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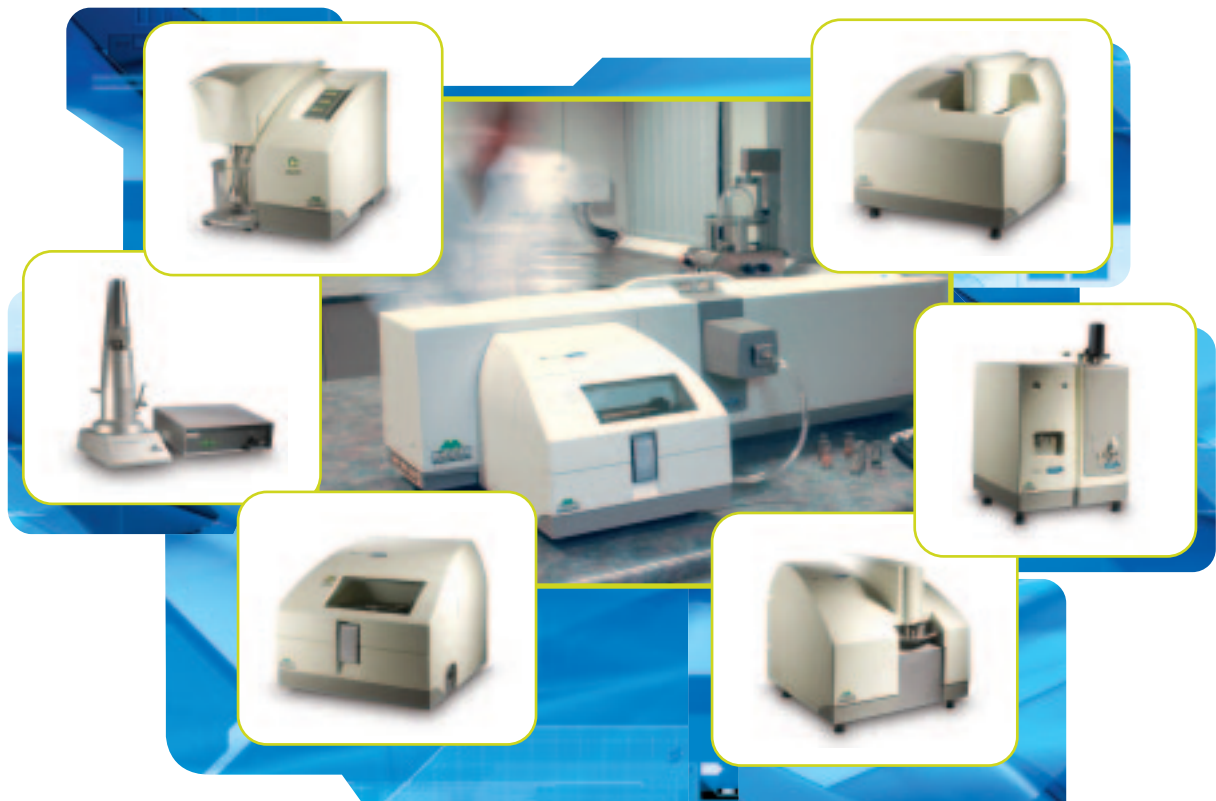


Mastersizer 2000 sample dispersion units

Mastersizer 2000 sample dispersion units

The key to high quality particle size measurement is the presentation of a well-dispersed sample to the instrument optics. This must be delivered at an appropriate concentration with a minimum of sample bias.

Since the Mastersizer 2000 is designed for a very broad range of samples and applications, no single dispersion methodology can be universally applicable. The system therefore offers a range of plug-and-play sample dispersion options for both wet and dry measurements, which additionally allow a rapid interchange between these two modes.



“ The Mastersizer 2000 provides the flexibility we need for measuring a diverse range of materials quickly and easily. The inclusion of ‘well thought out’ interchangeable wet and dry modules was critical in our selection of the system. ”

Howard Beedle, Technical Manager, Viaton Industries Ltd

Each dispersion unit has been designed with ISO13320, the international standard for laser diffraction particle sizing, in mind. This standard provides guidance as to how particle dispersion should be achieved and controlled. Each dispersion unit allows the precise definition of all key

measurement parameters, enabling robust measurements in compliance with ISO13320 recommendations. Validated design and Standard Operating Procedure (SOP) control ensure that all measurements are entirely reproducible.

Wet Dispersion Units

Many samples are produced as slurries or need to be measured wet in order to achieve good particle dispersion and reproducible results. The Mastersizer 2000 system includes a comprehensive range of wet dispersion units, ensuring robust measurements whatever your sample requirements.

Fully automated solutions are available to meet the sample dispersion requirements of both small and large volume applications. Each system features software control of dispersant delivery, pump and stirrer settings, sonication settings and cleaning cycles. All the key measurement parameters can be set within an SOP, allowing method development and definition to ISO13320 guidelines.

For some applications, full automation is not necessary. In such cases a variety of semi-automated dispersion units are available, designed to achieve reproducible measurements across a wide size range. For these units, SOP definition is provided via software prompts and guidance notes, steering the user through the measurement process and ensuring good measurement practice.

