



Mill Test Certificate

Bri-Steel Manufacturing Inc.
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Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0434** Product Size: **NPS 20 SCH 160** Production Date: **August 2, 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-0434 (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 μ R/hr	Res. Mag. Gauss	Visual Insp.	OD	WT	UT	UT	ET	HydroTest	End Condition
BSM-0434	Heat	20	SCH 160	3	DRL	379.00	<5	<20	Pass	Pass	Pass	---	Pass	Pass	Pass	Plain End

Chemical Analysis (wt%)																	
Heat	Steelmaking Method	Analysis	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE (IIW)	CE (CSA)
BSM-0434	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.15	1.00	0.018	0.002	0.32	0.05	0.05	0.01	0.02	0.004	0.003	0.001	0.0001	-	-
		Product	0.15	1.01	0.017	0.003	0.24	0.04	0.06	0.01	0.02	0.004	0.003	0.001	0.0002	0.34	0.32

Mechanical Properties									
Heat	Test Type	Microstructure	Hardness HRBW	Flattening Test	Tension Test 2 in. GL	Yield (Rt0.5) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
BSM-0434	Heat	Ferrite & Pearlite	71	Pass	Longitudinal; 0.5in. Round Bar	38,900	65,700	0.59	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:

Kent Dechant
 2017 May 29
 Kenton Dechant, P. Eng.
 Manager of Quality and R&D