MATERIAL	DATA SHEE	MDS D46	Rev. 4						
TYPE OF MATERIAL: Ferritic / Austenitic Stainless Steel, Type 22Cr duplex									
PRODUCT	STANDARD	GRADE	ACCEPT. CLASS	SUPPL. REQ.					
Castings	ASTM A 995	4A (UNS J92205)	-	S6, S8, S20					
				Page 1 of 2					
1. SCOPE			ferred standard and addition nding requirements in the re						
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. MANUFACTURE	The manufacturing of pr qualified Manufacturing		MDS shall be carried out ac	cording to the M-650					
4. STEEL MAKING	The steel melt shall be v	vith AOD or equivalent re	efining.						
5. HEAT TREATMENT	The castings shall be solution annealed followed by water quenching.								
	Components shall be placed in such a way as to ensure free circulation of air and water around each component during the heat treatment process including quenching.								
6. CHEMICAL COMPOSITION	N = 0.14 - 0.30 %								
7. IMPACT TESTING	Charpy V-notch testing to ASTM A 703 supplementary requirement S8 is required and the test temperature shall be - 46 °C.								
	The minimum absorbed energy shall satisfy 45 J average and 35 J single.								
8. MICROGRAPHIC EXAMINATION	The test specimens shall be extracted from the same area as specimens for mechanical testing and near surface. The test area shall be minimum 10 x 10 mm. The ferrite content shall be determined according to ASTM E 562 or equivalent and shall be within 35 - 55 %. The microstructure, as examined at minimum 200 X magnification on a suitably etched specimen and shall be free from intermetallic phases and precipitates.								
9. EXTENT OF TESTING	A full set of tensile, impact, hardness tests and microstructure examinations shall be made for each heat and heat treatment load including any PWHT. A test lot shall not exceed 5 000 kg.								
10. TEST SAMPLING	Samples for mechanical testing shall realistically reflect the properties in the actual components.								
	Thickness of the test block shall be equal to the thickness of the actual components. For flanged components the largest flange thickness is the ruling section.								
	Dimensions of test blocks and location of test specimens within the test blocks are shown in figures 1 and 2 for integral and gated test blocks, respectively. The test specimens shall be taken within the cross hatched area and in a distance of T/4 from the ends. When thickness "T" of test block is \leq 50mm the longitudinal axis of test specimens shall be located in the centre of test blocks.								
	During any PWHT the test block shall be tack welded onto the casting.								
	T								
	<u></u>	-	T or min. 50mm						
		>=T/2	T/2						
		×	X ≤T+X	(
	Fig.1 - Integral test block Fig. 2 - Gated test block								
		riy.	2 Galey (65) DIOCK						

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ASTM A 995		4A (UNS J92205)		-		S6, S8, S20				
					Page 2 of 2					
 Liquid penetrant testing: Supplementary requirement S6 shall apply to all surfaces (including internal surfaces) of all castings. The testing shall be carried out after final machining. Non-machined surfaces shall be pickled prior to the testing. The acceptance criteria shall be to ASME VIII, Div. 1, Appendix 7. Radiographic testing (RT): Castings shall be tested in accordance with ASME VIII div.1 appendix 7. The number of castings to be tested per lot shall be according to table below. 										
		•			000	1500	> 0500			
							<i>≥ 2500</i> ≥ 2"			
of RT	100%	Not	Not	≥ 20"	≥ 16"	≥ 6"	≥ 6"			
- Pilot cast of each pattern shall be 100% RT.										
 When spot examination (10 %) is specified, minimum one casing in any order shall be tested. If one test fails, two more components shall be tested, and if any of these two fail al items represented shall be tested. White pickled. Machined surfaces do not require pickling. 										
ASTM A 703 supplementary requirement S20 shall apply.										
Post weld heat treatment (PWHT) is required after all weld repairs. For minor weld repairs, as defined by ASTM A995, the PWHT may be excluded provided the welding procedure qualification shows that all specified properties, as specified in this MDS, can be fulfilled.										
and this MDS. The repair welding procedure qualification shall include the following:										
 Examination of microstructure of base material and weld zone. The ferrite content shall be 3 % to 55 % for the base material and 35 % to 65 % for the weld metal; 										
 Charpy V-notch testing as specified above, with two sets each 3 specimens, with notch located in weld metal and fusion line, respectively. 										
The component shall be marked to ensure full traceability to melt and heat treatment lot.										
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 system she		 The material certificate shall be in accordance with EN 10204 Type 3.1, and shall include the following information: Steel manufacturer, melting and refining practice; 								
The material ce following inform	nation:				pe 3.1, and	shall inc	lude the			
_	RIAL: Ferritic / STANDAR ASTM A 995 NDT operators Liquid penetrar internal surface machined surface VIII, Div. 1, App Radiographic to - Castings s - The number Extent or Pressure Extent of RT - Pilot cast or - Castings s sections ar - When spot If one test items repr White pickled. ASTM A 703 su Post weld heat defined by AST shows that all suface The repair weld and this MDS. - Qualified or - Change of - Examination % to 55 % - Charpy V-r located in to The componen The material m	RIAL: Ferritic / Austen STANDARD ASTM A 995 NDT operators shall be carried surfaces of all carried surfaces of all carriachined surfaces shall be vill, Div. 1, Appendix 7. Radiographic testing (RT) - Castings shall be test - The number of castin Extent of RT based Pressure Class: Extent 10% of RT 100% - Pilot cast of each path - Castings shall be test sections and at the ju - When spot examinati If one test fails, two items represented sections and at the ju - White pickled. 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