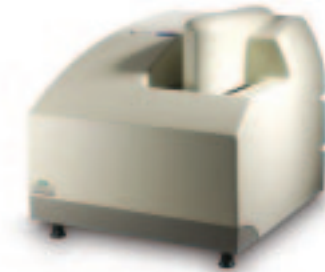


Hydro 2000G

- 800ml dispersant volume
- Integrated ultrasonics aids dispersion of cohesive materials
- Automatic SOP control of pump, stirrer and sonication settings
- Contra-rotating pump and stirrer system allows the use of high pump and stirrer rates without bubble entrainment, enabling unbiased sampling across a wide range of sizes and dense materials
- Control of dispersant fill and drain functions ensures full compatibility with the Autosampler 2000, for 24-hour operation

The Hydro 2000G is an automated general purpose, dispersion unit designed to handle large sample volumes. It is ideal for the measurement of larger, denser materials and broad size distributions. The Hydro 2000G creates a suspension of particles in water or other liquids. Optimal dispersion is achieved through the use of ultrasonics and surfactants, as required.

www.malvern.co.uk/hydrog



Hydro 2000S

- 50-120ml dispersant volume
- Integrated ultrasound probe for particle dispersion
- Automatic SOP control of pump, stirrer and ultrasound settings
- Control of dispersant fill and drain functions ensures full compatibility with the Autosampler 2000 allowing 24-hour operation

The Hydro 2000S is an automated small volume dispersion unit for sample dispersion in both aqueous and non-aqueous solvents. The small dispersant capacity enables the measurement of minimal quantities of high value or scarce samples, such as pharmaceutical actives, as well as minimizing solvent use.

www.malvern.co.uk/hydros



Hydro 2000 Micro Precision Unit

- 18-20ml dispersant volume minimizes solvent use and allows measurement of milligram samples
- Automatic control of dispersion conditions via software SOPs
- Efficient in-line ultrasonics for rapid dispersion
- Precision control of pump/stirrer and ultrasonics ensures high reproducibility
- Enables repeatable measurements of small samples during product development and formulation
- Sample easily recovered for further characterization

In some applications sample and solvent use must be minimized, especially when characterizing expensive or hazardous materials. Requiring just 18-20ml dispersant, the Hydro 2000 μ P enables the measurement of milligram sample quantities under precisely defined dispersion conditions.

www.malvern.co.uk/hydroup



Hydro 2000MU

- Compatible with 600ml and 1000ml laboratory beakers
- Control via touch-sensitive, splash-resistant control panel
- Integral ultrasonic probe assists correct sample dispersion
- Efficient pump/stirrer design ensures effective unbiased sample presentation across a wide size range
- SOP operation via software prompts for easy, reliable use

The Hydro 2000MU is a semi-automated large volume unit designed for the measurement of dense, large materials or polydisperse distributions. A unique dip-in pump and stirrer head allows measurements to be carried out in a standard laboratory beaker. A counter-balanced lifting mechanism allows this head to be raised out of the sample beaker for ease of cleaning and sample recovery.

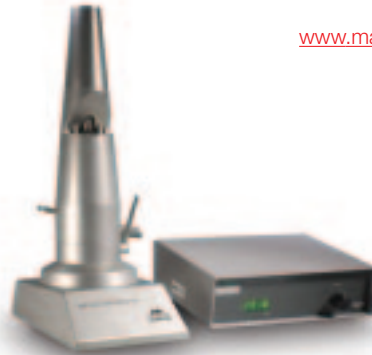
www.malvern.co.uk/hydromu



Hydro 2000SM

- 50-120ml dispersant volume
- Tacho-controlled pump/stirrer ensures the application of correct sample handling conditions
- Integrated centrifugal pump maintains sample suspension
- SOP operation via software prompts for easy and reliable use

A low-cost, manually controlled dispersion unit designed for use with small sample volumes or where solvent use must be minimized.



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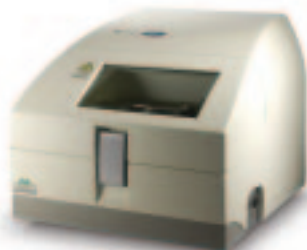
Dry Dispersion

Some materials are produced and used as dry powders. For these materials, dry dispersion often offers the best solution for particle size analysis. Dry analysis also allows the measurement of samples where hydration may affect the particle size, such as foodstuffs, pharmaceuticals, coatings and building materials.

Scirocco 2000 Dry Powder Feeder

- Automatic control via SOP includes sample feed rate and dispersive air pressure allowing method development and definition to ISO13320 guidelines
- Dispersive air pressure range from 0 to 4.0 bar (0.02 bar precision) ensures reproducible dispersion of agglomerated materials
- Range of feeder trays ensures suitability for samples from bulk down to milligram quantities
- Flow-balanced cell ensures minimal sampling bias.
- Ceramic venturi available for cement and other abrasive materials.

Reliable measurement of dry powders requires strict control of dispersion conditions. The Scirocco 2000 disperses particles by accelerating them with a compressed air stream. Precise control of feed rate and dispersion pressure ensures highly reproducible measurements across a broad range of samples, from fragile pharmaceuticals to robust materials such as cement. Measurements are made in an enclosed cell, minimizing environmental exposure and ensuring safe material handling, especially when measuring pharmaceutical actives or toxic materials.



www.malvern.co.uk/scirocco

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