Knowledge Beyond Measure.

Flow-Focusing Monodisperse Aerosol Generator

Model 1520

The Flow-Focusing Monodisperse Aerosol Generator (FMAG) 1520 can successfully generate highly monodisperse aerosol particles in a matter of minutes.

The FMAG can produce solid particles (0.8-8.5 µm) and liquid non-volatile particles (0.8-12 µm) from liquid solutions.

Applications

With the ability to generate highly monodisperse particles from a wide range of materials, the FMAG is a valuable tool for numerous applications, such as:

- Generating laboratory standard aerosols for calibrating droplet and aerosol particle sizing instruments such as aerosol spectrometers and cascade impactors
- Generating known size particles at a known rate for laboratory experimentation and exposure studies
- Generating viable bioaerosols and proxy biomaterials for bioaerosol research in a variety of sectors

Features and Benefits

- Generation of monodisperse aerosol particles of an accurately known particle diameter
- Low shear stress, non-clogging design
- Built-in corona aerosol neutralizer
- Advanced touch-screen control and user-friendly features

Compatible Materials

Using the solvent evaporation technique, a variety of solid and liquid materials can be generated by the FMAG. Successful liquid materials include oleic acid, DOP (dioctyl phthalate) and glycerol. Successful solid materials include sodium chloride, ammonium sulfate, sucrose and methylene blue. In addition to dissolved materials, suspended particles such as polystyrene latex spheres and biological microorganisms can also be generated. Recommended solvents for the FMAG include water, methanol and ethanol.

Specifications

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How it Works

The operation of the FMAG is based on proven aerosol generation technology and includes:

1. Stable, mechanical generation of monodisperse droplets: a liquid stream is pumped through a nozzle, and forms a narrow jet with the coaxial flow-focusing air. This jet is subjected to mechanical vibration, and breaks up into droplets that have the same volume.
2. Conditioning of droplets into particles: once generated, the droplets are dried into particles by exposure to dry dilution airflow. They are also electrically neutralized to optimize the successful transport of the particles from the generator into the intended application.

While maintaining these strengths, the FMAG also represents a significant step forward from previous technology. It incorporates:

1. Flow-focusing air. Reflected in the name 'FMAG', the use of flowfocusing air allows the instrument to operate with a much larger nozzle (100 µm). This significantly reduces clogging and downtime.
2. Low shear stress: the low liquid pressure operation is suitable for use with biological aerosols. Cell viability following aerosolization is enhanced when using FMAG, making it a useful tool for a wide variety of bioaerosol applications.
3. NIST-traceable particle size: The FMAG operating parameters are calibrated with NIST traceable standards. This allows users to use the FMAG for instrument calibration applications.
4. Corona aerosol neutralizer: this non-radioactive neutralizer generates a bipolar cloud of gaseous ions to neutralize any electrical charge that may be generated during the droplet and particle formation process. This feature is important in scientific research and laboratory experimentation, since unwanted or uncontrolled particle electric charge can adversely affect the behavior of aerosol particles and compromise the validity of experimental results.

Liquid Flow Rate
1 to 24 ml/hr; ±0.50%

Vibration Frequency
0 to 250 kHz; ±0.1%

Droplet Diameter*
15 to 90 µm; ±1.0%***

Particle Diameter
0.8 to 8.5 (solid) or 12 (liquid) µm**; ±1.0%***

Geometrical Standard Deviation
<1.02 for droplets; <1.05 for liquid/solid particles

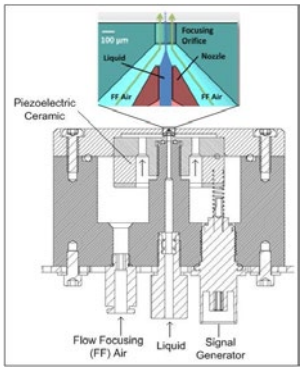
Aerosol Neutralizer
Bipolar corona (non-radioactive)

Compressed Air Requirement
30 Std L/min; 100 to 430 kPa (14.5 to 62.5 psig); 0°C dew point

Dimensions (H x D x W)
273 mm x 356 mm x 483 mm (10.7" x 14" x 19")

Weight
16 kg (35 lb.)

Power Requirements
115 or 230 VAC, 50-60 Hz, 50 W max



Specifications are subject to change without notice.
* Droplet diameter accuracy is based on the accuracy of the liquid flow rate and vibrating frequency
** Maximum particle diameter depends on particle density. Larger particles are more difficult to be transported by the flow.
*** Particle diameter accuracy is based upon the accuracy of droplet diameter and solution concentration.

To Order

Specify	Description
1520	Flow-Focusing Monodisperse Aerosol Generator

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TSI Incorporated - Visit our website **www.tsi.com** for more information.

USA	Tel: +1 800 874 2811	**India**	Tel: +91 80 67877200
UK	Tel: +44 149 4 459200	**China**	Tel: +86 10 8219 7688
France	Tel: +33 1 41 19 21 99	**Singapore**	Tel: +65 6595 6388
Germany	Tel: +49 241 523030		

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