



Mill Test Certificate

Bri-Steel Manufacturing Inc.
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Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0433** Product Size: **NPS 20 SCH 160** Production Date: **August 1, 2012**
 Production Method: **Hot Expansion** Product Heat Treatment: **As-rolled**
 Product Standards: **ASTM/ASME A/SA106-2011 Grade B, A/SA53-2012 Grade B Type S, NACE MR0175-2009**

Product Markings: **.BRI-STEEL MFG NPS 20 SCH 160 ASTM/ASME A/SA106 GR B A/SA53 GR B HEAT BSM-0433 (PIPE # LENGTH MASS) 379lb/ft NDE 1000PSI NACE MR0175 2012/08 MADE IN CANADA.**

Product Details						Non-Destructive Testing										
Heat	Test Type	NPS	Wall Thickness	Pieces	Length	Mass lb/ft	Geiger IRR/hr	Res. Mag. Gauss	Visual Insp.	OD	WT	UT	UT	ET	HydroTest	End Condition
BSM-0433	Heat	20	SCH 160	6	DRL	379.00	<5	<20	Pass	Pass	Pass	---	Pass	Pass	Pass	Plain End

Steelmaking Method		Chemical Analysis (wt%)														
Heat	Analysis	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE (IIW)	CE (CSA)
BSM-0433	Blast Furnace; EAF; Ladle Refining;	0.13	1.01	0.016	0.003	0.27	0.06	0.06	0.01	0.03	0.004	0.003	0.001	0.0001	-	-
	Vacuum Degass; Fully Killed	Product	0.13	0.99	0.014	0.004	0.24	0.04	0.06	0.01	0.03	0.004	0.002	0.001	0.0001	0.31

Mechanical Properties									
Heat	Test Type	Microstructure	Hardness HRBW	Flattening Test	Tension Test	Yield (Rt0.5) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
BSM-0433	Heat	Ferrite & Pearlite	69	Pass	2 in. GL Longitudinal; 0.5in. Round Bar	36,700	65,600	0.56	37

- 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, A/SA53-2012 and the purchase order requirements, and that the results meet the corresponding requirements.
 - ✓ This pipe product meet the sour service requirements of NACE MR0175/ISO 15156-2:2009 Annex A2 for Region 3 Sour Service, and NACE MR0103-2010 Section 2.1.
 - ✓ No weld repairs have been performed on this product. This product has no mercury contamination.
 - ✓ This certificate represents a quality control system that is compliant with EN 10204:2004 Type 3.1.

Mill Test Certificate approved by:

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