MATERIAL DATA SHEET MDS R13 Rev. 4

TYPE OF MATERIAL: Austenitic Stainless Steel, Type 6Mo

PRODUCT	***STANDARD***	***GRADE***	***ACCEPT. CLASS***	***SUPPL. REQ.***
Wrought fittings	ASTM A 403	WP S31254 UNS N08367 UNS N08926	WP-S, WP-WX and WP-W	

1. SCOPE	This MDS specifies the selected options in the referred standard and additional requirements which shall be added or supersede the corresponding requirements in the referred standard.
2. QUALIFICATION	Manufacturers and the manufacturing process used for manufacturing of product to this MDS shall be qualified in accordance with NORSOK Standard M-650.
3. STEEL MAKING	Steel melt shall be refined with AOD or equivalent.
4. MANUFACTURING PROCESS	The manufacturing of products according to this MDS shall be carried out according to the M-650 qualified manufacturing procedure. The Hot Isostatic Pressed (HIP) process is an acceptable alternative manufacturing process.
4. HEAT TREATMENT	The fittings shall be solution annealed followed by water quenching. Fittings shall be placed in such a way as to ensure free circulation of air and water around each fitting during the heat treatment process including quenching. Fittings machined directly from solution annealed forging or bar-stock need not be resolution annealed provided tested and certified in accordance with MDS R14 or R17.
5. TENSILE TESTING	$R_{P0,2} \geq 300$ MPa, $R_M \geq 650$ - 820 MPa, $A \geq 35$ %.
6. CORROSION TESTING	Corrosion test according to ASTM G 48 Method A is required. Test temperature shall be 50 °C and the exposure time 24 hours. The test shall expose the external and internal surfaces and a cross section including weld zone (if relevant) in full wall thickness. Cut edges shall be prepared according to ASTM G 48. The whole specimen shall be pickled before being weighed and tested. Pickling may be performed for 5 minutes at 60 °C in a solution of 20 % HNO3 + 5 % HF. The acceptance criteria are: - No pitting at 20 X magnification. - The weight loss shall be less than 4,0 g/m^2.
7. EXTENT OF TESTING	Tensile and corrosion testing shall be performed for each heat, heat treatment load with a wall thickness range of 5 mm and welded with the same WPS.
8. TEST SAMPLING	Samples for production testing shall realistically reflect the properties in the actual components. Test sampling shall be made from an actual fitting or from a prolongation thereof. Sketches shall be established showing location for extraction of test specimens.
9. WELDING	The welding procedure shall be qualified in accordance with ASME IX or ISO 15614-1 and this MDS: - A matching consumable with enhanced Mo or Cr content compared to the base material shall be used. The S content shall not exceed 0,015 %. - The PQR/WPQR shall be corrosion tested as specified above. The qualification shall be carried out on the same material grade (UNS number) as used in production. Change of specific make (brand name) of welding consumables requires requalification.
10. NON DESTRUCTIVE TESTING	Penetrant testing, shall apply to 10 % of seamless fittings (from the test lot as defined above) and 100 % of welded fittings above NPS 2. For welded fittings the testing shall cover the weld only. The weld of each examined fitting shall be ground flush in a length of 100 mm prior to penetrant testing. The testing shall be carried out after calibration and pickling. The acceptance criteria shall be to ASME VIII, Div. 1, Appendix 8. NDT operators shall be qualified in accordance with EN 473 or equivalent.
11. SURFACE FINISH	White pickled.
12. REPAIR OF DEFECTS	Weld repair of base material is not acceptable. For repair of welds the same requirement to PQR/WPQR shall apply as for production testing.
13. MARKING	The component shall be marked to ensure full traceability to melt and heat treatment lot.

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14. CERTIFICATION	The material manufacturer shall have a quality system certified in accordance with ISO 9001 and the system shall have undergone a specific assessment for the relevant materials. The material certificate shall be issued in accordance with EN 10204 Type 3.1, and shall include the following information: - Manufacturer of the starting material for the finished product; - Steel melting and refining practice; - Heat treatment condition. (Solution annealing temperature and holding time shall be stated.)