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Artificial ageing of cabin air filters

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DIN standards committee draft DIN 71460-4
Isopropanol conditioning of automotive cabin air filters

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Scope

Determination of the minimum fractional collection efficiency of automotive cabin air filters.

Methodology

Artificial ageing of the cabin air filter shall be done with defined isopropanol (IPA) vapour.

Filter element shall be placed inside a defined test chamber specified in DIN 71460-4 draft.

Lab test rig

Fractional collection efficiency testing according to DIN 71460-1 (ISO11155-1).

Test report

Contains new filter & aged filter fractional collection efficiencies for DEHS aerosol and further information on ageing process.

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This lab ageing method is

good to handle and reproducible

but

cannot be compared directly with measured values from real driving operations.

- → Risk to match artificial lab test requirements only
- → Many OEMs trust on their ambient air ageing database, based on customized stationary ageing test rigs (see next slides)

Cabin Air Filter ageing under real environmental conditions
Roadside test rigs for ambient air ageing

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- Location A inside road tunnel: one pipe, length appr. 2700 m
- Location B at roadside inner city area

  timing: ~weekly
- 4 filter samples
- Volume air flow rate: 100 - 500 m³/h, regulated / controlled

Test procedure

- Initial state: lab test
  weight, pressure drop, fractional efficiency
- Online measurement during ageing process with fidas mobile (PMx)
- Aged state: lab test
  weight, pressure drop, fractional efficiency

Cabin Air Filter ageing under real environmental conditions
Roadside test rigs for ambient air ageing

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This real environment ageing method is

good to handle and shows results for ambient air ageing very close to real driving conditions

but

cannot be reproduced, as ambient air conditions cannot be controlled.

Comparison of results is only possible for the those filters which are aged simultaneously (max. 4).

→ It’s recommended to combine artificial ageing (IPA) with validated ambient air ageing.

Thank you.
Any questions ?