

DIN EN ISO 16809:2025-09 (E)

Non-destructive testing - Ultrasonic thickness determination (ISO 16809:2025)

Contents

Page

Foreword	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Modes of determination	1
5 General requirements	3
5.1 Ultrasonic instruments	3
5.2 Probes	3
5.3 Couplant	3
5.4 Reference blocks	4
5.5 Test objects	4
5.6 Qualification of test personnel	4
6 Application of the techniques	4
6.1 Surface condition and surface preparation	4
6.2 Technique	5
6.2.1 General	5
6.2.2 Determination during manufacture	5
6.2.3 Determination of residual wall thickness in service	6
6.3 Selection of probe	6
6.4 Selection of ultrasonic instrument	7
6.5 Special test conditions	7
6.5.1 General	7
6.5.2 Materials different from the material of the reference block	7
6.5.3 Determination at temperatures below 0 °C	7
6.5.4 Determination at elevated temperatures	8
6.5.5 Hazardous atmospheres	8
7 Instrument setting	8
7.1 General	8
7.2 Methods of setting	8
7.2.1 General	8
7.2.2 Ultrasonic instruments with numerical display	9
7.2.3 Ultrasonic instruments with A-scan presentation	9
7.3 Checks of settings	10
8 Influence on accuracy	11
8.1 Operational conditions	11
8.1.1 Surface conditions	11
8.1.2 Temperature of the test object	11
8.1.3 Metallic coating	11
8.1.4 Non-metallic coating	12
8.1.5 Geometry	13
8.1.6 Material homogeneity	13
8.2 Test equipment	14
8.2.1 Resolution	14
8.2.2 Range	14
8.3 Evaluation of accuracy	15
8.3.1 General	15
8.3.2 Influencing parameters	15
8.3.3 Method of calculation	15

9	Influence of materials	15
9.1	General.....	15
9.2	Inhomogeneity.....	15
9.3	Anisotropy.....	15
9.4	Sound attenuation.....	15
9.5	Surface conditions.....	16
	9.5.1 General.....	16
	9.5.2 Test surface.....	16
	9.5.3 Reflecting surface.....	16
	9.5.4 Corrosion and erosion.....	17
10	Test report	17
10.1	General.....	17
10.2	General information.....	17
10.3	Test results.....	18
	Annex A (informative) Corrosion in vessels and piping	19
	Annex B (informative) Instrument settings	24
	Annex C (informative) Parameters influencing accuracy	27
	Annex D (informative) Selection of technique for thickness determination	31
	Bibliography	34