



# Mill Test Certificate

Bri-Steel Manufacturing  
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-3070 Product Size: NPS 18 TRUE 80 Production Date: Feb 27, 2017  
 Production Method: Hot Expansion Product Heat Treatment: Normalizing Forming Certificate No.: MTR- 003194

Product Standards: ASME B36.10M-2015, ASTM/ASME A333-2016/SA333-2015 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 18 TRUE 80 0.938 INCHWT SMLS 2017/02 NDE 2200PSI  
 HEAT BSM-3070 (PIPE # LENGTH MASS) 171.08lb/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) ASTM E114	UT ASTM E213	ET ASTM E309	HydroTest 2200PSI/ 5 s	End Condition
BSM-3070	Heat	NPS 18 TRUE 80 0.938in. WT	1	DRL	171.08	<5	<10	Pass	Pass	N12.5 Pass	-	-	Pass	35° Bevel

### Chemical Analysis (wt%)

Heat	Steelmaking Method	Test Type	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE (IIW)	CE (IIW)Max	CE (CSA)
BSM-3070	Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed	Heat	0.18	1.18	0.011	0.001	0.26	0.03	0.01	0.01	0.01	0.045	-	-	-	-	0.39	0.40
		Product	0.15	1.17	0.012	0.002	0.29	0.03	0.01	0.00	0.00	0.050	0.002	0.0004	0.0004	0.36	-	0.35

### 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-3070	Heat	Ferrite & Pearlite	77 HRBW	Pass	Longitudinal; 0.5 in. Round Bar	46 400	71 000	0.65	36

Heat	Test Standard	Result	Impact Test Sample Details	Temp °C	Impact Energy Min. (J) (3 Tests) AVG	Impact Energy Results (J) (3 Tests) AVG	Shear (%) (3 Tests) AVG	Lateral Expansion (mm) (3 Tests) AVG
BSM-3070	ASTM A333	Pass	CVN Long 10 x 10 mm	-45	(14/14/14) 18	(124/128/158) 137	(70/70/80) 73	(1.93/2.00/2.31) 2.08

### Additional Details:

✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing in accordance with ASTM/ASME A333-2016/SA333-2015, 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 2014/68/EU.

✓ 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:

Til Lam Mares/07/2017

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