

ISO 15712-1:2005-01 (E)

Building acoustics - Estimation of acoustic performance of buildings from the performance of elements - Part 1: Airborne sound insulation between rooms

Contents		Page
Foreword		v
1	Scope	1
2	Normative references	1
3	Relevant quantities	2
3.1	Quantities to express building performance	2
3.1.1	Apparent sound reduction index R'	2
3.1.2	Standardized level difference DnT	2
3.1.3	Normalized level difference Dn	3
3.1.4	Relation between quantities	3
3.2	Quantities to express element performance	3
3.2.1	Sound reduction index R	3
3.2.2	Sound reduction index improvement R	3
3.2.3	Element normalized level difference Dn,e	4
3.2.4	Normalized level difference for indirect airborne transmission Dn,s	4
3.2.5	Flanking normalized level difference Dn,f	4
3.2.6	Vibration reduction index K_{ij}	5
3.2.7	Other element data	5
3.3	Other terms and quantities	6
3.3.1	Direct transmission	6
3.3.2	Indirect transmission	6
3.3.3	Indirect airborne transmission	6
3.3.4	Indirect structure-borne transmission (flanking transmission)	6
3.3.5	Direction-averaged junction velocity level difference ijv,D	6
3.3.6	Flanking sound reduction index R_{ij}	6
4	Calculation models	7
4.1	General principles	7
4.2	Detailed model for structure-borne transmission	9
4.2.1	Input data	9
4.2.2	Transfer of input data to in-situ values	10
4.2.3	Determination of direct and flanking transmission in-situ	12
4.2.4	Interpretation for several types of elements	13
4.2.5	Limitations	16
4.3	Detailed model for airborne transmission	16
4.3.1	Determination from measured direct transmission for small elements	16
4.3.2	Determination from measured total indirect transmission	17
4.3.3	Determination from measured transmission for the separate elements of a system	17
4.4	Simplified model for structure-borne transmission	17
4.4.1	Calculation procedure	17
4.4.2	Input data	19
4.4.3	Limitations	20
5	Accuracy	20
Annex A (normative)	Symbols	21
Annex B (informative)	Sound reduction index for monolithic elements	25

B.1	Sound reduction index in frequency bands	25
B.2	Weighted sound reduction index	28
Annex C (informative) Structural reverberation time		31
Annex D (informative) Sound reduction index improvement of additional layers		34
D.1	Sound reduction index improvement of layers	34
D.1.1	Direct transmission, R	34
D.1.2	Flanking transmission	34
D.2	Weighted sound reduction index improvement of layers	36
Annex E (informative) Vibration reduction index for junctions		38
E.1	Determination methods	38
E.2	Empirical data	38
E.3	Limiting values	39
Annex F (informative) Determination of indirect transmission		47
F.1	Laboratory measurement of total indirect transmission	47
F.1.1	Indirect airborne transmission	48
F.1.2	Flanking transmission	49
F.2	Determination of indirect airborne transmission from known transmission for the separate elements of a system	49
F.2.1	Hall or corridor	49
F.2.2	Ventilation system	50
Annex G (informative) Laboratory weighted sound reduction index including field simulated flanking transmission ('Prüfstand mit bauähnlicher Flankenübertragung', DIN 52210)		51
Annex H (informative) Calculation examples		53
H.1	Situation	53
H.2	Detailed model	54
H.2.1	Results	54
H.2.2	Detailed steps for separating element, floor and inner wall	54
H.2.3	Structural reverberation time partition wall at 500 Hz octave :	56
H.3	Simplified model	57
Bibliography		59