



# Mill Test Certificate

Bri-Steel Manufacturing  
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Product: Seamless Carbon Steel Pipe    Product Heat Number: BSM-2732    Product Size: NPS 24 STD    Production Date: Apr 21, 2016  
 Production Method: Hot Expansion    Product Heat Treatment: As Rolled    Certificate No.: MTR- 002790

Product Standards: ASME B36.10M-2015, ASTM/ASME A333-2015/SA333-2013 Grade 6 LT(M45C) A106-2014/SA106-2013 Grade B NDE, A53-2012/SA53-2013 Grade B Type S, NACE MR0175-2009 MR0103-2012

Product Markings: NPS 24 STD 0.375 INCHWT SMLS 2016/04 NDE 660PSI  
 HEAT BSM-2732 (PIPE # LENGTH MASS) 94.62lb/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 $\mu$ R/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT Pass	ET	ASTM E213	ASTM E309	HydroTest	End Condition
BSM-2732	Heat	NPS 24 STD 0.375in. WT	8	DRL	94.62	<5	<20	Pass	Pass	N12.5	Pass	-	-	660 PSI/ 5 s	Pass	31° Bevel

Chemical Analysis (wt%)

Heat	Steelmaking Method	Test Type	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	CE(IIW)	CE(IIW)Max	CE(CSA)
BSM-2732	Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed	Heat	0.15	1.18	0.011	0.002	0.25	0.01	0.01	0.01	0.02	0.050	0.001	0.001	0.0001	0.36	0.35
		Product	0.15	1.12	0.011	0.001	0.26	0.05	0.01	0.01	0.02	0.056	0.002	0.001	0.0003	0.36	0.35

Mechanical Properties

Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test		Yield (Rt0.5) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
					2 in. GL	psi				
BSM-2732	Heat	Ferrite & Pearlite	80 HRBW	Pass	Longitudinal; 1.5 in. x WT	47 100	75 500	0.62	44	
				Pass	Longitudinal; 1.5 in. x WT	51 500	76 000	0.68	45	

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy Min. (J) (3 Tests) AVG	Impact Energy (J) (3 Tests) AVG	Shear (%) (3 Tests) AVG	Lateral Expansion (mm) (3 Tests) AVG
BSM-2732	ASTM A333		-48	(11/11/11) 14	(58/49/63) 57	(20/20/30) 23	(1.33/1.02/1.41) 1.25

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/SA333-2013, A106-2014/SA106-2013, A53-2012/SA53-2013, 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 MR0103-2012 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:

*T. Lam* APR 26 2016

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