

MASTERSIZER 3000 CHOCOSIZER

Effective Chocolate production quality control



PARTICLE SIZE

Key Benefits

- Routine, reproducible measurement of chocolate samples
- Simple measurement workflow to support QC operations
- Easy detection of oversized particles which impact product perception
- Enables tracking of particle size changes during processing

The goal of chocolate production is to produce a product which delivers the consistent taste and mouthfeel consumers demand while ensuring optimized, economical and efficient production. Critical to achieving this goal is particle size control. The particle size and size distribution of the solids present in chocolate have a significant effect on the consumer's perception of the product and the efficiency of the production process. The presence of coarse particles within the product may present a gritty, unpleasant mouthfeel. Milling the solid components to a finer particle size can improve the mouthfeel, but this also increases production costs through increased energy use. In addition, particle size reduction leads to a requirement to add more expensive cocoa butter to the product in order to yield the correct flow properties. This, in turn, may impact the melting behavior and rheological properties of the chocolate during consumption. As a result, particle size measurement and control is important, both to maintain mouthfeel and to achieve reasonable production costs.



The Mastersizer 3000 Chocosizer kit provides for fast, reliable chocolate particle size analysis as part of routine process and quality control. It includes all the components required for chocolate sample preparation and measurement using the Mastersizer's Hydro MV or Hydro SM dispersion units, including:

- Dispersant flasks and pumps for supplying the correct volume of dispersant for sample preparation and measurement.
- A sonication probe for pre-dispersion of chocolate samples prior to measurement.
- A measurement guide which describes the measurement workflow and gives details of the Mastersizer 3000 measurement method settings required for reproducible measurements.

Together these enable the reproducible measurement of chocolate samples. This, in turn, enables any variation in the particle size of the chocolate to be detected during production, ensuring any process adjustments required to maintain product consistency can be made.

The Chocosizer kit can be used with the Mastersizer 3000 laser diffraction particle size analysis system, enabling measurements over a range from 0.01 to 1500 μm . This ensures the easy detection of any oversized particles above 20-30 μm in size that may be responsible for a poor product mouthfeel. In addition, the reduction in particle size can be detected during milling and conching, enabling the end point for processing to be determined. Alternatively, the kit can be used with the Mastersizer 3000E, which operates over a 0.1-1000 μm range.

Specifications

Measurement size range	Hydro MV: 0.01 - 1500 μm †* Hydro SM: 0.01 – 600 μm † *
Maximum dispersant volume	120ml
Measurement time	1-2 minutes for chocolate pre-dispersion Less than 60 seconds for particle size measurement †
Power supply	Supplied via the Mastersizer optical unit

† Sample dependent.

*Ranges relate to measurements using the Mastersizer 3000. The Mastersizer 3000E measures from 0.1 – 1000 μm .



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