

Contents

Introduction	VIII
1. Scope.....	1
2. Conformity.....	3
2.3 Compliance to this Specification.....	3
3. Normative references	5
4. Terms and definitions	7
4.14 EW Pipe.....	7
4.18 HFW pipe.....	7
4.36 Manufacturer.....	7
4.46 Pipe mill.....	7
4.56 Seamless pipe	7
4.68 Calibration.....	7
4.69 Consumable batch.....	7
4.70 JCOE.....	8
4.71 Manufacturing procedure specification	8
4.72 Plate mill.....	8
4.73 Purchasers Inspection Engineer.....	8
4.74 Quality assurance.....	8
4.75 Quality management system.....	8
4.76 Quality manual	8
4.77 Quality plan	8
4.78 Steel mill.....	8
4.79 Strip mill	9
4.80 UOE	9
4.81 Vendor.....	9
5. Symbols and abbreviated terms.....	11
5.2 Abbreviated terms	11
6. Pipe grade, steel grade and delivery condition.....	13
6.1 Pipe grade and steel grade	13
6.1.1	13
6.1.2	13
6.2 Delivery condition.....	13

7. Information to be supplied by the Purchaser	15
8. Manufacture	17
8.1 Process of manufacture	17
8.3 Starting material.....	17
8.3.2	17
8.3.6	18
8.5 Weld seams in COW pipe.....	18
8.6 Weld seams in SAW pipe.....	18
8.6.1 Water injection lines.....	18
8.6.2 SAWH pipe.....	18
8.6.3 Control of welding consumables and batch testing.....	18
8.8 Treatment of weld seams in EW pipes	19
8.8.1	19
8.8.2 PSL 2 HFW pipe	19
8.9 Cold sizing and cold expansion.....	19
8.9.4	19
8.10 Coil/plate end welds	19
8.11 Jointers.....	19
8.11.1	19
8.12 Heat treatment.....	19
9. Acceptance criteria	21
9.1 General	21
9.1.2	21
9.2 Chemical composition.....	21
9.2.2/9.2.3	21
9.2.4	22
9.2.5	22
9.3 Tensile properties	22
9.3.2	22
9.3.3	22
9.4 Hydrostatic test.....	22
9.4.1	22
9.6 Flattening test	22
9.8 CVN impact test for PSL 2 pipe	23
9.8.2 Pipe body tests	23
9.8.3 Pipe weld and HAZ tests	23
9.9 DWT test for PSL 2 pipe	23
9.10 Surface conditions, imperfections and defects	23
9.10.1 General.....	23
9.10.4 Laminations	23

9.10.5 Geometric deviations	24
9.10.6 Hard spots	24
9.10.7 Other surface imperfections	24
9.11 Dimensions, mass and tolerances	24
9.11.1 Dimensions.....	24
9.11.3 Tolerances for diameter, wall thickness, length and straightness.....	25
9.12 Finish of pipe ends.....	26
9.12.5 Plain ends	26
9.13 Tolerances for the weld seam.....	26
9.13.1 Radial offset of strip / plate edges	26
9.13.2 Height of the flash or weld bead / reinforcement	26
9.13.3 Misalignment of the weld beads of SAW and COW pipes	27
9.15 Weldability of PSL2 pipe	27
10. Inspection.....	29
10.2 Specific inspection	29
10.2.1 Inspection frequency.....	29
10.2.3 Samples and test pieces for mechanical tests.....	32
10.2.4 Test methods.....	35
10.2.5 Macrographic and metallographic tests.....	35
10.2.6 Hydrostatic test.....	36
10.2.7 Visual inspection.....	36
10.2.8 Dimensional testing	37
10.3 Plant access	37
10.4 Rejection	38
11. Marking.....	39
11.1 General.....	39
11.1.5	39
11.2 Pipe markings.....	39
11.2.1	39
11.2.3	39
11.2.7	39
12. Coatings and threat protectors.....	41
12.1 Coatings and linings.....	41
12.1.2	41
13. Retention of records	43
14. Pipe loading	45

Annex A (normative) Specification for welded jointers.....	47
Annex B (normative) Manufacturing procedure qualification for PSL 2 pipe.....	49
Annex C (normative) Treatment of surface imperfections and defects.....	57
Annex D (normative) Repair welding procedure	59
Annex E (normative) Modify title to read Non destructive inspection	61
Annex F (normative) Requirements for couplings (PSL 1 only).....	71
Annex G (normative) PSL 2 pipe with resistance to ductile fracture propagation	73
Annex H (normative) PSL 2 pipe ordered for sour service	75
Annex J (normative) PSL 2 pipe ordered for offshore service	79
Annex K (normative) Non destructive inspection for pipe ordered for sour service.....	81
Annex M (normative) Pipe ordered for European onshore gas transmission.....	83
Annex AA (normative) Line pipe subjected to high strain.....	85
Annex BB (normative) Procedure requirements for NDT	89
Annex CC (informative) Modular Pipeline Data Sheet.....	93

Tables

Table 5 (modified) Chemical composition for PSL 2 pipe	21
Table 8A Impact test temperatures.....	23
Table18 (modified) Inspection frequency for PSL 2 pipe.....	30
Table 20 (modified) Number, orientation and locations of test pieces per sample for mechanical tests.....	34
Table BB1 Ultrasonics	89
Table BB2 Radiography	90
Table BB3 Eddy Current	90
Table BB4 Wet fluorescent magnetic particle	91

Figures

Figure 7 (modified) location of CVN test specimens for weld and HAZ tests.....	33
Figure B5.2.1	54