

Agenda Item 650-2078

Title: Allowable Materials for Reduced PWHT Temperatures

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Revision: 1

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Purpose: Add Note 2 in table 6.16 in ASME VIII-2 code to the notes in the table in section 5.7.4.8 in API 650.

Source: Introduced by Andrew Yearwood during the Spring 2025 SGF meeting.

Impact: Provide clarity on the requirements for material types that are allowed to be post weld heat treated at reduced temperatures.

Rationale: ASME has a more general note allowing these reduced temperatures only for P-No 1, Group 1 and Group 2 materials. API has added more Group 3 steels over the years. Now such note updating needs to happen in both API 650 and API 620.

For reference see below excerpt from ASME

*** ASME VIII-2 2025 edition, Table 6.16

Table 6.16 has Note 2 specifying that these lower post weld heat-treat temperatures are permitted only for P-No1, Group 1 and Group 2 materials.

Table 6.16 Alternative Postweld Heat Treatment Requirements	
Decrease in Temperature Below Minimum Specified Temperature, °C (°F)	Minimum Holding Time at Decreased Temperature, h <i>[Note (1)]</i>
≤30 (≤50)	3
55 (100)	4
85 (150) <i>[Note (2)]</i>	10
110 (200) <i>[Note (2)]</i>	20
GENERAL NOTES: (a) Applicable only when permitted by Tables 6.8 through 6.15. (b) Interpolation for time based on temperature reduction between values greater than 30°C (50°F) is permitted. NOTES: (1) Minimum holding time for 25 mm (1 in.) thickness or less. Add 15 min for each additional 25 mm (1 in.) of thickness greater than 25 mm (1 in.). (2) These lower postweld heat-treat temperatures are permitted only for P-No 1, Group 1 and Group 2 materials.	

Proposed Changes in API 650:

**** API 650 14th edition, in section 5.7.4.8

Minimum Stress-relieving Temperature		Holding Time (hours per 25 mm [1 in.] of thickness)	See Note
(°C)	(°F)		
600	1100	1	1
570	1050	2	1
540	1000	4	1
510	950	10	1, 2
480 (min.)	900 (min.)	20	1, 2

NOTE 1 For intermediate temperatures, the time of heating shall be determined by straight line interpolation.

NOTE 2 ~~Stress relieving at these temperatures is not permitted for ASME Class 3 material.~~

These lower post weld heat-treat temperatures are permitted only for P-No 1, Group 1 and Group 2 materials.