



Mill Test Certificate

Bri-Steel Manufacturing Inc.
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Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0456** Product Size: **NPS 18 STD** Production Date: **August 27, 2012**

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

Product Standard: **ASME B36.10-2004, API SL-44th Ed. Grade B PSL1, ASTM/ASME A/SA106-2011 Grade B, 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 A/SA53 GR B NPS 18 STD HEAT BSM-0456 (PIPE # LENGTH MASS) 70.59lb/ft NDE 890PSI SM15 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	UT WT	UT ASTM E213	ET ASTM E309	HydroTest 890 psi/5s	End Condition
BSM-0456	Heat	18	STD	36	DRL	70.59	<5	<20	Pass	Pass	Pass	Pass	Pass	Pass	37.5° Bevel

		Chemical Analysis (wt%)														
Heat	Steelmaking Method	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE (IIV)	CE (CSA)
BSM-0456	Blast Furnace; EAF; Ladle Refining;	0.20	0.88	0.010	0.011	0.23	0.05	0.08	0.06	-	-	-	-	0.0003	-	-
	Vacuum Degass; Fully Killed	Product	0.21	0.90	0.010	0.009	0.23	0.06	0.09	0.01	0.06	0.002	0.001	0.001	0.0001	0.39

Mechanical Properties											
Heat	Test Type	Microstructure	Hardness HRBW	Flattening Test	Tension Test		Yield (Rt0.5) psi	Yield (Rp0.2) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
					50mm GL	38.1mm x WT					
BSM-0456	Heat	Ferrite & Pearlite	78	Pass	Transverse; 38.1mm x WT	Longitudinal; 38.1mm x WT	45,600	45,400	73,500	0.62	34

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
 2012 Sept 5
 Kenton Dechant, P.Eng.
 Manager of Quality and R&D