



Mill Test Certificate

Bri-Steel Manufacturing Inc.
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Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0536** Product Size: **NPS 20 STD** Production Date: **October 31, 2012**

Production Method: **Hot Expansion** Product Heat Treatment: **As-rolled**

Product Standards: **ASME B36.10-2004, API SL-44th Ed. Grade B PSL1, ASTM/ASME A/SA106-2011 Grade B/C NDE, A/SA53-2012 Grade B Type S, NACE MR0175-2009, MR0103-2010**

Product Markings: **.BRI-STEEL MFG <API> SL-0898 API SL GR B PSL1 ASTM/ASME A/SA106 GR B/C A/SA53 GR B NPS 20 STD HEAT BSM-0536 (PIPE # LENGTH MASS) 78.6lb/ft NDE 1070PSI SM1S NACE MR0175 2012/10 MADE IN CANADA.**

Product Details				Non-Destructive Testing											
Heat	Test Type	NPS	Wall Thickness	Pieces	Length	Mass	Geiger	Res. Mag.	Visual	OD	UT	UT	ET	HydroTest	End Condition
BSM-0536	Heat	20	STD	50	DRL	78.60	uR/hr	Gauss	Insp.	Pass	Pass	Pass	Pass	Pass	37.5° Bevel

Steelmaking Method		Chemical Analysis (wt%)														
Heat	Analysis	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE	CE
BSM-0536	Heat	0.19	0.86	0.007	0.011	0.22	0.05	0.09	0.01	0.07	-	-	-	0.0003	-	-
Blast Furnace; EAF; Ladle Refining;	Product	0.22	0.87	0.007	0.012	0.22	0.03	0.10	0.01	0.06	0.002	0.001	0.001	0.0003	0.38	0.39
Vacuum Degass; Fully Killed																

Mechanical Properties										
Heat	Test Type	Microstructure	Hardness	Tension Test		Yield (Rt0.5)	Yield (Rp0.2)	Tensile (Rm)	Y/T	Elongation (A)
				HRBW	Flattening Test					
BSM-0536	Heat	Ferrite & Pearlite	77	Pass	Transverse; 38.1mm x WT	44,000	42,100	74,000	0.59	43
					Longitudinal; 38.1mm x WT	43,600	42,800	73,500	0.59	43

- Additional Details:
- ✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing Inc. in accordance with API SL-44th Ed., ASTM/ASME A/SA106-2011, 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, and 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.

Mill Test Certificate approved by:


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