Notice No.2

Rules for the
Manufacture, Testing and Certification of Materials
July 2017

The status of this Rule set is amended as shown and is now to be read in conjunction with this and prior Notices. Any corrigenda included in the Notice are effective immediately.

Please note that corrigenda amends to paragraphs, Tables and Figures are not shown in their entirety.

Issue date: December 2017

Amendments to	Effective date	IACs/IMO implementation (if applicable)
Chapter 1, Section 6	1 January 2018	N/A
Chapter 2, Section 5	1 January 2018	N/A
Chapter 6, Section 4	1 January 2018	N/A
Chapter 12, Section 5	1 January 2018	1 January 2018

Chapter 1
General Requirements

■ *Section 6*
References

6.1 General

(Part only shown)

Table 1.6.1 List of National and International Standards

Rule reference	Standard
Chapter 12 – Welding Qualifications	ISO 25239-4 ISO 14732

Chapter 2
Testing Procedures for Metallic Materials

■ *Section 5*
Embrittlement tests

5.2 Strain age embrittlement tests

5.2.1 The test material is to be heat treated in accordance with the specification and then subjected to five per cent strain. ~~Half of the~~ The test material is then to be heated to 250°C and held for one hour.

5.2.2 Impact tests in accordance with *Ch 2, 5.1 Temper embrittlement tests 5.1.2* are to be made in both the ~~strained~~ strain aged and unstrained conditions.

Chapter 6
Steel Pipes and Tubes

■ *Section 4*
Ferritic steel pressure pipes for low temperature service

4.4 Mechanical tests

4.4.5 The results of all tensile, impact (when applicable), flattening and bend tests are to comply with the appropriate values in *Table 6.4.2 Mechanical properties for acceptance purposes*. *See Ch 2, 1.4 Re-testing procedures* for re-testing procedures.

~~4.4.6 The average value for impact test specimens is to comply with the appropriate requirements of *Table 6.4.2 Mechanical properties for acceptance purposes*. One individual value may be less than the required average value provided that it is not less than 70 per cent of this value. *See Ch 2, 1.4 Re-testing procedures 1.4.1* for re-test procedures.~~

Chapter 12
Welding Qualifications

■ *Section 5*
Welder qualification tests

5.1 Scope

5.1.1 The requirements of this Section relate to qualification of welders involved in welded construction and repair associated with ships, or other marine structures, and products or components for use on or in these structures.

5.1.3 The qualification test and approval range of welding operators for fully mechanised and automatic welding processes are to be carried out with reference to ISO 14732 or equivalent.

Existing paragraphs 5.1.3 to 5.1.5 have been renumbered 5.1.4 and 5.1.6.

5.3 Examination and testing

5.3.1 Each completed test weld is to be examined and tested in accordance with the requirements of *Table 12.5.1 Welder qualification test requirements*. All examinations and tests are to be witnessed by the Surveyor.

Table 12.5.1 Welder qualification test requirements

Examination type	Butt welds	Fillet welds	Pipe branch welds	Butt tack welds	Fillet tack welds
Visual	100%	100%	100%	100%	100%
Surface crack detection	*See* Note 1	100%	100%	Not required	Not required
Radiography	100% *See* Notes 2 and 6	Not required	Not required	Not required	Not required
Bend tests	4 required *See* Notes 3 and 6	Not required	Not required	Not required	Not required
Fracture tests	Not required	1 required *See* note 4	Not required	1 required	1 required
Macro	Not required	1 required *See* note 4	4 required *See* note 5	Not required	Not required

Note *1*. Surface crack detection examination may be required by the Surveyor in order to clarify the acceptability of any weld feature.

Note *2*. Radiography may be replaced by ultrasonic examination for carbon and low alloy steels where the thickness exceeds 8 mm.

Note *3*. Bend tests are required for gas metal arc welding (GMAW) with solid wire or metal cored wire ~~(GMAW)~~ and oxy-acetylene welding.

Note *4*. The fracture test may be replaced with 4 macro sections equally spaced along the inspection length.

Note *5*. Macro-sections are to be separated by 90° measured around the abutting pipe member.

Note *6*. Radiography and bend tests are required for tests in aluminium alloys.

5.6 Range of approval

5.6.6 A change from welding with solid wire to metal cored wire or vice versa is allowed. A change from or to welding with flux cored wire requires a new qualification test.

5.6.7 For gas tungsten arc welding in which the wire is added manually, welding with a filler wire qualifies welding without filler wire but not vice versa.

