



Mill Test Certificate

Bri-Steel Manufacturing Inc.
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Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0446** Product Size: **NPS 18 XS** Production Date: **August 20, 2012**

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

Product Standards: **ASME B36.10-2004, API 5L-44th Ed. Grade B PSL1, ASTM/ASME A/SAS106-2011 Grade B/C, A/SAS3-2012 Grade B Type S, NACE MR0175-2009, MR0103-2010**

Product Markings: **BRI-STEEL MFG <API> 5L-0898 API 5L GR B PSL1 ASTM/ASME A/SAS106 GR B A/SAS3 GR B NPS 18 XS HEAT BSM-0446 (PIPE # LENGTH MASS) 93.45lb/ft NDE 1180PSI SMIS NACE MR0175 2012/08 MADE IN CANADA.**

Product Details				Non-Destructive Testing											
Heat	Test Type	NPS	Wall Thickness	Pieces	Length	Mass lb/ft	Gelger μR/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT E213	ET E309	HydroTest 1180 psi/5s	End Condition
BSM-0446	Heat	18	XS	24	DRL	93.45	<5	<20	Pass	Pass	Pass	Pass	Pass	Pass	37.5° Bevel


Chemical Analysis (wt%)																		
Heat	Steelmaking Method	Analysis	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE (IIW)	CE (CSA)	
			0.19	0.94	0.012	0.008	0.25	0.06	0.08	0.01	0.07	-	-	-	-	0.0005	-	-
			Heat	0.20	0.92	0.012	0.008	0.23	0.06	0.09	0.01	0.06	0.002	0.001	0.001	0.0001	0.38	0.38
BSM-0446	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Product																

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	Transverse; 38.1mm x WT					
					Pass	Longitudinal; 38.1mm x WT					
BSM-0446	Heat	Ferrite & Pearlite	77	Pass		51,000	50,500	74,500	0.68	42	

Additional Details:

- ✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing Inc. in accordance with API 5L-44th Ed., ASTM/ASME A/SAS106-2011, A/SAS3-2012 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:


 2013 Sep 24
 Kenton Dechant, P. Eng.
 Manager of Quality and R&D