construction projects such as airport runways, highly frequented highways and traffic junctions.

