

ISO/IEC 28360:2012-02 (E)

Information technology - Office equipment - Determination of chemical emission rates from electronic equipment

| Contents | | Page |
|--------------------|---|-------------|
| Foreword | | v |
| Introduction | | vi |
| 1 | Scope | 1 |
| 2 | Conformance | 1 |
| 3 | Normative references | 2 |
| 4 | Terms and definitions | 2 |
| 5 | Symbols and abbreviated terms | 5 |
| 5.1 | Abbreviated terms | 5 |
| 5.2 | Symbols | 6 |
| 6 | Method overview | 7 |
| 7 | ETC requirements | 9 |
| 7.1 | Construction materials | 9 |
| 7.2 | Air tightness | 9 |
| 7.3 | Air mixing efficiency | 9 |
| 8 | Determination method | 9 |
| 8.1 | Test conditions | 9 |
| 8.1.1 | Operating temperature and relative humidity (rH) | 9 |
| 8.1.2 | Air exchange rate (n) | 9 |
| 8.1.3 | Air velocity | 9 |
| 8.1.4 | Sampled air flow | 9 |
| 8.2 | Handling of EUT and ETC | 9 |
| 8.2.1 | ETC purging | 9 |
| 8.2.2 | Background concentrations (C_{bg}) | 10 |
| 8.2.3 | EUT unpacking | 10 |
| 8.2.4 | Preparation of the EUT before testing | 10 |
| 8.2.5 | EUT installation | 11 |
| 8.2.6 | EUT operation during test | 11 |
| 8.3 | VOC, carbonyl compounds | 12 |
| 8.3.1 | Sorbents | 13 |
| 8.3.2 | Sample collection | 13 |
| 8.3.3 | Emission rate calculation | 14 |
| 8.4 | Ozone | 15 |
| 8.4.1 | Analyser and sampling line requirements | 16 |
| 8.4.2 | Monitoring | 16 |
| 8.4.3 | Emission rate calculation | 16 |
| 8.5 | Particulate matter | 17 |
| 8.5.1 | Weighing and Filter conditioning | 17 |
| 8.5.2 | Sampling | 17 |
| 8.5.3 | Emission rate calculation | 18 |
| 8.6 | Fine and Ultrafine Particles (FP and UFP) | 18 |
| 8.6.1 | General Requirements for Aerosol Measuring Systems | 19 |
| 8.6.2 | Measurement | 21 |

| | | |
|--|--|----|
| 8.6.3 | Calculation | 21 |
| 9 | Test report | 24 |
| Annex A (normative) Print Patterns | | 27 |
| A.1 | Monochrome print pattern 5% coverage | 27 |
| A.2 | Colour print pattern, 20% coverage | 29 |
| Annex B (normative) Preparatory Aerosol Measuring System Test Procedures | | 30 |
| B.1 | Procedures for operational readiness of Aerosol Measuring System | 30 |
| B.1.1 | Particle size range measurements | 30 |
| B.1.2 | Particle number concentration range measurements | 30 |
| B.2 | Procedures for Operational readiness test of Fast Aerosol Measuring System | 31 |
| B.2.1 | Set up of instrument | 31 |
| B.2.2 | Zero Check | 32 |
| B.2.3 | Preparation for measurement | 32 |
| B.3 | Procedures for Operational readiness test of CPC | 33 |
| B.3.1 | Preparation | 33 |
| Annex C (informative) Emission rate model for EUT using consumables | | 35 |
| C.1 | Objective | 35 |
| C.2 | Approach | 35 |
| C.3 | General mass balance and concentration equations | 35 |
| C.4 | Background SER | 35 |
| C.5 | Emission during pre-operating phase | 36 |
| C.6 | Emission during operating phase | 36 |
| C.7 | Emission during post-operating phase | 38 |
| C.8 | Special cases | 40 |
| C.9 | Model for RAL-UZ 122 Option | 40 |
| Annex D (informative) Influence of EUT filtering on SERO3 | | 43 |
| Bibliography | | 45 |