



Mill Test Certificate

Bri-Steel Manufacturing Inc.
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Product: Seamless Carbon Steel Pipe

Product Heat Number: BSM-1614

Product Size: 22 X 0.450

Production Date: Feb 06, 2014

Production Method: Hot Expansion

Product Heat Treatment: As-rolled

Certificate No.: MTR- 000852

Product Standards: ASME B36.10-2004, ASTM/ASME A/SA106-2013 Grade B/C NDE, A/SA53-2012 Grade B Type S, NACE MR0175-2009 MR0103-2010

Product Markings



NPS 22 X 0.450 INCHWT SMLS 2014/02 NDE 1720PSI
HEAT BSM-1614 (PIPE # LENGTH MASS) 103.5lb/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	HydroTest 1720PSI/ 5 s	End Condition
BSM-1614	Heat	NPS 22 X 0.450in. WT	5	DRL	103.5	<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)	
			Heat	0.20	0.88	0.012	0.008	0.26	0.04	0.01			0.01					-
		Product	0.22	0.93	0.021	0.008	0.30	0.07	0.01	0.00	0.04	0.002	0.003	0.001	0.0003	0.40	0.40	
BSM-1614	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed																	

Mechanical Properties									
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test 50mm GL	Yield (Rt0.5) psi	Tensile (Rm) psi	V/T (Rt0.5/Rm)	Elongation (A) %
BSM-1614	Heat	Ferrite & Pearlite	78 HRBW	Pass	Longitudinal; 38.1 mm x WT	46,300	74,500	0.62	41

Heat	Test	Impact Test Sample Details	Temp °C	Impact Energy				% Shear			Lateral Expansion		
BSM-1614	Standard	-	-	J	J	J	AVG	%	%	%	mm	mm	mm
				-	-	-	-	-	-	-	-	-	-

Additional Details:

✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing Inc. in accordance with ASTM/ASME A/SA106-2013 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.

Mill Test Certificate approved by:

Paul Sowden
2014 FEB 12

Paul Sowden, T.T.
Assistant QA Manager