

MATERIAL DATA SHEET				MDS C02	Rev. 4			
TYPE OF MATERIAL: Carbon Steel Type 235								
PRODUCT	STANDARD	GRADE	ACCEPT. CLASS	SUPPL. REQ.				
Castings	ASTM A 216	WCB	-	S4				
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. CHEMICAL COMPOSITION	$C \leq 0.22 \%$ and $CE_{(IIW)} = C + Mn/6 + (Cr + Mo + V)/5 + (Cu + Ni)/15 \leq 0.43$							
3. EXTENT OF TESTING	One set of tensile test is required for each melt and heat treatment load.							
4. TEST SAMPLING	Samples for mechanical testing shall realistically reflect the properties in the actual components. For castings with weight 250 kg or more the test blocks shall be integrally cast with the casting. The test blocks shall be heat treated together with the castings they represents.							
5. NON DESTRUCTIVE TESTING	NDT operators shall be certified in accordance with EN 473 or equivalent.							
	Magnetic particle testing, S4:							
	- Supplementary requirement S4 shall apply to all surfaces (including internal surfaces) of all castings.							
	- The examination shall be carried out after final machining.							
	- The acceptance criteria shall be to ASME VIII, Div.1, Appendix 7.							
	Radiographic testing (RT):							
	- The number of castings to be tested per lot shall be according to table below.							
	Extent of RT based on pressure class and nominal outside diameter:							
	Pressure Class:		$\leq 150$	300	600	900	1500	$\geq 2500$
Extent of RT	10%	$\geq 10''$	$\geq 10''$	$\geq 2''$	$\geq 2''$	$\geq 2''$	$\geq 2''$	
	100%	Not applicable	Not applicable	$\geq 20''$	$\geq 16''$	$\geq 6''$	$\geq 6''$	
	- Castings shall be tested in accordance with ASME VIII div.1 Appendix 7.							
	- Pilot cast of each pattern shall be 100% RT.							
	- Castings shall be tested in the critical areas as defined by ASME B16.34, including abrupt changes in sections and at the junctions of risers, gates or feeders to the casting.							
	- The acceptance criteria shall be to ASME VIII, Div.1, Appendix 7.							
	- When random testing (10%) is specified, minimum one casting in any order shall be tested. If one test fails, two more components shall be tested, and if any of these two fail all items represented shall be tested.							
6. 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:							
	- Heat treatment condition (For QT condition austenitisation and tempering temperature and quenching medium shall be stated.)							