

# MOISTURE MEASUREMENT IN ASPHALT MIXES

Product composition control



 **BERTHOLD**

# ONLINE MOISTURE MEASUREMENT FOR THE PRODUCTION OF ASPHALT MIXES

Rising material and energy costs are forcing the manufacturers of asphalt mixes to consider new ways to optimize their production process. During asphalt production, one of the biggest cost factors is bitumen or the binding agent that binds the raw material aggregates together to produce asphalt. Bitumen is added depending on the amount of bone dry product mix that comes across the weigh bridge.

Traditionally, raw material moisture measurements were taken once a day with that moisture value being applied to the entire day's worth of raw material. Especially in areas where raw material moisture varies throughout the day, having an on-line moisture meter can help optimize bitumen usage thus realizing cost savings. This can be achieved through Berthold's on-line microwave moisture meter. Online measurement technologies offer real economic advantages by both improving the control of the manufacturing process, and reducing costs related to onsite tests and offline measurements.

## Online measurement to improve quality

Microwave measurement is nonintrusive; there is no sensor that comes into contact with the product to be measured, which limits maintenance and avoids special cleaning. The measurement is not influenced by the colour or inhomogeneity of the measured product. Furthermore, the measurement is carried out on the entire product.

In addition, the multi-frequency technique enhances the stability and representativeness of the result. The Micro-Polar system is easy to install. The processing unit has a large display and a user-friendly interface. Automatic calibration can be carried out on site.

**Humidity range: from 6 to 16%**

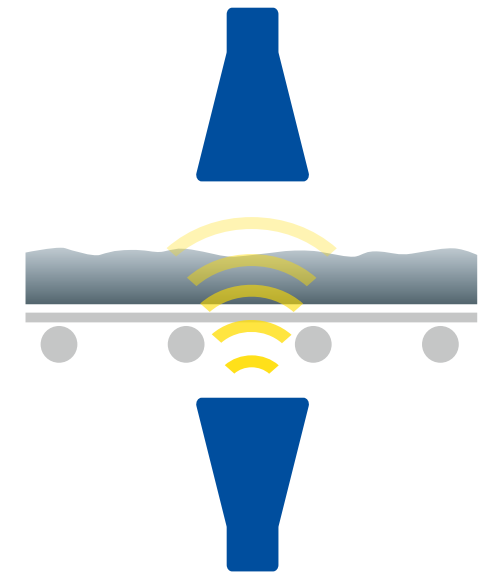
**Correlation coefficient: 90%**

**Standard deviation with the laboratory: +/- 1%**

## Measuring principle

The microwaves pass through the product to be measured, causing rotation of the free water molecules. They have excellent dielectric properties. This rotation causes the microwaves to slow down (phase shift) and decrease in amplitude (attenuation), resulting in a very accurate measurement of the water content.

Thanks to the multi-frequency technique used by Berthold, the measurements are highly reliable and stable and are not affected by reflectance or resonance. The integrated reference line provides excellent compensation of the influence of environmental parameters. As the device generates very low power microwaves (about 0.1 mW), the measured product does not undergo any temperature rise or changes. The radio licenses for the system have been approved by the FCC, IC and ETSI.



*Moisture measurement on a conveyor with horn antennas*

## Customer Benefits

- Precise and maintenance-free operation
- Measurement of the whole material profile
- Reliable measurement without recalibration
- Reduction of operating costs through effective use of the binding agent

## Technical Features

- As it is noncontact, it can be installed without interrupting operation
- High availability and therefore high operational safety
- Easy to install on existing conveyors







## THE EXPERTS IN MEASUREMENT TECHNOLOGY

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Using our varied product portfolio, our enormous specialized knowledge and extensive experience, we develop suitable solutions together with our customers for new, individual measurement tasks in a wide variety of industries and applications.

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