

Pressure equipment — Welding and brazing qualification

Amendment No. 1

Revised text amendment

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Summary

This Amendment applies to the following elements:

- Clauses 1.1.2, 2.2, 3.8, 7.4.2, 7.6.1, 8.2.2.3, 8.2.3.5, 8.4.2, 8.4.3, 9.2, 9.5.2.2, 15.2, 16.1
- Tables 2.1, 5.1, 5.2, 5.5, 6.1, 9.1(A), 9.1(B), 9.2, 9.3, 10.2
- Figures 7.1, B2, G1
- Appendices A, I

Amendment details

AS 3992:2020 is amended as follows. The amendments should be inserted in the locations as instructed.

Element	Instruction/New text
Cl 1.1.2	Item (b), <i>delete</i> “purchaser” and <i>replace</i> with “purchaser or owner”.
Tbl 2.1	Column 2, row 9, <i>delete</i> “Figure 5.1” and <i>replace</i> with “Figures 5.1, 5.2 and Clause 1.3”.
Cl 2.2	Second paragraph, after “For FCAW”, <i>add</i> “and GMAW”.
Cl 3.8	After the first paragraph, <i>add</i> the following: NOTE: Weld procedures should be suitably amended where difficulties or improvements are identified during manufacture, testing of pressure equipment and test plates, or feedback from service.
Tbl 5.1	1 Column 2, row 2, at end of text, <i>add</i> the following: Where impact tests are required, the minimum thickness qualified is— (a) $0.5t$ when the test plate thickness (t) < 16 mm; and (b) 15 mm when the test plate thickness (t) ≥ 16 mm. 2 Column 2, row 5, Item (b), at end of text, <i>add</i> the following: By agreement, a change from the use of standard consumable to low carbon (‘L’ symbol) consumable or vice versa does not require requalification. 3 Column 2, row 5, Item (c), <i>delete</i> first sentence and <i>replace</i> with the following: (c) For ferrous metals only, a variation of the alloy content of the weld metal outside of the specified range of the classification of the welding consumables used in the procedure test, except that for—
Tbl 5.2	1 Column 2, heading, after “Material type”, <i>add</i> “(Note 8)”. 2 <i>Delete</i> row A2 and <i>replace</i> with the following:

A2	Carbon and carbon manganese medium strength steel $CE_{\max} 0.55$ $C \leq 0.33$ $Mn \leq 1.7$ $R_e \leq 400$ $460 < R_m \leq 540$	C-Mn-Si	490	PS	AS 1548 PT 490	1	2	101	1.2
		C-Mn-Si	485	PT	ASTM A106C (K03501)	1	2	101	11.1

3 Column 10, row B1, *delete* “3.1”.

4 Column 10, row B2, *delete* “4.2” and *replace* with “—”.

5 Column 10, row B3, *delete* “4.1” and *replace* with “4.1, 4.2”.

6 *Delete* row D1 and *replace* with the following:

D1	Low alloy steel [Vanadium type] ($V \leq 0.35$, $Cr \leq 3.5$)	3Cr-1Mo-V-Ti-B	585	F	ASTM A182 F3V (K31830)	5C	1	102	6.2
		2.25Cr-1Mo-V	585	PS	ASTM A182 F22V (K31835)	5C	1	102	6.2
		3Cr-1Mo-25V-Nb-Ca	585	F	ASTM A182 F3VCb (K31390)	5C	1	102	6.2
		3Cr-1Mo-V-Ti-B	585	F	ASTM A182 F3V (K31830)	5C	1	102	6.2

7 *Delete* row K2 and *replace* with the following:

K2	Austenitic Cr-Ni steel ($Cr \geq 19$)	21Cr-11Ni-N (308)			ASTM A240 (S30815)	8	2	102	8.2
		23Cr-12Ni (309) (also with Nb)			ASTM A240 (S30915)	8	2	102	8.2
		25Cr-20Ni (310 S)	515	PS	ASTM A240 (S31008)	8	2	102	8.2
		25Cr-20Ni (310 H)	515	PS	ASTM A240 (S31009)	8	2	102	8.2
		25Cr-20Ni-Nb (310 Nb)	515	PS	ASTM A240 (S31040)	8	2	102	8.2
		25Cr-22Ni-2Mo-N	550	PS	ASTM A240 (S31050)	8	2	102	8.2

8 Notes to Table 5.2, after NOTE 7, *add* the following:

8 For materials that conform to more than one material group, consideration should be given to the appropriate service application.

