



Mill Test Certificate

Bri-Steel Manufacturing Inc.
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-1609 Production Date: Feb 06, 2014
Production Method: Hot Expansion Product Heat Treatment: As-rolled Certificate No.: MTR- 000838
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 20 SCH 100 1.281 INCHWT SMLS 2014/02 NDE
HEAT BSM-1609 (PIPE # LENGTH MASS) 256.1lb/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	End Condition
BSM-1609	Heat	NPS 20 SCH 100 1.281in. WT	2	DRL	256.1	<5	<10	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(IW)	CE(CSA)
			Heat	0.21	0.93	0.001	0.004	0.34	0.06	0.06	0.02	0.03	0.005	0.002	0.001	0.0003	-
		Product	0.20	0.97	0.010	0.004	0.30	0.08	0.06	0.01	0.03	0.003	0.002	0.001	0.0004	0.38	0.38
BSM-1609			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	Y/T (Rt0.5/Rm)	Elongation (A) %
BSM-1609	Heat	Ferrite & Pearlite	75 HRBW	Pass	Longitudinal; 19.05 mm x WT	46,000	70,500	0.65	44

Heat	Test Standard	Impact Test Sample Details	Temp $^{\circ}$ C	Impact Energy					Lateral Expansion				
				J	J	J	AVG	%	%	AVG	mm	mm	AVG
BSM-1609	-	-	-	-	-	-	-	-	-	-	-	-	-

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.

* Note that this product was hydrotested to 1000 psi for 5 seconds.

Mill Test Certificate approved by:

Paul Sowden
2014 FEB 11

Paul Sowden, T.T.
Assistant QA Manager