

Measurement of road tunnel air quality

Contents

	Foreword
	Introduction
1	Scope
2	Normative references
3	Terms and definitions
4	Test parameter — Air speed and flow direction
4.1	General
4.2	Principle
4.3	Apparatus
4.3.1	Instrument
4.3.2	Reference path length measurement device (open path instruments only)
4.3.3	Transfer standard flow sensor
4.4	Procedure
4.5	Instrument checks and calibrations
4.5.1	General
4.5.2	Measurement path length (open path instruments only)
4.5.3	Initial check
4.5.4	Cross-section calibration
4.5.5	Zero check
4.5.6	System component check
4.5.7	Operational precision check
4.6	Maintenance
4.6.1	General
4.6.2	On site checks
4.7	Calculation and expression of results
4.8	Measurement uncertainty
5	Test parameters — Carbon monoxide, nitric oxide and nitrogen dioxide
5.1	General
5.2	Principle
5.3	Apparatus
5.3.1	Instrument
5.3.2	Reference barometer
5.3.3	Reference thermometer
5.3.4	Reference path length measurement device (for open path instruments only)
5.3.5	Reference flow through calibration cell length measurement device (for open path instruments only)
5.4	Procedure
5.4.1	Open path instruments
5.4.2	Single point instruments
5.5	Instrument checks and calibrations
5.5.1	General
5.5.2	Open path instruments
5.5.3	Single point instruments
5.5.4	Measurement path length (for open path instruments only)
5.5.5	Flow through calibration cell length (for open path instruments only)
5.5.6	Temperature and pressure checks
5.5.7	Zero air
5.5.8	Reference test atmosphere
5.5.9	Zero check

- 5.5.9.1 Open path instruments
- 5.5.9.2 Single point instruments
- 5.5.10 Zero calibration
- 5.5.11 Span check
- 5.5.11.1 Open path instruments
- 5.5.11.2 Single point instruments
- 5.5.12 Span calibration
- 5.5.13 Multipoint precision check
- 5.5.14 System component check
- 5.6 Maintenance
- 5.6.1 General
- 5.6.2 Cleaning of optical interfaces
- 5.6.3 Light source/electrochemical cell replacement
- 5.6.4 Optical alignment
- 5.7 Calculation and expression of results
- 5.8 Measurement uncertainty

6 Testing parameter — visibility

- 6.1 General
- 6.2 Principle
- 6.3 Apparatus
 - 6.3.1 Instrument
 - 6.3.2 Reference path length measurement device
- 6.4 Procedure
 - 6.4.1 Transmissometer
 - 6.4.2 Scattered light instrument
- 6.5 Instrument checks and calibrations
 - 6.5.1 General
 - 6.5.2 Zero check
 - 6.5.3 Span check
 - 6.5.4 Zero and span calibration
 - 6.5.5 Multipoint precision check
 - 6.5.6 System component check
- 6.6 Maintenance
- 6.6.1 General
- 6.6.2 Cleaning of optical interfaces
- 6.6.3 Light source replacement
- 6.6.4 Transmissometer optical alignment
- 6.7 Calculation and expression of results
- 6.8 Measurement uncertainty

7 Quality assurance and control

- 7.1 General
- 7.2 Instrument log
- 7.3 Data acquisition and transfer
- 7.4 Data validation

8 Test report

Page count: 31