



# Mill Test Certificate

Bri-Steel Manufacturing  
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Product: Seamless Carbon Steel Pipe      Product Heat Number: BSM-2855      Product Size: NPS 20 TRUE 40      Production Date: Aug 08, 2016  
 Production Method: Hot Expansion      Product Heat Treatment: Normalizing Forming      Certificate No.: MTR- 002924  
 Product Standards: ASME B36.10M-2015, ASTM/ASME A333-2015 Grade 6 LT(M45C) A106-2014/SA106-2015 Grade B NDE, AS3-2012/SA53-2015 Grade B Type S, NACE MR0175/ISO 15156-2:2009 MR0103/ISO 17495:2015



Product Markings: NPS 20 TRUE 40 0.594 INCH WT SMLS 2016/08 NDE 1250PSI  
 HEAT BSM-2855 (PIPE # LENGTH MASS) 122.9lb/ft ASTM/ASME A/SA333 GR 6 LT(M45C) A/SA106 GR B 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 µR/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT ASTM E213	ET ASTM E309	HydroTest 1250PSI/ 5s	End Condition
BSM-2855	Heat	NPS 20 TRUE 40 0.594in. WT	7	DRL	122.9	<5	<40	Pass	Pass	Pass	N12.5 Pass	-	Pass	Plain End

Heat	BSM-2855	Steelmaking Method	Test Type	Chemical Analysis (wt%)																
				C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE(IIW)	CE(IIW)Max	CE(CSA)	
		Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.14	1.00	0.006	0.024	0.31	0.06	0.06	0.06	0.03	0.02	0.026	0.002	0.001	0.0004	0.34	-	0.32
			Product	0.13	0.97	0.009	0.003	0.30	0.06	0.05	0.03	0.02	0.003	0.002	0.001	0.0004	0.31	-	-	0.29

Mechanical Properties									
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test 2 in. GL	Yield (Rt0.5) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
BSM-2855	Heat	Ferrite & Pearlite	77 HRBW	Pass	Longitudinal; 1.5 in. x WT	47 000	68 500	0.69	52
				Pass	Longitudinal; 1.5 in. x WT	45 100	67 500	0.67	52

Heat	Test Standard	Result	Impact Test Sample Details	Temp °C	Impact Energy Min. (J)	Impact Energy Results (J)	Shear (%)	Lateral Expansion (mm)
BSM-2855	ASTM A333	Pass	CVN Long 10 x 10 mm	-45	(14/14/14) 18	(3 Tests) AVG (138/280/144) 187	(70/100/70) 80	(3 Tests) AVG (1.99/UNB/2.13) 2.06

**Additional Details:**

- ✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing in accordance with ASTM/ASME A333-2015/SA333-2015, A106-2014/SA106-2015, AS3-2012/SA53-2015, and the purchase order requirements, and that the results meet the corresponding requirements. Bri-Steel Manufacturing is registered and certified to ISO-9001:2008 (APIQR-1584), API Q1, and PED 97/23/EC.
- ✓ 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/ISO 17495:2015 Section 13.1
- ✓ 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:  
*T. Lam* August 11/10/2016

Tonya Lam, P. Tech (Eng.)  
 Assistant QA Manager