

DIN EN ISO 27548:2024-12 (E)

Additive manufacturing of plastics - Environment, health, and safety - Test method for determination of particle and chemical emission rates from desktop material extrusion 3D printer (ISO 27548:2024)

Contents		Page
Foreword		4
Introduction		5
3Europeanforeword	
1	Scope	6
2	Normative references	6
3	Termsanddefinitions	7
4	Abbreviated terms and symbols	9
4.1	Abbreviated terms	9
4.2	Symbols	9
5	Method overview	10
6	Requirements of the instrument for measurement	10
6.1	General	10
6.1.1	Emission test chamber (ETC)	10
6.1.2	Instruments for chemical analyses	10
6.1.3	Aerosol instruments	11
6.2	General requirements of desktop MEX-TRB/P machine and test specimen	11
6.2.1	Desktop MEX-TRB/P machine	11
6.2.2	Filament	11
6.2.3	Test specimen	12
7	ETC conditions and test procedures	12
7.1	ETC general conditions	12
7.2	ETC background concentration	13
7.3	Preparation of ETC and desktop 3D printer	13
7.4	Pre-extruding phase	14
7.5	Extruding phase	14
7.6	Post-extruding phase	14
7.7	Sampling for particles and chemical substances	14
7.7.1	Particles	14
7.7.2	Chemical substances	14
7.8	Measurement process	15
8	Calculation of emission rate	16
8.1	Calculation of emission rate of particles	16
8.2	Calculation of volatile organic compounds emission rate	18
9	Test report	19
9.1	Data on test condition and method	19
9.2	Data on filament and desktop 3D printer	20
9.3	Description on standard test specimen	21
9.4	Information about test laboratory	21

9.5	Results	21
	Annex A (normative) Standard operating condition of a desktop 3D printer	22
	Annex B (normative) Test specimen	23
	Annex C (informative) Examples of the particle and chemical emission rates	27
	Bibliography	30