



Mill Test Certificate

Bri-Steel Manufacturing Inc.
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Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0585** Product Size: **NPS 20 TRUE80** Production Date: **December 4, 2012**

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

Product Standards: **ASME B36.10-2004, 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 ASTM/ASME A/SA106 GR B/C A/SA53 GR B NPS 20 TRUE80 HEAT BSM-0585 (PIPE # LENGTH MASS) 208.9lb/ft NDE SMIS 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	OD	UT	UT	ET	HydroTest	End Condition	
BSM-0585	Heat	20	TRUE80	3	DRL	208.90	µR/hr	Gauss	Insp.	Pass	Pass	Pass	Pass		*	Plain End

Steelmaking Method		Chemical Analysis (wt%)														
Heat	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE	CE
BSM-0585		0.21	0.85	0.011	0.003	0.31	0.04	0.05	0.01	0.02	0.003	0.002	0.001	0.0002	-	-
		0.22	0.93	0.014	0.008	0.31	0.03	0.06	0.01	0.02	0.003	0.003	0.001	0.0003	0.39	0.40

Mechanical Properties																
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test		Yield (Rt0.5)	Yield (Rp0.2)	Tensile (Rm)	Y/T	Elongation (A)					
					HRBW	Pass						50mm GL	psi	psi	psi	(Rt0.5/Rm)
BSM-0585	Heat	Ferrite & Pearlite	76	Pass	Transverse; 38.1mm x WT	Longitudinal; 38.1mm x WT	47,200	46,700	43,400	46,400	70,000	68,500	0.67	0.68	52	57

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 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.

*Note that this product was hydrotested to 1000 psi for 5 seconds.

Mill Test Certificate approved by:


 2012 Dec 21

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