



# Mill Test Certificate

Bri-Steel Manufacturing  
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Product: Seamless Carbon Steel Pipe      Product Heat Number: BSM-2851      Product Size: NPS 20 TRUE 40      Production Date: Jul 27, 2016  
 Production Method: Hot Expansion      Product Heat Treatment: Normalizing Forming      Certificate No.: MTR- 002920  
 Product Standards: ASME B36.10M-2015, ASTM/ASME A333-2015 Grade 6 LT(M45C) A106-2014/SA106-2015 Grade B NDE, A53-2012/SA53-2015 Grade B Type S, NACE MR0175/ISO 15156-2:2009 MR0103/ISO 17495:2015  
 Product Markings: NPS 20 TRUE 40 0.594 INCHWT SMLS 2016/07 NDE 1200PSI  
 HEAT BSM-2851 (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 1200PSI/ 5 s	End Condition
BSM-2851	Heat	NPS 20 TRUE 40 0.594in. WT	3	DRL	122.9	<5	<40	Pass	Pass	Pass	N12.5 Pass	-	Pass	33° Bevel

Heat	Test Type	Steelmaking Method	Test Type	Chemical Analysis (wt%)															
				C	Min	P	S	SI	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE(IIW)	CE(IIW)Max	CE(CSA)
BSM-2851		Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed	Heat	0.14	1.00	0.006	0.024	0.31	0.06	0.06	0.03	0.02	0.026	0.002	0.001	0.0004	0.34	-	0.32
			Product	0.14	0.98	0.007	0.003	0.31	0.06	0.05	0.04	0.02	0.003	0.001	0.001	0.0004	0.33	-	0.31

Heat	Test Type	Microstructure	Hardness	Flattening Test				Yield (Rt0.5) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
				Tension Test 2 in. GL	Pass	Pass	Pass				
BSM-2851	Heat	Ferrite & Pearlite	75 HRBW	Pass	Pass	Pass	Pass	45 600	68 500	0.67	46
				Pass	Pass	Pass	Pass	46 400	68 500	0.68	47

Heat	Test Standard	Result	Impact Test Sample Details	Temp °C	Impact Energy Min. (J)		Impact Energy Results (J)		Shear (%)	Lateral Expansion (mm)
					(3 Tests) AVG	(14/14/14) 18	(3 Tests) AVG	(98/34/22) 51		
BSM-2851	ASTM A333	Pass	CVN Long 10 x 10 mm	-45	(3 Tests) AVG	(14/14/14) 18	(3 Tests) AVG	(50/10/10) 23	(3 Tests) AVG	(1.76/0.55/0.32) 0.88

**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, A106-2014/SA106-2015, A53-2012/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:

*[Signature]*  
 2016 July 29

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