

DIN EN 1092-1:2018-12 (E)

Flanges and their joints - Circular flanges for pipes, valves, fittings and accessories, PN designated - Part 1: Steel flanges

Contents

Page

European foreword	5
Introduction	6
1 Scope	7
2 Normative references	7
3 Terms and definitions	10
4 Designation	11
4.1 General	11
4.2 Standard designation	11
5 General requirements	13
5.1 Materials	13
5.1.1 General	13
5.1.2 Methods of manufacture related to base material	13
5.2 Repairs by welding	14
5.3 Bolting	14
5.4 Gaskets	15
5.5 Determination of p/T ratings	15
5.6 Dimensions	15
5.6.1 Flanges and collars	15
5.6.2 Hubs	16
5.6.3 Threaded flanges	16
5.6.4 Bolt holes	16
5.6.5 Lapped joints	16
5.6.6 Collar types	16
5.7 Facings	16
5.7.1 Types of facings	16
5.7.2 Jointing face finish	17
5.8 Surface finish of flanges and collars	17
5.8.1 Surface finish	17
5.8.2 Spot facing or back facing of flanges	18
5.9 Tolerances	18
5.10 Marking	19
5.10.1 General marking requirements	19
5.10.2 Stamping	19
5.10.3 Declaration of compliance	19
5.11 Welding	20
5.12 Inspection and testing	20
5.12.1 Inspection and testing of fusion welded joints	20
5.12.2 Inspection and testing of bent and electric welded flanges or collars from formed bars, sectional steel or band material	21
5.12.3 Inspection and testing of formed parts manufactured from base material other than forgings	22
5.12.4 Inspection and testing of close die flanges	23
5.12.5 Inspection and testing of other materials	24
5.13 Certificates	24

DIN EN 1092-1:2018-12 EN 1092-1:2018 (E) Annex A (normative) Wall thickness and end preparation for flanges type 11, 34, 35, 36, 37 and pipe nominal thicknesses for the use with type 01 flanges	83
A.1 Weld-end preparation for flanges types 11 and 34	83
A.2 Weld-end preparation for type 35	85
A.3 Weld end preparation for types 36 and 37	87
Annex B (informative) Material groups	89
Annex C (informative) Approximate masses of flanges and collars	91
Annex D (informative) Additional materials	101
Annex E (normative) Basis of flange calculation	103
E.1 General	103
E.2 Calculation method	103
E.3 Basic rules for calculation of flange connection	103
E.3.1 General	103
E.3.2 Flanges	104
E.3.3 Pipes	104
E.3.4 Bolting/Tightening	105
E.3.5 Gasket	105
Annex F (normative) Determination of p/T ratings	107
F.1 General	107
F.1.1 Reference temperature (RT)	107
F.1.2 Application limits and formulae	107
F.2 Symbols, descriptions and units	107
F.2.1 General	107
F.2.2 p/T ratings for materials with time independent nominal design stress	108
F.2.3 p/T ratings for materials with time dependent nominal design stress	108
F.2.4 Reference value for thickness (vR)	108
F.2.5 Nominal design stresses and safety factors for mean creep rupture strength	108
F.2.6 Flanges made from steel castings	109
F.2.7 Rounding of maximum allowable pressure at temperature	109
Annex G (normative) p/T ratings for a selection of EN materials	110
G.1 General	110
G.1.1 p/T ratings	110
G.1.2 Basics of determination of p/T ratings (see Annex F)	110
G.1.3 Application limits for creep range	110
G.2 Non-austenitic steels	111
G.2.1 General	111
G.2.2 List of materials	112
DIN EN 1092-1:2018-12 EN 1092-1:2018 (E) G.2.3 p/T ratings	113
G.3 Austenitic and austenitic-ferritic steels	125
G.3.1 General	125
G.3.2 List of materials	125
G.3.3 p/T ratings	126
Annex H (informative) Rings for flanges with groove	138
Annex I (informative) Flanges with fixed inner diameter	139
I.1 General	139
I.2 Scope	139

Annex J (informative) Mating dimensions for flanges with higher DN	144
Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 2014/68/EU Pressure Equipment Directive aimed to be covered	146
Bibliography	147