Генераторы аэрозоля с распылителем ATM 221, ATM 230. Технические характеристики

ATM 230 (left) and ATM 220 (right) Aerosol Generator

ATM 210 Aerosol Generator (left) and
ATM 226 Aerosol Generator with stainless steel housing (right)

The products of the ATM series are used to generate test aerosols with defined properties (VDI 3491). The technological and design solutions of the ATM ensure a high consistency of particle size distribution and particle concentration. The generated aerosol is highly reproducible.

Quality assurances as well as health and safety aspects require regular testing of filters, the certification of safety cabinets, and testing and validation measurements of clean rooms.

Special Advantages

- Aerosol generators according to guidline VDI 3491
- Long-term stable test-aerosol
- Submicron particle size distribution
- Adjustable particle production
- Individual device solution by use case

Applications

- Filter testing
- Aeorosl research, i. e. for inhalation studies, toxicological experiments or for environmental research
- Calibration of measuring instruments
- Flow visualisation
- Cleanroom validation

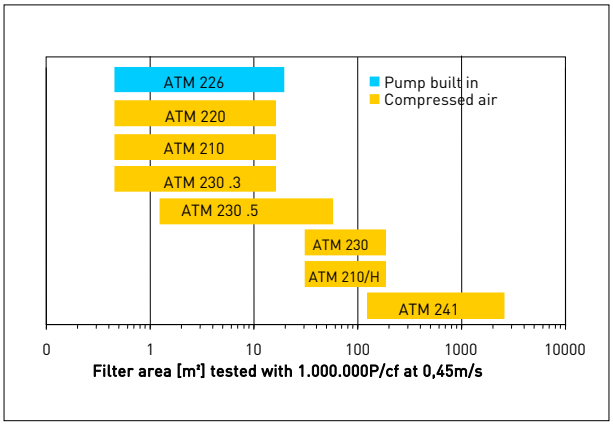


Chart of scanable filter area using various
ATM aerosol generators

Specifications

Atomizer Aerosol Generator ATM 220 with Diffusion Dryer suitable for generation of Calibration Aerosols

Device Designs

Depending on the application the individual device models differ in their technical implementation of this operating principle.

The **ATM 230** is also operated with compressed air, but has a ten times higher particle production rate in comparison with the ATM 220.

The devices **ATM 221** are designed as "Laskin version", which allows a very accurate and reproducible adjustment of the aerosol generation for very low mass flows. Here, the ATM 221 works with a two-substance nozzle in submerged operation, the ATM 231 with a Laskin nozzle.

Applications

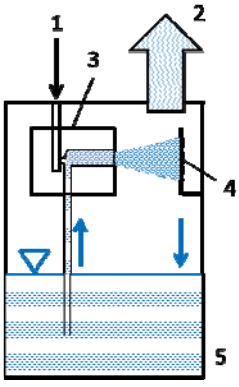
The generators of the ATM series generate test aerosols according to VDI guideline 3491, and feature stable and reliable operation. The generators facilitate atomizing various oily liquids, e.g. DEHS, PAO or paraffin oil (Shell Ondina). Alternatively, salt aerosols and latex aerosols (PSL) can be generated.

Operating Principle

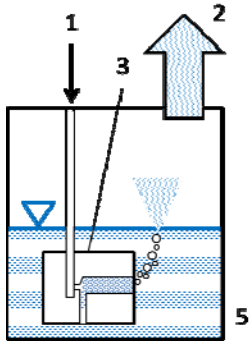
The essential part of the aerosol generators is a patented atomizer completely made of stainless steel, which has been developed by Topas. It works as a two-substance nozzle based on the injection principle and is combined with a baffle placed close to the spray outlet. This integrated particle impaction section removes coarse spray droplets and results in a submicron particle size distribution. Alternatively, these aerosol generators can be operated in the Laskin mode, meaning the nozzle is dipped into the test liquid. This results in significantly reduced particle production rates at almost unchanged particle size distribution.

Principles of pneumatic atomizers
(Taking into account the VDI 3491-2, preliminary draft 2013)

1 Dispersion gas volume flow
2 Aerosol
3 Two-substance nozzle
4 Baffle
5 Feed tank (Liquid reservoir)



Two-substance nozzle, open operation, with baffle as separator

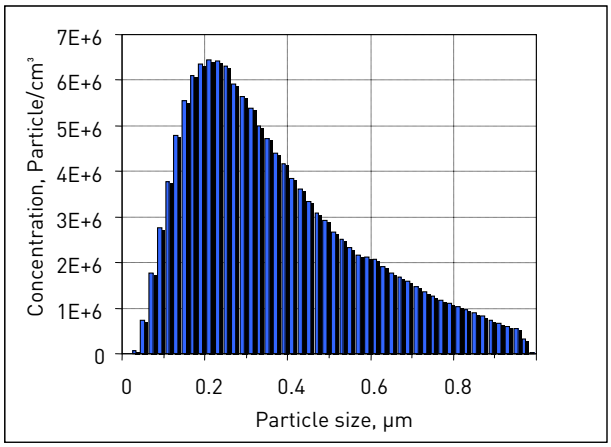


Two-substance nozzle, submerged operation, with liquid as separator

Specifications

	221	230
Compressed air supply	max. 250 kPa (2.5 bar)	max. 800 kPa (8 bar)
Counter-pressure	200 mbar	200 mbar
Filling volume	10...80 ml	0.1... 0.5 l
Flow rate	50... 140 l/h	500... 2500 l/h
Mass flow	max. 0.6 g/h	max. 20 g/h
Aerosol materials	DEHS, PAO (Emery 3004), DOP [1], salt solutions (not for ATM 210 and ATM 210/H), paraffin oil, PSL etc.	

[1] In the Globally Harmonised System (GHS), DOP is classified as a hazardous substance. DEHS or PAO are recommended as a replacement for DOP.



Particle size distribution of a DEHS aerosol measured by the Scanning Mobility Particle Sizer system in the size range 0.15 µm to 1 µm.