

Road vehicles - Air filters for passenger compartments - Part 2: Test for gaseous filtration

Contents	Page
Foreword	4
1 Scope	5
2 Normative references	5
3 Terms and definitions.....	5
4 Limits of error	8
4.1 General rule	8
4.2 Volume flow measurement	8
4.3 Differential pressure measurement.....	8
4.4 Temperature measurement	8
4.5 Relative humidity measurement.....	8
4.6 Limits of error for the specified test gases.....	8
5 General conditions.....	8
5.1 Conditioning of the air	8
5.2 Purity of the air used.....	8
5.3 Stability of the gas concentration.....	9
6 Test substances.....	9
6.1 Basic test substances.....	9
6.2 Optional test substances	9
6.3 Other test substances.....	10
7 Test apparatus	10
7.1 General set-up	10
7.2 Test stand performance	10
7.3 Air supply.....	10
7.4 Test set-up	10
7.5 Generation and feeding of the test substances	10
7.6 Sampling and analysis	11
7.7 Test stand components	11
7.7.1 Volume flow sensors	11
7.7.2 Differential pressure sensors.....	11
7.7.3 Temperature sensors.....	11
7.7.4 Sensors for determining relative humidity	11
7.7.5 Data recording	11
7.7.6 Gas analysers (cf. 4.5)	11
8 Experimental determination of the zero time point (t_0) and the lag time (t_{lag})	12
9 Preparation of a filter or a filter element for the test.....	12
10 Measurement.....	13
10.1 Purpose.....	13
10.2 Measurement of the pressure drop.....	13
10.3 Preparation of the test gas	13
10.4 Determining the efficiency or the breakthrough.....	13
10.4.1 General approach.....	13

10.4.2	Determining efficiency	13
10.4.3	Measuring efficiency	13
10.5	Determining capacity.....	14
10.6	Data recording and analysis	14
10.7	Determining desorption (optional).....	14
11	System check.....	14
11.1	Uniformity of the volume flow	14
11.2	Test of the stability of the concentration of the test substances without test filter	14
12	Documentation.....	15
12.1	General data.....	15
12.2	Test results.....	15
Annex A (normative)	Recommended test stand set-up.....	17
Annex B (informative)	Precise definition and determination of the zero time point (t_0) and the lag time (t_{lag}).....	18
Annex C (informative)	Determining capacity	21
Annex D (informative)	Conversion equation for possible test substances and typical concentrations used	22

Figures

Figure 1 — Positions for measuring the test substance concentration.....	15
Figure A.1 — Recommended test stand set-up.....	17
Figure B.1 — Determining t_0 and t_{lag}.....	19
Figure C.1 — Determining capacity.....	21

Tables

Table 1 — Test substances	9
Table 2 — Optional test substances	9
Table D.1 — Typical test substances and concentrations at $T_C = 23^\circ\text{C}$ with $p = 1\,013 \text{ hPa}$	22