Existing paragraphs 5.6.6 and 5.6.7 have been renumbered 5.6.8 and 5.6.9.

Table 12.5.4 Welder qualification, range of approval for material thicknesses

Material type	Test piece thickness (mm)	Range approved, see Note (mm)
Steel and copper alloys	~~$t \leq 3$~~ $t < 3$	t to 2t
	~~$3 < t \leq 12$~~ $3 \leq t < 12$	3,0 to 2t
	~~$t > 12$~~ $t \geq 12$	≥ ~~5,0~~ 3,0
Aluminium alloys	$t \leq 6$	0,5 t to 2t
	$t > 6$	≥ 6
Note For oxy-acetylene welding the maximum thickness is limited to 1,5 t.		

~~5.6.8~~ 5.6.10 A qualification test performed on plate confers approval to weld on pipes having an outside diameter greater than 500 mm in a fixed position (*see Table 12.5.5 Welder qualification, diameter range of approval for pipes and hollow sections* and *Table ~~12.5.6~~ 12.5.7 Welding position ranges for welder qualification*).

Existing paragraphs 5.6.9 has been renumbered 5.6.11.

~~5.6.10~~ 5.6.12 A qualification test performed on a butt weld may be considered as giving approval for fillet welds. Where a welder is employed to perform fillet welding only, a fillet welding qualification test is required. For welding T joints with full or partial penetration a butt welding qualification is required.

5.6.13 A qualification test performed on one type of weld joint will give approval to weld other types of weld joint as shown in *Table 12.5.6 Range of welded joints for welder qualification*.

~~5.6.11 A butt qualification test welded from one side, with the root unsupported (i.e. no backing), will give approval for welds made from both sides with or without back gouging or grinding, but not vice versa~~

Table 12.5.6 Range of welded joints for welder qualification

Type of welded joint for test assembly				Range of approval
Butt welding	One side	With backing	A	A, C, E, F
		Without backing	B	A, B, C, D, E, F
	Both sides	With gouging	C	A, C, E, F
		Without gouging	D	A, C, D, E, F
Fillet weld		Multi-run	E	E, F
		Single-run	F	F

~~5.6.12~~ 5.6.14 A qualification test performed in one position will give approval to weld in other positions as shown in *Table ~~12.5.6~~ 12.5.7 Welding position ranges for welder qualification.*

(Part only shown)
Table ~~12.5.6~~ 12.5.7 Welding positions ranges for welder qualification

Existing paragraphs 5.6.13 to 5.6.15 have been renumbered 5.6.15 to 5.6.17.

5.6.18 A qualification for butt or fillet welding qualifies welding of tacks.

5.6.19 Where a welder is employed in the welding of tack welds only and which are not incorporated into the final weld, a test assembly in accordance with *Figure 12.5.3 Dimensions and types of test assemblies for butt tack welding* or *Figure 12.5.4 Dimensions and types of test assemblies for fillet tack welding*, may be prepared as an alternative to full butt or fillet weld qualification.

