



Mill Test Certificate

Bri-Steel Manufacturing Inc.
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-1320 Product Size: 16 SCH 100 Production Date: Oct 15, 2013
 Production Method: Hot Expansion Product Heat Treatment: As-rolled Certificate No.: MTR- 000532
 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: NPS 16 SCH 100 1.031 INCHWT SMLS 2013/10 NDE
 HEAT BSM-1320 (PIPE # LENGTH MASS) 164.8lb/ft ASTM/ASME A/SA106 GR B/C A/SA53 GR B NACE MR0175/MR0103 MADE IN CANADA

Product: Details				Non-Destructive Testing											
Heat	Test Type	Product Size	Pieces	Length	Mass lb/ft	Geiger μ R/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT ASTM E213	ET ASTM	HydroTest	End Condition	
BSM-1320	Heat	NPS 16 SCH 100 1.031in. WT	3	DRL	164.8	OK	OK	Pass	Pass	Pass	Pass	Pass		*	Plain End

Chemical Analysis (wt%)																	
Heat	Steelmaking Method	Test Type	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE(IIW)	CE(CSA)
BSM-1320	Blast Furnace; EAF; Ladle Refining; Vacuum Degass, Fully Killed	Heat	0.20	0.92	0.016	0.001	0.33	0.06	0.07	0.01	0.02	0.005	0.002	0.001	0.0003	-	-
		Product	0.20	0.92	0.016	0.003	0.30	0.05	0.07	0.01	0.03	0.004	0.001	0.001	0.0001	0.37	0.37

Mechanical Properties									
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test 50mm GL	Yield (Rt0.5) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
BSM-1320	Heat	Ferrite & Pearlite	76 HRBW	Pass	Longitudinal; 19.05 mm x WT	48,000	72,000	0.67	48

Heat	Test Standard	Impact Test Sample Details	Temp $^{\circ}$ C	Impact Energy						Lateral Expansion				
				J	J	J	AVG	%	%	AVG	mm	mm	AVG	
BSM-1320	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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 Grade B/C 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-2009 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:

 2013 OCT 23
 Paul Sowden, T.T.
 Assistant QA Manager