Tbl 5.5

Delete rows F1 to F6 and *replace* with the following:

F1	MMAW	High iron powder or iron oxide electrode for carbon and carbon manganese steels	AS/NZS 4855	SFA 5.1	EXX20, EXX22, EXX24, EXX27, EXX28
F2	MMAW	High titania (rutile) electrode for carbon and carbon manganese steels	AS/NZS 4855	SFA 5.1	EXX12, EXX13, EXX14, EXX19
F3	MMAW	High cellulose electrode for carbon and carbon manganese and low alloy steels	AS/NZS 4855	SFA 5.1 and 5.5	EXX10, EXX11

F4	MMAW	(a) Hydrogen controlled basic electrode for carbon and carbon manganese steels	AS/NZS 4855	SFA 5.1 and 5.5	EXX15, EXX16, EXX18, EXX48
	MMAW	(b) Hydrogen controlled basic electrode for low alloy steels and high chromium other than austenitic and duplex steels	AS/NZS 4856	SFA 5.5	EXX15, EXX16, EXX18, EXX48
F5	MMAW	Hydrogen controlled basic electrode for high alloy austenitic and duplex steels	AS/NZS 4854	SFA 5.4	EXX15, EXX16, EXX17
F6	Oxy acetylene welding	Filler metal rods for carbon and low alloy steels	AS/NZS 1167.2	SFA 5.2	RX
	SAW	Electrodes for carbon and carbon manganese steels	AS/NZS ISO 14171 AS/NZS ISO 14174	SFA 5.17	FXX-EXX
	SAW	Electrodes for low alloy steels	AS/NZS ISO 24598	SFA 5.23	FX-EXXX-X
	SAW	Electrodes for high alloy austenitic steels	AS/NZS ISO 14343	SFA 5.9	ERXX
	GTAW GMAW	Electrodes for high alloy austenitic steels	AS/NZS 1167.2 AS/NZS ISO 14343	SFA 5.9	ERXX
	GTAW GMAW	Electrodes for carbon and carbon manganese steels	AS/NZS 1167.2 AS/NZS ISO 636 AS/NZS ISO 14341	SFA 5.18	ERXXS-X
	GTAW GMAW	Electrodes for low alloy steels	AS/NZS 1167.2 AS/NZS 21952	SFA 5.28	ERXXX-X ERXXX-X
	FCAW	Electrodes for carbon and carbon manganese steels	AS/NZS ISO 17632 (see Note 3)	SFA 5.20	EXXT-X
	FCAW	Electrodes for low alloy steels	AS/NZS ISO 17634 (see Note 3)	SFA 5.29	EXXTX-X
	FCAW	Electrodes for stainless and high alloy steels	AS/NZS ISO 17633	SFA 5.22	EXXTX-X

Tbl 6.1 1 Delete row 5 and replace with the following:

Root bend (Notes 5 and 8)	2 (Note 14)	1 (Note 9)	—	—
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2 Delete NOTE 14 and replace with the following:

14 Single-sided welds require two root bend tests and two face bend tests, and double-sided welds require two bend tests for each side.

CI 7.4.2

Delete first and second paragraphs and replace with the following:

The tensile strength shall not be less than 95% of the specified minimum tensile strength of the parent metal. The yield strength shall exceed the specified minimum yield strength of the parent metal or the yield strength required by the design calculation, whichever is less. For exceptions, see Note 6 and Note 12 of Table 6.1.

The elongation measured on a gauge length of $5.65 \sqrt{\text{cross-sectional area}}$ ($\approx 5 \times \text{specimen diameter}$) shall be not less than 10%, or not less than 80% of the equivalent specified minimum elongation of the parent material, whichever is the greater.

CI 7.6.1

1 Delete Item (e)(iv) and replace with the following:

(iv) Near surface specimens shall be within 2 mm of the surface