



SARA SAE ENGINEERING SPECIFICATION

SECTION SES - 26 - 616

ISSUE "A"

REV. "1"

EFF. DATE 20.10.2011

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SPECIFICATION FOR GENERAL REQUIREMENTS OF POST WELD HEAT TREATMENT (STRESS RELIVING)

1.0 PURPOSE

- 1.1 It is the purpose of this specification to list in a concise form the Post weld Heat Treatment of alloy Steels used in well head, Christmas Tree, Manifold and related equipment used oil field services.
- 1.2 This material specification is intended to aid the PPC / Product Manager/ Purchasing department in out sourcing and the vendor to comply the requirements of heat treatment of a material which needs to meet its intended use, and the quality control department in the inspection and release of incoming material.
- 1.3 Welds may be locally post weld heat treated as defined in this procedure.

2.0 SCOPE

- 2.1 This specification covers requirements of post weld heat treatment of alloy steels used for Well Head , Christmas Tree , Manifold and related equipment /die-forgings and ring rollings(where applicable) to meet requirements of the relevant specification.

3.0 GENERAL REQUIREMENTS

3.1 FURNACE HEATING

- 3.1.1 Spacing: Material to be heat treated should be racked / stacked such to allow circulation of heating and quenching media, to ensure all surfaces of the product are exposed to heating media and to minimize warpage during heating & quenching.
- 3.1.2 Carburization and Nitriding - The heating media in furnaces used for heating material shall be controlled to preclude carburization & nitriding.
- 3.1.3 Temperature Uniformity / Calibration of Furnace – The design and construction of the furnace(heat treatment equipment) shall be such that the temperature at any point in the furnace working zone or work load shall comply requirements of Appx 'P' of the 19th Edn of API 6A or AMS-H – 6875.

3.2 LOCAL HEATING

- 3.2.1 Local post weld heat treatment shall consist of heating a circumferential band around the weld at a temperature within the range specified in the qualified WPS. The minimum width of the controlled band at each side of weld on the face of the greatest weld width shall be the thickness of the weld or 50 mm (2") from the weld edge, whichever is less. Heating by direct flame impingement on the material shall not be permitted.



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4.0 POST WELD HEAT TREATMENT

4.1 The post weld heat treatment of the material shall be in the same temperature range as that specified on the WPS or purchase order. Allowable range for the post weld heat treatment on the WPS shall be nominal temperature range $\pm 14^{\circ}\text{C}$ ($\pm 25^{\circ}\text{F}$).

Maximum holding time shall not exceed Five times (5X) the minimum holding time. In all case, holding time shall not start until parts or materials have reached specified heat treatment temperature. The 5X rule does not apply to the separate QTC (e.g. ER 5").

Soaking hold time shall be $\frac{1}{2}$ hour per inch of maximum through thickness. One hour minimum.

Material shall slow cooled to room temperature in furnace.

5.0 ACCEPTANCE

5.1 Heat Treated products shall be supplied clean, free from scale meeting the requirements of this specification & the purchase order.

6.0 DOCUMENTATION REQUIRED

6.1 Certification of heat treatment including cycle time, temperature, cooling media, hardness and graphs.

6.2 Calibration certificate of furnace.

