

DIN EN 448:2025-07 (E)

District heating pipes - Bonded single pipe systems for directly buried hot water networks - Factory made fitting assemblies of steel service pipes, polyurethane thermal insulation and a casing of polyethylene

Contents		Page
European foreword		4
Introduction		5
1	Scope	6
2	Normative references	6
3	Terms and definitions	8
4	Requirements	8
4.1	Steel parts	8
4.1.1	Specification	8
4.1.2	Wall thickness and diameter	9
4.1.3	Bends	9
4.1.4	T-pieces	10
4.1.5	Reducers	10
4.1.6	Welding of steel parts	10
4.1.7	Surface condition	15
4.2	Casing	15
4.3	Polyurethane foam thermal insulation	15
4.4	Fitting assembly	15
4.4.1	General	15
4.4.2	Thermal insulation series	15
4.4.3	Fitting ends	15
4.4.4	Angle between casing segments of bend and minimum length	16
4.4.5	Polyethylene welding	16
4.4.6	Diameter and wall thickness of the casing	17
4.4.7	Minimum thickness of the thermal insulation in fitting assembly	18
4.4.8	Tolerances of the main fitting dimensions	18
4.4.9	Expected thermal life and long term temperature resistance	18
4.4.10	Thermal conductivity	18
4.4.11	Surface conditions at delivery	19
4.4.12	Measuring wires for surveillance system	19
5	Test methods	19
5.1	General	19
5.2	Test specimens	19
5.3	Steel parts	19
5.3.1	Leak-tightness test with water	19
5.3.2	Visual leak-tightness test by air with over pressure	20
5.3.3	Visual leak-tightness test by air with below atmospheric pressure	20
5.4	Casing	20
5.4.1	Visual testing of weld seams on casing	20
5.4.2	Bending test of weld seams on casing	23
5.5	Fitting assembly	24
5.5.1	Centre line deviation and angular deviation	24
5.5.2	Minimum thickness of the polyurethane foam thermal insulation	24
5.5.3	Thermal conductivity in unaged condition	24

6	Marking	24
6.1	General	24
6.2	Steel service pipe	25
6.3	Steel fittings	25
6.4	Casing	25
6.5	Fitting assembly	25
Annex A (informative) Guidelines for inspection and testing		26
Annex B (informative) Procedures for casing welding		29
Annex C (informative) Waste treatment and recycling		32
Bibliography		33