



Mill Test Certificate

Bri-Steel Manufacturing Inc.
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-1611 Product Size: 20S100 Production Date: Feb 06, 2014
Production Method: Hot Expansion Product Heat Treatment: As-rolled Certificate No.: MTR- 001531
Product Standards: ASME B36.10-2004, ASTM/ASME A106-2014/SA106-2013 Grade B NDE, AS3-2012/SA33-2013 Grade B Type S, NACE MR0175-2009 MR0103-2012

Product Markings



NPS 20 SCH 100 1.281 INCHWT SMLS 2014/02 NDE
HEAT BSM-1611 (PIPE # LENGTH MASS) 256.1lb/ft ASTM/ASME A/SA106 GR B 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-1611	Heat	NPS 20 SCH 100 1.281in. WT	1	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(IIW)	CE(CSA)
BSM-1611	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.21	0.96	0.001	0.003	0.22	0.05	0.05	0.02	0.02	0.001	0.002	0.001	0.0005	-	-
		Product	0.21	0.93	0.014	0.003	0.32	0.06	0.05	0.01	0.02	0.003	0.004	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	Y/T (Rt0.5/Rm)	Elongation (A) %
BSM-1611	Heat	Ferrite & Pearlite	69 HRBW	Pass	Longitudinal; 19.05 mm x WT	39,100	67,000	0.58	46

Heat	Test Standard	Impact Test Sample Details	Temp $^{\circ}$ C	Impact Energy J			% Shear			Lateral Expansion mm			AVG
BSM-1611	-	-	-	-	-	-	-	-	-	-	-	-	-

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 A106-2014/SA106-2013 Grade B AS3-2012/SA53-2013, and the purchase order requirements, and that the results meet the corresponding requirements. Bri-Steel Manufacturing is registered and certified to ISO-9001:2008 and API Q1.

✓ This pipe product meets the sour service requirements of NACE MR0175/ISO 15156-2:2009 Annex A2 for Region 3 Sour Service-2009 NACE MR0103-2012 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:

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

Tonya Lam Jan. 13. 2015