

DIN EN ISO 17201-4:2026-04 (E)

Acoustics - Noise from shooting ranges - Part 4: Calculation of projectile sound (ISO 17201-4:2025)

Contents		Page
Foreword.....		iv
Introduction.....		v
1	Scope	1
2	Normative references	1
3	Terms and definitions	1
4	Projectile sound	5
4.1	General.....	5
4.2	Regions.....	5
4.3	Spectrum of an N-wave.....	6
5	Source description	7
5.1	Source point.....	7
5.2	Source sound exposure level for streamlined projectiles.....	7
5.3	Source sound exposure level for non-streamlined projectiles.....	8
5.4	Spectrum of the source sound exposure level.....	11
6	Calculating the sound exposure level at a receiver location	11
6.1	Basic formula.....	11
6.2	Calculation of the attenuation terms.....	12
6.2.1	Geometric attenuation.....	12
6.2.2	Non-linear attenuation.....	14
6.2.3	Non-linear shift of the spectrum.....	15
6.2.4	Atmospheric absorption, excess attenuation and barrier effects.....	16
7	Uncertainty in source description and propagation	16
7.1	Overview.....	16
7.2	Uncertainties in source description.....	17
7.2.1	General.....	17
7.2.2	Source point location.....	17
7.2.3	Broadband source sound exposure level for streamlined projectiles.....	17
7.2.4	Source sound exposure level for non-streamlined projectiles.....	18
7.2.5	Characteristic frequency of the N-wave.....	19
7.2.6	Spectrum of the source sound exposure level.....	19
7.3	Uncertainties in determining the sound exposure level at a receiver location.....	19
7.3.1	General.....	19
7.3.2	The uncertainties at a receiver location for non-streamlined projectiles.....	19
Annex A (informative) Derivation of constants and consideration of barrier and other effects		20
Annex B (informative) Calculation of projectile sound for projectiles on ballistic trajectories		24
Annex C (informative) Estimation of projectile velocity change		27
Annex D (informative) Calculation examples		30
Bibliography		41