DIN EN 16272-6:2024-02 (E)

Railway applications - Infrastructure - Noise barriers and related devices acting on airborne sound propagation - Test method for determining the acoustic performance - Part 6: Intrinsic characteristics - Airborne sound insulation under direct sound field conditions

Contents

Page

European foreword 4

Introduction 6

1 Scope 8

2 Normative references 8

3 Terms, definitions, symbols and abbreviations 9
3.1 Terms and definitions 9
3.2 Symbols and abbreviations 14

4 Sound insulation index measurements 16
4.1 General principle 16
4.2 Measured quantity 16
4.3 Test arrangement 17
4.3.1 General 17
4.3.2 Tests on purposely built full-size samples 17
4.3.3 Tests on installed noise barriers and related devices 17
4.3.4 Non-flat, inclined or curved noise barriers and related devices 18
4.4 Measuring equipment 23
4.4.1 Components of the measuring system 23
4.4.2 Sound source 24
4.4.3 Test signal 24
4.5 Data processing 25
4.5.1 Calibration 25
4.5.2 Sample rate and filtering 25
4.5.3 Background noise 25
4.5.4 Scanning technique using nine microphones 26
4.5.5 Adrienne temporal window 27
4.5.6 Placement of the Adrienne temporal window 28
4.5.7 Low-frequency limit 29
4.6 Positioning of the measuring equipment 31
4.6.1 Selection of the measurement positions 31
4.6.2 Post measurements 31
4.6.3 Additional measurements 31
4.6.4 Reflecting objects 31
4.6.5 Safety considerations 32
4.7 Sample surface and meteorological conditions 32
4.7.1 Condition of the sample surface 32
4.7.2 Wind 32
4.7.3 Air temperature 32
4.8 Single-number rating 32

5 Measurement uncertainty 32

6 Measuring procedure 33

7 Test report 33

Annex A (informative) Low-frequency limit and window width 35

Annex B (informative) Measurement uncertainty 39

B.1 General 39
B.2 Measurement uncertainty based upon reproducibility data 39
B.3 Standard deviation of repeatability and reproducibility of the sound insulation index 39

Annex C (normative) Template of test report on airborne sound insulation of rail noise barriers and related devices acting on airborne sound propagation 42

C.1 General 42
C.2 Test setup (example) 44
C.3 Test object and test situation (example) 46
C.4 Results (example) 49
C.4.1 Part 1 - Results for `element' in tabular form 49
C.4.2 Part 2 - Results for `element' in graphic form 50
C.4.3 Part 3 - Results for `post' in tabular form 51
C.4.4 Part 4 - Results for `post' in graphic form 52
C.4.5 Uncertainty (example) 52

Annex D (informative) Indoor measurements for product qualification 55

D.1 General 55
D.2 Parasitic reflections 55
D.3 Reverberation time of the room 55

Bibliography 56