



Mill Test Certificate

Bri-Steel Manufacturing Inc.
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-1277 Product Size: 20XS Production Date: Sep 26, 2013
 Production Method: Hot Expansion Product Heat Treatment: As-rolled
 Certificate No.: MTR- 001565

Product Standards: ASME B36.10-2004, ASTM/ASME A106-2014/SA106-2013 Grade B/C NDE, A53-2012/SA53-2013 Grade B Type S, NACE MR0175-2009 MR0103-2012

Product Markings
 NPS 20 XS 0.500 INCHWT SMLS 2013/09 NDE
 HEAT BSM-1277 (PIPE # LENGTH MASS) 104.1lb/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	Hydro Test	End Condition
BSM-1277	Heat	NPS 20 XS 0.500in. WT	11	DRL	104.1	<5	<5	Pass	Pass	Pass	Pass	Pass	-	34° Bevel

Chemical Analysis (wt%)																
Heat	Steelmaking Method	Test Type	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	CE(IHW)	CE(CSA)
BSM-1277	Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed	Heat	0.19	0.85	0.019	0.009	0.22	0.06	0.00	-	0.04	-	-	-	-	-
		Product	0.22	0.91	0.023	0.011	0.24	0.07	0.01	0.01	0.04	0.003	0.003	0.003	0.001	0.0002

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-1277	Heat	Ferrite & Pearlite	75 HRBW	Pass	Longitudinal; 38.1 mm x WT	41,500	71,000	0.58	50

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy			% Shear			Lateral Expansion				
				J	J	J	%	%	%	mm	mm	mm		
BSM-1277	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Additional Details: Mill Test Certificate approved by:

✓ 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/C A53-2012/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.

T. Lam Feb/09/2015

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