

DIN EN 13480-4:2017-12 (E)

Metallic industrial piping - Part 4: Fabrication and installation

Contents	Page
European foreword	5
1 Scope	7
2 Normative references	7
3 Terms and definitions	8
4 Symbols	8
5 General	8
5.1 Requirements on the manufacturer	8
5.2 Requirements on fabricators and installers of piping and supports	9
5.3 Requirements for fabrication and installation	9
5.4 Classification of piping	10
5.5 Material grouping	10
5.6 Tolerances	10
6 Cutting and bevelling	10
6.1 General	10
6.2 Identification of pressure parts	10
7 Bending and other forming	11
7.1 General	11
7.2 Heat treatment after cold forming	13
7.2.1 Flat products	13
7.2.2 Pipes	13
7.3 Heat treatment after hot forming	15
7.3.1 Material groups 1, 3, 4, 5 and 6	15
7.3.2 Material groups 8.1 and 8.2	15
7.3.3 Heat treatment after hot forming for material group 10	17
7.3.4 Heat treatment after hot forming for clad materials	17
7.4 Tolerances	17
7.4.1 Out of roundness of bends under internal pressure equal to, or greater than, the external pressure	17
7.4.2 Out of roundness of bends under external pressure and vacuum	18
7.4.3 Waves at bends	18
7.4.4 Startup bulge of induction bends	19
7.5 Surface finish	20
8 Installation of piping	20
8.1 Fixing and alignment	20
8.2 Field run piping	22
8.3 Flanged or similar mechanical connections	22
8.3.1 Flange connections	22
8.3.2 Threaded connections	23
8.3.3 Couplings and compression fittings	23
8.4 Protection of ends of piping components	23
9 Welding	24
9.1 Welding personnel	24

9.2	Welding procedures specifications	24
9.3	Welding procedures	24
9.3.1	Verification of suitability	24
9.3.2	Application	25
9.4	Filler metals and auxiliary materials	26
9.5	Climatic conditions	26
9.6	Cleaning before and after welding	26
9.7	Joint preparation	27
9.8	Edge protection	27
9.9	Assembly for welding	27
9.10	Earthing	27
9.11	Performance of welding	28
9.11.1	Preheating	28
9.11.2	Striking marks	28
9.11.3	External welds	28
9.11.4	Dissimilar joints	28
9.12	Backing rings	28
9.13	Attachments	29
9.13.1	General	29
9.13.2	Temporary attachments	29
9.13.3	Permanent attachments	29
9.14	Post weld heat treatment	29
9.14.1	General	29
9.14.2	Equipment	33
9.14.3	Temperature measurements	33
9.14.4	Controlling thickness	33
9.14.5	Rate of heating	35
9.14.6	Local heat treatment	35
9.14.7	Insulation	36
9.15	Weld identification	36
10	Adjustment and repair	36
10.1	General	36
10.2	Adjustment	36
10.2.1	Cold hammering	36
10.2.2	Adjustments by means of heat	36
10.2.3	Adjustment by welding	37
10.2.4	Adjustment by local forging	37
10.3	Weld repair	37
11	Marking and documentation	37
11.1	Marking of spools and components for installation	37
11.2	Marking and identification of installed piping	37
11.2.1	General	37
11.2.2	CE Marking of installed piping	38
11.2.3	Technical identification of installed piping	38
12	Additional requirements	39
12.1	Cleaning	39
12.2	Temporary preservation	39
12.3	External corrosion protection	39
12.4	Thermal and acoustic insulation	39
12.5	Connections for static electricity	40
Annex A (informative) Contamination and surface quality of stainless steel		41
A.1	Introduction	41
A.2	Protection	41
A.2.1	Handling	41
A.2.2	During fabrication and installation	41
A.3	Controlled cleaning methods	42

A.4	Chemical treatments	42
A.4.1	Acid pickling	42
A.4.2	Decontamination, passivation	43
A.5	Preparing for shipment	43
Annex B (normative)	Dimensional tolerances for fabricated spools	44
Annex Y (informative)	History of EN 134804	46
Y.1	Differences between EN 134804:2012 and EN 134804:2017	46
Annex ZA (informative)	Relationship between this European Standard and the Essential Requirements of EU Directive 2014/68/EU aimed to be covered	47
Bibliography		48