DIN ISO 7447:2026-09 (E)

Underwater acoustics - Measurement of radiated underwater sound from percussive pile driving - In situ determination of the insertion loss of barrier control measures underwater (ISO 7447:2024)

Contents

Page

Foreword ..... **v**

Introduction ..... **vi**

1 Scope **1**

2 Normative references **1**

3 Terms and definitions **1**

4 Instrumentation **2**
4.1 General information 2
4.2 Hydrophones and analysers 2
4.3 Analysis software 2
4.4 Calibration 3

5 Methods **3**
5.1 General remarks 3
5.2 Comparability of measurements 3
5.3 Background noise 4
5.4 Measurements on one single pile (direct method) 5
5.5 Measurements on two different piles (indirect method) 5

6 Measurement procedure **5**
6.1 General remarks 5
6.2 Chronological order of the measurements 6
6.3 Measuring positions 6
6.3.1 General 6
6.3.2 Number of hydrophones/measuring positions 6
6.3.3 Measuring distance 6
6.3.4 Measuring direction 6
6.3.5 Measuring depths 6
6.4 Examples of measuring setups 7
6.4.1 General 7
6.4.2 Measuring setup 1 — Checking for a radially-symmetric effect 8
6.4.3 Measuring setup 2 — Checking for dependence on depth 9
6.4.4 Measuring setup 3 — Measurement with radially-symmetric effect, independent of the respective depth 9
6.5 Functional test and measuring conditions 10
6.6 Measuring quantities and accompanying parameters 10
6.7 Data recording 11

7 Data processing and calculation of acoustic metrics **11**
7.1 Data processing steps 11
7.2 Background noise correction 11
7.3 Determination of the insertion loss 12
7.3.1 General 12
7.3.2 Case 1 — Measurement on one pile 12
7.3.3 Case 2 — Measurement on two different piles 12
7.4 Uncertainties 13
7.4.1 General 13
7.4.2 Measurement uncertainty 13
7.4.3 Characterization of noise abatement systems 13
7.5 Sound insulation for broadband level quantities 13

8 Test report **14**
8.1 Formal information in the reports 14
8.1.1 Front page 14
8.1.2 Recurring information on the following pages 14
8.1.3 Signatures 14
8.2 Contents of the reports 14
8.2.1 Structuring of contents 14
8.2.2 Description of the measurements 15
8.2.3 Presentation of the results 16
Annex A (informative) **Considerations for near shore piling applications** **17**
Annex B (informative) **Sound particle motion and seabed vibration** **19**
Bibliography **23**