

# DIN EN 13480-8:2014-12 (E)

## Metallic industrial piping - Part 8: Additional requirements for aluminium and aluminium alloy piping

---

<b>Contents</b>		<b>Page</b>
Foreword .....		5
1	Scope .....	7
2	Normative references .....	7
3	Terms, definitions, symbols and units .....	9
4	General requirements .....	9
5	Materials .....	9
5.1	General .....	9
5.2	Material grouping system .....	9
5.3	Elongation after fracture .....	10
5.4	Chemical composition .....	11
5.5	Lamellar tearing .....	11
5.6	Design temperature and properties .....	11
5.7	Prevention of brittle fracture .....	11
5.8	Specific requirements for fasteners made of aluminium and aluminium alloys .....	12
5.9	Lined piping .....	12
5.10	Clad products .....	12
5.11	Technical delivery conditions for welding consumables .....	12
6	Design .....	12
6.1	General .....	12
6.2	Time-independent nominal design stress .....	12
6.3	Straight pipes .....	13
6.4	Pipe bends and elbows .....	13
6.5	Mitre bends .....	13
6.6	Socket welds .....	14
6.7	Designing with transition joints .....	15
6.7.1	Design considerations .....	15
6.7.2	Location of transition joints .....	15
6.7.3	Requirements for transition joints .....	15
7	Fabrication and installation .....	15
7.1	General .....	15
7.2	Material grouping .....	16
7.3	Tolerances .....	16
7.3.1	Welded pipes and connection dimensions of pipe fittings .....	16
7.3.2	Welded piping construction .....	16
7.4	Cutting and bevelling .....	16
7.5	Bending and other forming .....	17
7.5.1	General .....	17
7.5.2	Definition of cold- and hot forming .....	17
7.5.3	Heat treatment after cold forming .....	17
7.5.4	Heat treatment after hot forming .....	18
7.6	Welding .....	19
7.6.1	Welding personnel .....	19
7.6.2	Welding processes .....	19
7.6.3	Weld joint preparation .....	19

7.6.4	Preheating .....	20
7.6.5	Backing rings and backing strips .....	21
7.6.6	Post-weld heat treatment (PWHT) .....	21
Issue 3 (2014-08) 8 Inspection and testing .....		21
8.1	General .....	21
8.2	Formed pressure retaining parts .....	21
8.2.1	General .....	21
8.2.2	Testing of formed parts .....	22
8.2.3	Destructive testing of formed and heat treated parts .....	22
8.3	Welding .....	23
8.4	Visual and non-destructive testing of welds .....	23
8.4.1	Application of NDT .....	23
8.4.2	Circumferential, branch, socket and seal welds .....	23
8.4.3	Longitudinal welds and spiral welded tubes/pipes .....	24
8.5	VT and NDT Methods .....	24
8.6	Production test plates for welded pipes .....	25
9	Final assessment and documentation .....	26
9.1	General .....	26
9.2	Pneumatic pressure test .....	27
9.3	Documentation for components .....	27
Annex A (informative) Dimensional tolerances .....		29
Annex B (normative) Transition joints .....		31
Annex C (normative) Nominal design stress values .....		31
Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 97/23/EC .....		43
Bibliography .....		44
Figures Figure 6.5-1 -- Mitre bend .....		14
Figure 7.6.3.1 -- Socket welds .....		20
Figure A.1 -- Dimensional details of spools .....		30
Tables Table 5.2-1 -- Grouping system based on CEN ISO/TR 15608:2005 and EN AW numbers according to EN 573-3:2009 .....		10
Table 6.2-1 -- Design stresses for aluminium and aluminium alloy material .....		12
Table 6.2-2 -- Allowable design strength values for 6 000 series aluminium alloys in the welded condition (see 5.6) .....		13
Table 6.5-1 -- Special symbols for subclause 6.5 .....		14
Table 7.3-1 -- Tolerances for welded pipes .....		16
Table 7.5-1 -- Heat treatment of flat products after cold forming .....		18
Table 7.5-3 -- Heat treatment after hot forming .....		19
Table 8.2-1 -- Destructive testing of formed and heat treated parts .....		23
Issue 3 (2014-08) Table 8.4-1 -- Extent of testing for circumferential, branch, socket and seal welds .....		24
Table 8.4-2 -- Extent of VT and NDT for longitudinal welds and spiral welded tubes/pipes .....		24

<b>Table 8.5-1 -- Techniques, methods, acceptance criteria .....</b>	<b>25</b>
<b>Table 8.6-1 -- Production test plates for welded pipes according to 8.6 a) .....</b>	<b>26</b>
<b>Table 8.6-2 -- Required tests and acceptance criteria for production test plates .....</b>	<b>26</b>
<b>Table 9.2-1 -- Extent of NDT in case of pneumatic pressure test according to 9.2b) .....</b>	<b>27</b>
<b>Table A.1 -- Tolerances .....</b>	<b>29</b>
<b>Table B.1 -- Testing of transition joints (T.J.) .....</b>	<b>34</b>
<b>Table C.1 -- Extruded rod/bar, tube and profile .....</b>	<b>36</b>
<b>Table C.2 -- Cold drawn rod/bar and tube .....</b>	<b>37</b>
<b>Table C.3 -- Forgings .....</b>	<b>38</b>
<b>Table C.4 -- Plate .....</b>	<b>39</b>
<b>Table ZA.1 -- Correspondence between this European Standard and Directive 97/23/EC .....</b>	<b>43</b>