

PolystyreneLatex (PSL) Aerosol Generator

ATM 240/L



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Principle

The aerosol generator ATM 240/L is used to generate a highly concentrated aerosol out of a suspension for testing air filters using polystyrene (PSL) particles. In sensitive areas such as semiconductor and aerospace industry the testing of high efficiency HEPA filters is often not carried out with the commonly used oily aerosol substances (DEHS, PAO, etc.). Even the smallest amounts of these substances can be stored in the filter and outgas in the application and can lead to product damages. The standard DIN EN 1822-4 describes the filter test with solid particles. Due to better material compatibility, PSL particles are also recommended for testing PTFE membrane HEPA filters.

Special Advantages

- Very high particle production rate (up to $2 \cdot 10^{11}$ per minute)
- High long-term stability of aerosol generation (VDI guideline 3491, part 2)
- very low moisture input, no subsequent drying necessary
- low minimum volume of the expensive suspension required (operation from approx. 100 ml suspension possible)
- Leak test up to filter class U16 (filter format 610mm x 610mm, volume flow 600 m³/h) within reasonable time
- possible start / stop operation for single tests
- high quantity output of applied particle size fraction with a low number of agglomerates
- Excellent scalability of particle production rate

Application

- Filter testing in sensitive areas such as the semiconductor and aerospace industries
- Filter test with non-outgassing aerosol substance and monodisperse aerosol
- Leak test up to filters of higher filter classes
- Production test during filter production
- Acceptance tests at the installation site of the filters

Operating principle

As a source for the filter test, the solid particles are referred to a particle size range called as MPPS (Most Penetrating Particle Size, in the range 0.1 ... 0.3 microns).



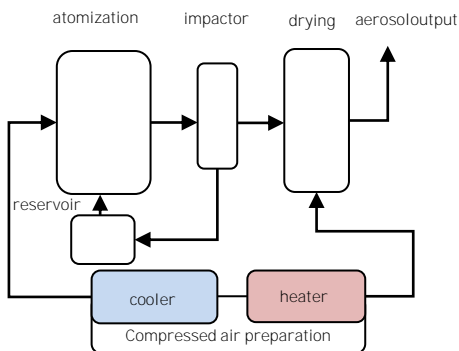
Specifications

A separation efficiency of a suspended matter filter determined with this particle size is always exceeded for other particle sizes.

The PSL suspension is sprayed inside the device in a first process step by step via compressed air. Larger droplets get separated by the impactor and flow back to the suspension.

This serves to avoid agglomerates. The water load resulting from the evaporation of the suspending agent is reduced by spraying at reduced temperature to a minimum.

The smaller droplets are removed and dried in a second step by heated, dry and particle-free air. The particles of the suspension contained in the droplets are transferred to the airborne state in this way and are available for a filter test as aerosol with solid particles. Due to the special design of the atomizer nozzle, a very high particle production rate is achieved.



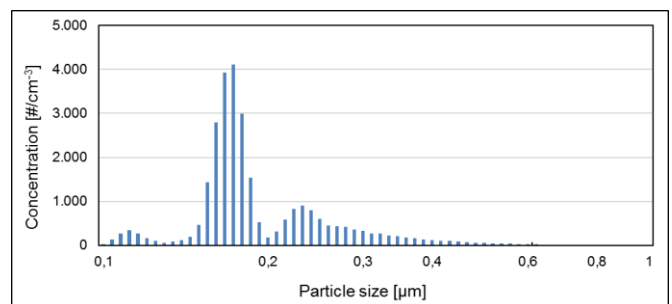
Principle of operation Topas ATM 240/L
Patent pending

Necessary equipment for sample preparation

- Laboratory scale for preparing the suspension
- Ultrasonic bath to disperse the suspension
- Particle free, deionized water to dilute the PSL solution

Technical Data

Particle size < 1 µm	Determined by the particle diameter of the suspension particles
Particle production rate	Up to 2 · 10 ¹¹ /min, scalable by suspension concentration and nozzle pressure
Min. required amount of suspension	approx. 100 ml
Achievable filter class for leak test acc. DIN EN 1822-4	U16 (for filter dimension 610 mm x 610 mm, 600 m ³ /h)
Compressed air connection	6 bar, free of oil
Dimensions	900 x 400 x 300 mm
Weight	25 kg



Particle size distribution of a 0.175 µm PSL aerosol

QMS certified to
DIN EN ISO 9001.



12 100 11908 TMS

For more information please visit our website at www.topas-gmbh.de

Specifications are subject to change without notice.

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