



Mill Test Certificate

Bri-Steel Manufacturing Inc.
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-1869 Product Size: 20S120 Production Date: May 29, 2014
Production Method: Hot Expansion Product Heat Treatment: As-rolled Certificate No.: MTR- 001156
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 120 1.500 INCHWT SMLS 2014/05 NDE
HEAT BSM-1869 (PIPE # LENGTH MASS) 296.4lb/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 μ R/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT ASTM E213	ET ASTM E309	HydroTest	End Condition
BSM-1869	Heat	NPS 20 SCH 120 1.500in. WT	1	DRL	296.4	<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(IIW)	CE(CSA)
BSM-1869	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.20	0.87	0.007	0.003	0.20	0.06	0.08	0.03	0.04				0.0005	-	-
		Product	0.20	0.88	0.008	0.002	0.20	0.06	0.07	0.03	0.03	0.002	0.001	0.001	0.0004	0.38	0.38

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-1869	Heat	Ferrite & Pearlite	75 HRBW	Pass	Longitudinal; 19.05 mm x WT	41,500	71,000	0.58	51				

Heat	Test Standard	Impact Test Sample Details	Temp $^{\circ}$ C	Impact Energy				% Shear				Lateral Expansion			
BSM-1869	-	-	-	J	J	J	AVG	%	%	%	AVG	mm	mm	mm	AVG
				-	-	-	-	-	-	-	-	-	-	-	-

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.

Mill Test Certificate approved by:

✓ 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.

Tony Lam, C.E.T.
Assistant QA Manager

T. Lam
June 05.2014