



Mill Test Certificate

Bri-Steel Manufacturing Inc.
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-1185 Product Size: 20 TRUE 80 Production Date: Aug 26, 2013
 Production Method: Hot Expansion Product Heat Treatment: As-rolled Certificate No.: MTR- 000011
 Product Standards: ASME B36.10-2004, ASTM/ASME A/SA106-2011 Grade B/C NDE, A/SA53-2012 Grade B Type S, NACE MR0175-2009 MR0103-2010

Product Markings: NPS 20 TRUE 80 1.031 INCHWT SMLS 2013/08 NDE
 HEAT BSM-1185 (PIPE # LENGTH MASS) 208.9lb/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-1185	Heat	NPS 20 TRUE 80 1.031in. WT	9	DRL	208.9	<5	<5	Pass	Pass	Pass	Pass	Pass	*	Plain End

Product: Details		Chemical Analysis (wt%)																
Heat	Test Type	Steelmaking Method	Test Type	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE(IIW)	CE(CSA)
BSM-1185	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed		Heat	0.21	0.89	0.014	0.005	0.29	0.05	0.04	0.01	0.02	0.004	0.002	0.001	0.0001	-	-
			Product	0.19	0.91	0.018	0.007	0.31	0.05	0.05	0.01	0.03	0.003	0.002	0.001	0.0001	0.36	0.36

Product: Details		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-1185	Heat	Ferrite & Pearlite	79 HRBW	Pass	Longitudinal; 19.05 mm x WT	49,500	73,000	0.68	51		

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy			% Shear			Lateral Expansion				
				J	J	J	%	%	%	mm	mm	mm	AVG	
BSM-1185	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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/SA106-2011 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:

2013 Aug 29

Kenton Dechant, P.Eng.
 Manager of Quality and R&D