

DIN EN 779:2012-10 (E)

Particulate air filters for general ventilation - Determination of the filtration performance

| Contents | | Page |
|--------------------|--|-------------|
| Foreword | | 4 |
| Introduction | | 5 |
| 1 | Scope | 7 |
| 2 | Normative references | 7 |
| 3 | Terms and definitions | 7 |
| 4 | Symbols and abbreviated terms | 11 |
| 5 | Requirements | 12 |
| 6 | Classification | 14 |
| 7 | Test rig and equipment | 15 |
| 7.1 | Test conditions | 15 |
| 7.2 | Test rig | 15 |
| 7.3 | Aerosol generation - DEHS Test Aerosol | 17 |
| 7.4 | Aerosol sampling system | 18 |
| 7.5 | Flow measurement | 19 |
| 7.6 | Particle counter | 19 |
| 7.7 | Differential pressure measuring equipment | 19 |
| 7.8 | Dust feeder | 19 |
| 8 | Qualification of test rig and apparatus | 23 |
| 8.1 | Air velocity uniformity in the test duct | 23 |
| 8.2 | Aerosol uniformity in the test duct | 23 |
| 8.3 | Particle counter sizing accuracy | 24 |
| 8.4 | Particle counter zero test | 25 |
| 8.5 | Particle counter overload test | 25 |
| 8.6 | 100 % efficiency test | 25 |
| 8.7 | Zero % efficiency test | 25 |
| 8.8 | Aerosol generator response time | 26 |
| 8.9 | Pressure equipment calibration | 26 |
| 8.10 | Pressure drop checking | 26 |
| 8.11 | Dust feeder air flow rate | 26 |
| 8.12 | Summary of qualification requirements | 27 |
| 8.13 | Apparatus maintenance | 28 |
| 9 | Test materials | 28 |
| 9.1 | Test air - cleanliness, temperature and humidity | 28 |
| 9.2 | Test aerosol | 28 |
| 9.3 | Loading dust | 29 |
| 9.4 | Final filter | 29 |
| 10 | Test procedure for the filter | 30 |
| 10.1 | Preparation of filter to be tested | 30 |
| 10.2 | Initial pressure drop | 30 |
| 10.3 | Initial efficiency | 30 |

| | | |
|-----------------------|--|----|
| 10.3.1 | General | 30 |
| 10.3.2 | Efficiency measurement | 30 |
| 10.4 | Dust loading | 31 |
| 10.4.1 | Dust loading procedure | 31 |
| 10.4.2 | Arrestance | 32 |
| 10.4.3 | Efficiency | 33 |
| 10.4.4 | Average efficiency | 33 |
| 10.4.5 | Test dust capacity | 33 |
| 11 | Test method for discharging of filter material | 34 |
| 11.1 | General | 34 |
| 11.2 | Equipment | 34 |
| 11.3 | Preparation of test samples | 35 |
| 11.4 | Measurement of the filter medium efficiency | 35 |
| 11.4.1 | General | 35 |
| 11.4.2 | Isopropanol test | 35 |
| 11.4.3 | Expression of results | 36 |
| 11.5 | Report | 36 |
| 12 | Uncertainty calculation of the test results | 37 |
| 13 | Reporting | 38 |
| 13.1 | General | 38 |
| 13.2 | Interpretation of test reports | 39 |
| 13.3 | Summary | 39 |
| 13.4 | Efficiency | 41 |
| 13.5 | Pressure drop and air flow rate | 41 |
| 13.6 | Arrestance and test dust capacity | 42 |
| 13.7 | Marking | 42 |
| Annex A (informative) | Shedding from filters | 51 |
| A.1 | General | 51 |
| A.2 | Shedding | 51 |
| A.2.1 | Particle bounce | 51 |
| A.2.2 | Release of fibres or particulate matter from filter material | 51 |
| A.2.3 | Re-entrainment of particles | 51 |
| A.3 | Testing | 52 |
| A.4 | References | 52 |
| Annex B (informative) | Commentary | 53 |
| B.1 | General | 53 |
| B.2 | Classification | 53 |
| B.3 | Test | 53 |
| B.3.1 | Test aerosol | 53 |
| B.3.2 | Loading dust | 54 |
| B.3.3 | Distribution and sampling of aerosols | 54 |
| B.3.4 | Particle counter characteristics | 54 |
| B.3.5 | Flat sheet test | 54 |
| B.4 | Filtration characteristics | 55 |
| B.4.1 | General | 55 |
| B.4.2 | Pressure drop | 55 |
| B.4.3 | Discharged efficiency | 55 |
| Annex C (informative) | Pressure drop calculation | 56 |
| Annex D (informative) | Example of a completed test report | 58 |
| D.1 | Example of test reports | 58 |
| D.2 | Examples of calculations | 66 |
| D.3 | Final results at 450 Pa | 69 |
| Bibliography | | 70 |