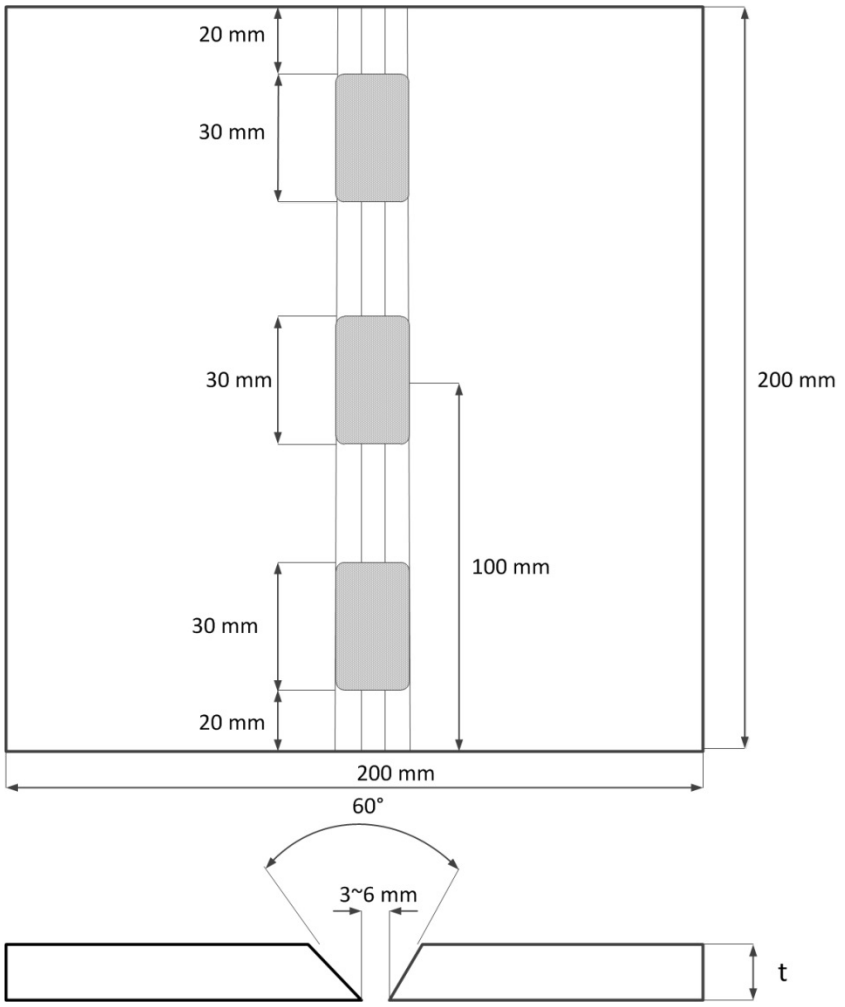

Figure 12.5.3 Dimensions and types of test assembly for butt tack welding

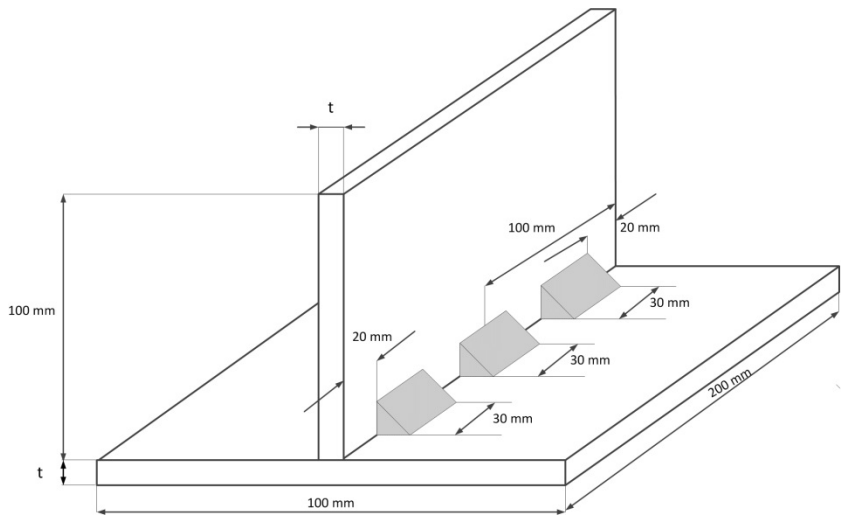

Figure 12.5.4 Dimensions and types of test assembly for fillet tack welding

5.7 Welders qualification certification

5.7.3 The welder is considered to be approved for an initial validity period of 2 or 3 years depending upon the chosen method of validation which is to be stated on the welder's certificate at time of issue. The welder is considered to have retained the qualification during this period subject to the manufacturer confirming every 6 months that the welder has ~~used the welding process with acceptable performance in the preceding 6 months.~~ met the following conditions:

(a) The welder has been engaged with a reasonable continuity on welding work within the current range of approval. An interruption for a period of no longer than six months is permitted.
(b) The welder's work shall generally be in accordance with the technical conditions under which approval test is carried out.
(c) There shall be no specific reason to question the welder's skill and knowledge.

5.7.4 ~~After 2 years, the~~ The Surveyor ~~may~~ shall extend the validity of the approval by one of the following methods: ~~for another period of two years provided that records or documented evidence is made available confirming acceptable welding performance, within the original range of approval, without a break exceeding 6 months. The Surveyor will signify acceptance of the extension to the validity by endorsing the certificate.~~

(a) Re-test the welder every 3 years.
(b) After 2 years, two welds made within the previous six months are to be subject to radiographic inspection or ultrasonic inspection or destructively tested and the result recorded. Welding shall reproduce all initial test conditions except for thickness. Subject to satisfactory examination or testing the qualification is revalidated for a further 2 years. The Surveyor will signify acceptance of the extension to the validity by endorsing the certificate.

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