



Mill Test Certificate

Bri-Steel Manufacturing Inc.
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Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0621** Product Size: **NPS 20 STD** Production Date: **December 20, 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 NDE, A/SA53-2012 Grade B Type S, NACE MR0175-2009, MR0103-2010**

Product Markings: **.BRI-STEEL MFG <API> SL-0898 API 5L GR B PSL1 ASTM/ASME A/SA106 GR B A/SA53 GR B NPS 20 STD HEAT BSM-0621 (PIPE # LENGTH MASS) 78.6lb/ft NDE 910 PSI SMLS NACE MR0175 2012/12 MADE IN CANADA.**

Product Details				Non-Destructive Testing											
Heat	Test Type	NPS	Wall Thickness	Pieces	Length	Mass	Geiger	Res. Mag.	Visual	UT	UT	ET	HydroTest	End	
BSM-0621	Heat	20	STD	25	DRL	78.60	µR/hr	Gauss	Insp.	OD	WT	ASTM E213	ASTM E309	910 psi/5s	Condition
							<5	<20	Pass	Pass	Pass	Pass	Pass	Pass	37.5° Bevel

Heat		Chemical Analysis (wt%)														
BSM-0621	Test Type	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE	CE
BSM-0621	Heat	0.19	0.92	0.010	0.009	0.24	0.03	0.08	0.01	-	-	-	-	0.0003	-	-
	Steelmaking Method	Analysis														
	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Product	0.20	0.92	0.012	0.011	0.23	0.03	0.09	0.01	0.04	0.003	0.001	0.001	0.0003	0.37

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-0621	Heat	Ferrite & Pearlite	76	Pass	Transverse; 38.1mm x WT	44,800	43,800	72,000	0.62	43
					Longitudinal; 38.1mm x WT	45,300	45,300	71,500	0.63	44

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:

[Signature]
 2013 Jan 1st
 Kenton Dechant, P.Eng.
 Manager of Quality and R&D