DIN 85051-1:2022-11 (E)

Pressfitting systems for pipes for use in shipbuilding - General requirements and test methods - Part 1: Operating pressures up to 16 bar

Contents

Page

Foreword 5

1 Scope 6

2 Normative references 6

3 Terms and definitions 8

4 Requirements 8
4.1 Materials 8
4.1.1 General 8
4.1.2 Metallic materials 9
4.1.3 Plastics 11
4.1.4 Composite materials 11
4.1.5 Elastomers 12
4.2 Pressing contours and press tools 13
4.3 Pressing machine 13
4.4 Pressing display and testing 13
4.5 Applications and media 13
4.6 Requirements for the pipes 13
4.7 Connectors 14
4.7.1 General 14
4.7.2 Leak-tightness 14
4.7.3 Surface characteristics/homogeneity 14
4.7.4 Positive pressure 14
4.7.5 Negative pressure 14
4.7.6 Pressure surges 14
4.7.7 Thermal cycling 14
4.7.8 Vibration 15
4.7.9 Forced leakage 15
4.7.10 Resistance to stress corrosion cracking of copper-zinc alloys 15
4.7.11 Resistance to dezincification 15
4.7.12 Leak-tightness of connecting parts with microstructure in the cast state or produced by welding or soldering 15
4.8 Hygiene (only for drinking water applications) 15

5 Testing 15
5.1 Materials 15
5.1.1 Metallic materials 15
5.1.2 Plastics 16
5.1.3 Composite materials 16
5.1.4 Elastomers 16
5.2 Connections 16
5.2.1 Test preparations for connections 16
5.2.2 Dimensions of connectors 17
5.2.3 Surface characteristics/homogeneity 17
5.2.4 Positive pressure 17
5.2.5 Negative pressure 17
5.2.6 Pressure surges 18
5.2.7 Thermal cycling 19
5.2.8 Vibration 20

5.2.9 Forced leakage 21
5.2.10 Resistance to stress corrosion cracking of copper-zinc alloys 22
5.2.11 Resistance to dezincification 22
5.2.12 Leak-tightness of connecting parts with microstructure in the cast state or produced by welding or soldering 22

6 Quality assurance 22
6.1 General 22
6.2 Tests to be carried out 22
6.2.1 Pipe connections 22
6.2.2 Elastomers 23

7 Classification, designation and coding 24

Annex A (normative) Resistance to the media used 25

A.1 Purpose 25
A.2 Procedure 25
A.2.1 Apparatus and test conditions 25
A.2.2 Test procedure 26
A.2.3 Expression of results 27
A.2.4 Evaluation 27

Annex B (informative) Pipe dimensions 28

B.1 Pipe dimensions of stainless steel pipes 28
B.2 Pipe dimensions of pipes of unalloyed steels 31
B.3 Pipe dimensions of copper pipes 33
B.4 Pipe dimensions of pipes of CuNiFe 35

Bibliography 36

Figures

Figure 1 — Example of a test set-up for negative pressure testing (shown schematically) 18
Figure 2 — Example of a test set-up for generating pressure surges (shown schematically) 18
Figure 3 — Example of a test set-up for the thermal cycling test (schematic diagram, rigid pipes) 19
Figure 4 — Example of a test set-up for the thermal cycling test $d > 63$ mm 20
Figure 5 — Example of a test set-up for the vibration test (schematic diagram) 21

Tables

Table 1 — Stainless steels 9
Table 2 — Unalloyed steels 10
Table 3 — Copper, copper-zinc alloys (brass) and copper-tin-zinc alloys (gunmetal) 10
Table 4 — CuNiFe 11
Table 5 — Plastics 11
Table 6 — Composite materials 11
Table 7 — Sealing ring materials for drinking water installations or seawater installations 12
Table 8 — Sealing ring materials for gas installations 12

Table 9 — Sealing ring materials for other installations **13**
Table 10 — Pressure test parameters **22**
Table 11 — Tests to be carried out **23**
Table 12 — Tests to be carried out **23**
Table A.1 — Testing after 14 days exposure time (normal test time) **27**
Table A.2 — Testing after 28 days exposure time **27**
Table B.1 — Mass of thin-walled stainless steel pipes — series 1 (DIN EN 10312:2005-12, Table 1) **28**
Table B.2 — Mass of thin-walled stainless steel pipes — series 2 (DIN EN 10312:2005-12, Table 2) **28**
Table B.3 — Stainless steel pipes — Tolerances for outside diameter (DIN EN ISO 1127:2019-03, Table 1) **29**
Table B.4 — Stainless steel pipes — Tolerances for wall thickness (DIN EN ISO 1127:2019-03, Table 2) **29**
Table B.5 — Stainless steels, dimensions per unit length of austenitic stainless steels **30**
Table B.6 — Stainless steels, dimensions per unit length of ferritic and martensitic stainless steels **30**
Table B.7 — Steel pipe overview for industrial and heating plants, pipes as in DIN EN 10255, DIN EN 10220/DIN EN 10216-1, DIN EN 10220/DIN EN 10217-1 ..... **31**
Table B.8 — Steel pipe overview for gases as in DVGW G 260, pipes as in DIN EN 10255 ..... **31**
Table B.9 — Steel pipe for gases as in DVGW G 260 pipes (series 1) as in DIN EN 10255/DIN EN 10216-1, DIN EN 10220/DIN EN 10217-1 ..... **32**
Table B.10 — Precision steel pipes of unalloyed steel, as in DIN EN 10305-3, electroplated zinc coating, for heating systems **32**
Table B.11 — Precision steel pipes of unalloyed, galvanized steel (DIN EN 10305-3) **33**
Table B.12 — Pipe dimensions and tolerances for hard-drawn pipes R 290 in extended lengths (DVGW GW 392:2015-04, Table 1b) **33**
Table B.13 — Pipe dimensions for semi-hard-drawn pipes R 250 in extended lengths (DVGW GW 392:2015-04, Table 1c) **34**
Table B.14 — Pipe dimensions for annealed pipes R 220 in rings (DVGW GW 392:2015-04, Table 1d) **34**
Table B.15 — Pipes with outside diameter 15 mm to 108 mm (DIN 86019:2006-02, Table 3) **35**