



Atomizer Aerosol Generator ATM 240/L for the generation of high-concentration PSL aerosols (polystyrene latex particles).

The Atomizer Aerosol Generator ATM 240/L is designed to produce dry PSL test aerosols from aqueous PSL dispersion/suspensions (polystyrene latex particles).

In numerous filter test standards, liquids (such as DEHS, PAO or paraffin oil) with low vapour pressure are recommended for test aerosol production in order to obtain sufficiently high droplet lifetimes. However, in certain situations or for various materials, such test aerosols are not suitable. There are two reasons for this: The filters tested with these aerosols can gradually emit the test substance that can lead to contamination of critical areas (especially in the semiconductor and aerospace industries). Furthermore, the aerosols can cause structural changes in the filter material (e.g., combination of DEHS with PTFE) due to chemical interactions. By using solid aerosols, those disadvantages can be eliminated. Aerosols consisting of monodisperse polystyrene latex

particles are often recommended for this purpose (ISO 29463-3, ISO 29463-4, EN 1822-4).

### Applications

- testing PTFE membranes with inert solid aerosol
- testing of special filters for the aerospace and semiconductor industries
- leak tests on HEPA filters according to ISO 29464-4 (formerly EN 1822-4) Annex D
- generation of test aerosols consisting of monodisperse polystyrene latex spheres

### Features

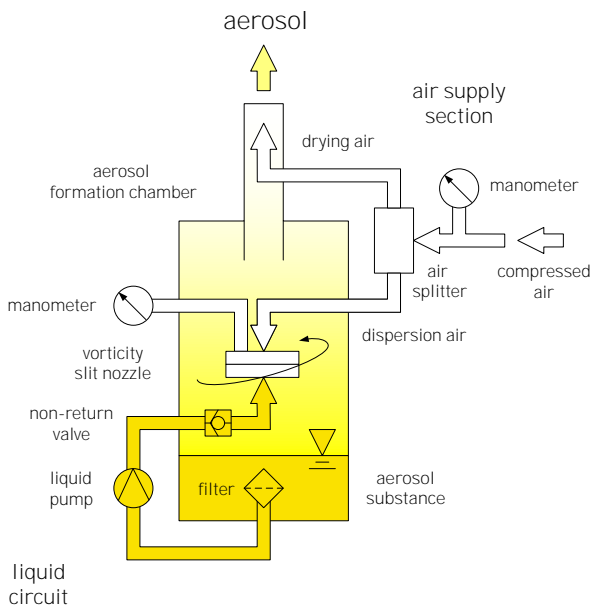
- generation of high concentration PSL test aerosols with low dispersion volume compared to other aerosol generators
- integrated aerosol drying to minimise the need for additional technical equipment
- possible start/stop operation for individual tests

### Principle of operation

The ATM 240/L is equipped with a vorticity slit nozzle, which is supplied with aerosol substance (PSL dispersion) and compressed air. From the droplet aerosol emerging at the nozzle slit, coarse droplets are initially separated due to inertia. Finer droplets are distributed in the aerosol formation chamber by a special vorticity ring. The compressed air flow rate transports the gradually drying aerosol away. Before leaving the generator, aerosol particles are exposed additionally to drying air to guarantee a drying-stable aerosol at the generator outlet.



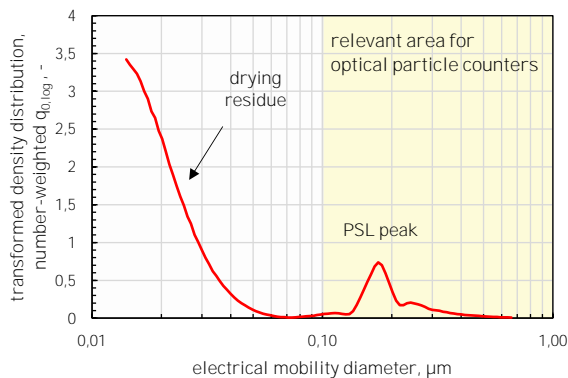
## Specifications



Principle of operation of the Atomizer Aerosol Generator ATM 240/L.

### Details

Spraying and drying of PSL dispersion/suspension cause not only desired PSL particles but also drying residues, which are attributed to stabilising agents of the PSL dispersion/suspension. Due to their small size ( $< 100 \text{ nm}$ ), these residues cannot be detected with optical particle counters and are therefore irrelevant for filter testing.



Particle size distribution of a PSL test aerosol (178 nm, 5 wt.-% aqueous dispersion) consisting of a fine fraction (drying residues) in the nanometre range ( $< 100 \text{ nm}$ ) and a PSL peak in the relevant range for optical particle counters; determined by differential electrical mobility analysis.

The properties of the test aerosol depend mainly on the PSL stock dispersion used and the sample preparation.

If agglomerates (doublets, triplets) are present in the sample and interfere with the analysis, the dispersion/suspension can be treated prior use by ultrasonication. Once the sample is dispersed, the PSL particles become individualised within the dispersion/suspension.

### Accessories (optional)

- EAN 581 for neutralisation or defined charging of the generated aerosols
- UDS 751 for ultrasonic dispersion of the PSL suspension

### Technical specifications

setting parameter	nozzle pre-pressure
setting range	750 ... 2500 hPa
setting resolution	continuously
air flow rate	10 ... 24 m <sup>3</sup> /h
mass flow rate	130 g/h (dispersion)
particle production rate < 0,1 μm	5 % (w/w), PSL, 178 nm ≤ 4×10 <sup>9</sup> #/s
aerosol substances	PSL dispersion
particle size range	0,05 ... 0,75 μm depending on aerosol substance
substance capacity	100 ... 400 ml
aerosol outlet	Ø 25,4 mm (inside)
power supply	24 V DC, 2 A
power consumption	< 5 W
air supply	6 bar, 25 m <sup>3</sup> /h, oil-free, dry
dimensions (w × h × d)	900 × 400 × 300 mm
weight	25,0 kg
normative references	VDI 3491-2, DIN EN 1822-4

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QMS certified according  
to DIN EN ISO 9001.



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PARTICLE UNDER CONTROL