



Mill Test Certificate

Bri-Steel Manufacturing Inc.
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Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-1152** Product Size: **NPS 16 SCH 140** Production Date: **August 8, 2013**

Production Method: **Hot Expansion** Product Heat Treatment: **As-rolled** Certificate No: **000102**

Product Standards: **ASME B36.10-2004, A/SA333-2011 Grade 6, 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/SA333 GR 6 A/SA106 GR B/C A/SA53 GR B NPS 16 SCH 140 1.438 inchWT HEAT BSM-1152 (PIPE # LENGTH MASS) 223.5lb/ft NDE SMLS NACE MR0175 2013/08 MADE IN CANADA.**

Product Details				Non-Destructive Testing										
Heat	Test Type	Product Size	Pieces	Length	Mass	Geiger	Res. Mag.	Visual	OD	UT	UT	ET	HydroTest	End Condition
BSM-1152	Heat	NPS 16 SCH 140 1.438 in.WT	1	DRL	lb/ft	µR/hr	Gauss	Insp.	Pass	Pass	ASTM E213	ASTM E309		*
					223.50	<5	<20	Pass	Pass	Pass	Pass	Pass		Plain End

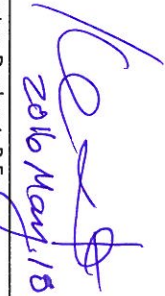
Chemical Analysis (wt%)																	
Heat	Steelmaking Method	Analysis	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE (IIW)	CE (CSA)
BSM-1152	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.21	0.91	0.014	0.003	0.30	0.07	0.08	0.02	0.03	0.004	0.002	0.001	0.0004	-	-
		Product	0.20	0.93	0.014	0.002	0.31	0.07	0.08	0.02	0.03	0.004	0.002	0.001	0.0001	0.38	0.39

Mechanical Properties										
Heat	Test Type	Microstructure	Hardness HRBW	Flattening Test	Tension Test		Yield (Rt0.5) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
					50mm GL	Longitudinal; 19.1mm x WT				
BSM-1152	Heat	Ferrite & Pearlite	78	Pass			41,700	75,000	0.56	49

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy			% Shear			Lateral Expansion					
				J	J	AVG	%	%	AVG	mm	mm	mm	AVG		
BSM-1152	A/SA333	CVN Longitudinal (X-Y) 10X10	-45°C	31	50	30	37	5	10	5	7	0.60	0.86	0.64	0.70

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/SA333-2011, 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:  **2016 May 15**
 Kenton Dechant, P.Eng.
 Manager of Quality and R&D

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