

Main Topics



Aerosols & Particles

- environmental relevance
- occupational safety
- particle synthesis

Air Quality & Gas Treatment

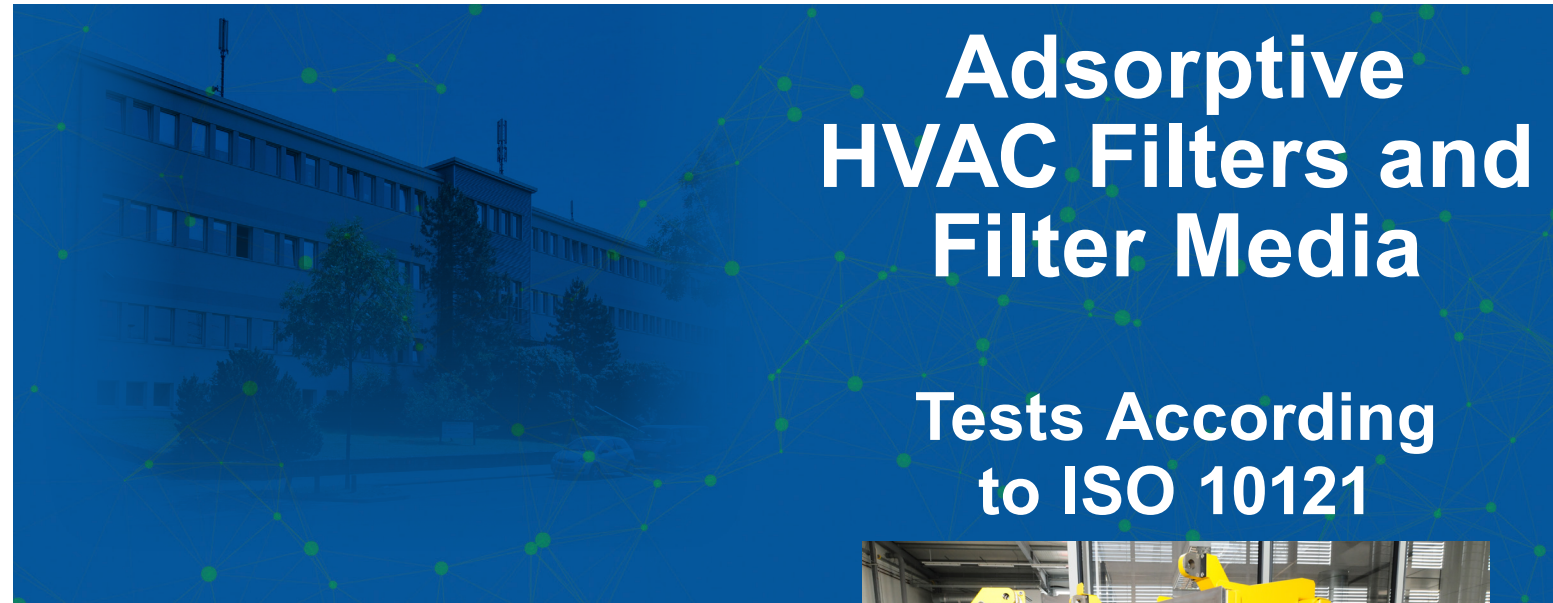
- filtration and sorption
- process development
- CFD simulations

Circular Economy & Water Technology

- mechanical & thermal processes
- reactive & oxidative processes
- process development

Analysis & Measurement Techniques

- trace analysis
- development of instruments
- process digitalisation



Adsorptive HVAC Filters and Filter Media

Tests According to ISO 10121



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Adsorptive HVAC Filtration - Test According to ISO 10121

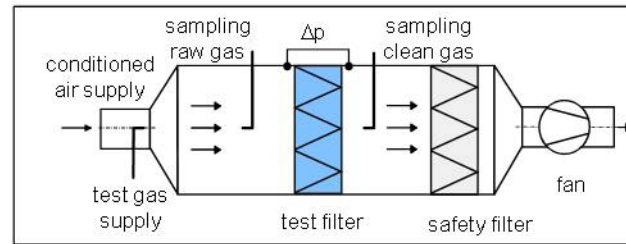
HVAC Filter Media ISO 10121-1*

- Test of flat sheets, granulated material, ...
- Measurements of
 - breakthrough curves
 - desorption behavior with organics
- Test gases e. g. toluene*, formaldehyde, SO₂*, H₂S, NO₂, NO, NH₃, O₃
- Test conditions
 - 10 - 50 °C
 - 10 - 90 % RH
 - 1 - 25 m³/h
 - Δp up to 800 Pa



Test adsorber (ISO 10121-1)

HVAC Filters ISO 10121-2*



Schematic of test rig (ISO 10121-2)

- Test of compact filters, bag filters, cartridges, panels
- Measurements of
 - breakthrough curves
 - desorption behavior
- Test gases toluene, n-butane, SO₂, NO₂, NH₃ (up to 9 ppm) and O₃ (up to 3 ppm)
- Test conditions
 - 15 - 40 °C
 - 15 - 95 % RH
 - 800 - 5000 m³/h
 - Δp up to 5000 Pa
 - cross sections up to 610 x 610 mm

Parameters marked with * are accredited according to DIN EN ISO/IEC 17025:2018. The accreditation is only valid for the scope specified in the annex of accreditation certificate no. D-PL-19759-01-03 by the Deutsche Akkreditierungsstelle GmbH (DAkkS) from 30.11.2022 (updated certificate pending).

HVAC Filters ISO 10121-3

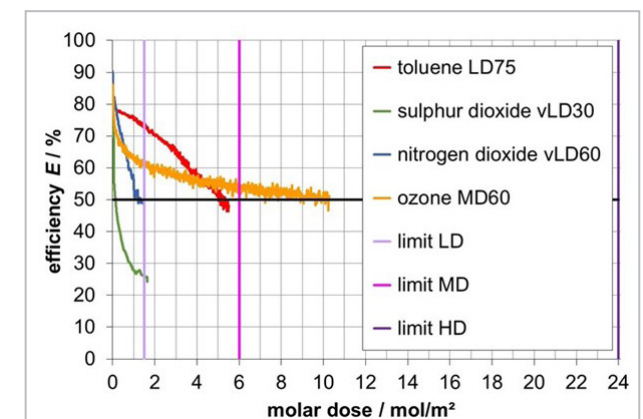
Classification of adsorptive HVAC filters with toluene, SO₂, NO₂ and ozone.

Determination of

- duty level
- integrated removal efficiency
- initial removal efficiency
- retention capacity

Challenge concentrations for initial efficiency E_i and the efficiency E for the duty level determination:

	Toluene	SO ₂	NO ₂	Ozone
E_i	900 ppb	450 ppb	450 ppb	150 ppb
E	9 ppm	9 ppm	9 ppm	3 ppm



Example of efficiency curves in dependence of normalized dose of a compact filter with corresponding classification results