

DIN EN 16253:2013-09 (E)

Air quality - Atmospheric measurements near ground with active Differential Optical Absorption Spectroscopy (DOAS) - Ambient air and diffuse emission measurements

Contents	Page
Foreword	3
Introduction	4
1 Scope	5
2 Terms and definitions	5
3 Symbols and abbreviations	6
3.1 Symbols	6
3.2 Abbreviations	7
4 Principle	7
4.1 General	7
4.2 Configuration of the measurement system	8
4.3 The Beer-Lambert law	9
4.4 Extended Beer-Lambert law	10
4.5 Differential optical density	11
5 Measurement procedure	15
5.1 General	15
5.2 Principle	16
6 Measurement planning	19
6.1 Definition of the measurement task	19
6.2 Selection of measurement parameters of the DOAS system	19
7 Procedure in the field	20
7.1 Installation and start-up of the instrument	20
7.2 Verification of optical properties	21
7.3 Visibility	21
8 Calibration methods	22
8.1 General	22
8.2 Gas cell calibration	22
8.3 Calibration with complete spectral modelling	23
9 Quality assurance	25
9.1 Measurement procedure	25
9.2 Apparent saturation of absorption bands	26
Annex A (informative) Components of the measurement system	27
Annex B (informative) Influence of scattered solar radiation	34
Annex C (informative) Examples of implementations of the DOAS technique	36
Annex D (informative) Performance characteristics	46
Annex E (informative) SI and common symbols and units in spectroscopy	51

Annex F (informative) Application examples	52
Annex G (informative) Example of sample form for a measurement record	80
Bibliography	84