Mill Test Certificate

Bri-Steel Manufacturing Inc.
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-1463 Product Size: 22 XS Production Date: Dec 06, 2013

Production Method: Hot Expansion Product Heat Treatment: As-rolled Certificate No.: MTR- 000663

Product Standards: ASME B36.10-2004, API 5L-45th Ed. Grade B/X42 PSL1, ASTM/ASME A/SA106-2011 Grade B/C NDE, A/SA53-2012 Grade B Type S, NACE MR0175-2009 MR0103-2010

Product Markings <API> 5L-0898 API SPEC 5L NPS 22 XS 0.500 INCHWT GR B/X42 PSL1 SMLS 2013/12 NDE 1720PSI
HEAT BSM-1463 (PIPE # LENGTH MASS) 114.8lb/ft ASTM/ASME A/SA106 GR B/C A/SA53 GR B NACE MR0175/MR0103 MADE IN CANADA

Product: Details						Non-Destructive Testing								
Heat	Test Type	Product Size *	Pieces	Length	Mass lb/ft	Geiger µR/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT ASTM E213	ET ASTM E309	HydroTest 1720PSI/ 5 s	End Condition
BSM-1463	Heat	NPS 22 XS 0.500in. WT	3	DRL	114.8	<5	<10	Pass	Pass	Pass	Pass	Pass	Pass	Plain End

Chemical Analysis (wt%)																	
Heat	Steelmaking Method	Test Type	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE(IIW)	CE(CSA)
BSM-1463	Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed	Heat	0.20	0.85	0.009	0.012	0.24	0.05	0.08	0.01	0.05				0.0003	-	-
		Product	0.20	0.87	0.009	0.013	0.25	0.04	0.10	0.01	0.04	0.003	0.001	0.001	0.0002	0.36	0.36

Mechanical Properties									
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test 50mm GL	Yield (Rt0.5) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
BSM-1463	Heat	Ferrite & Pearlite	72 HRBW	Pass	Longitudinal; 38.1 mm x WT	51,500	75,000	0.69	46

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy				% Shear				Lateral Expansion			
				J	J	J	AVG	%	%	%	AVG	mm	mm	mm	AVG
BSM-1463	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Additional Details:

✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing Inc. in accordance with API 5L-45th Ed., ASTM/ASME A/SA106-2011 Grade B/C A/SA53-2012, and the purchase order requirements, and that the results meet the corresponding requirements.

✓ This pipe product meets the sour service requirements of NACE MR0175/ISO 15156-2:2009 Annex A2 for Region 3 Sour Service-2009 NACE MR0103-2010 Section 2.1

✓ No weld repairs have been performed on this product.

✓ This product has not come into contact with mercury during the Bri-Steel Manufacturing processes.

✓ This certificate represents a quality control system that is compliant with EN 10204:2004 Type 3.1.

*API Minimum WT Tolerance increased to 0.495 by customer request

Mill Test Certificate approved by:

P Sowden
2013 DEC 12

Paul Sowden, T.T.
Assistant QA Manager