



Mill Test Certificate

Bri-Steel Manufacturing
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-2740 Product Size: NPS 24 STD Production Date: Apr 27, 2016
 Production Method: Hot Expansion Product Heat Treatment: As Rolled Certificate No.: MTR- 002800
 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
 Product Markings: MRO103-2012
 NPS 24 STD 0.375 INCHWT SMLS 2016/04 NDE 660PSI
 HEAT BSM-2740 (PIPE # LENGTH MASS) 94.62lb/ft ASTM/ASME A/SA333 GR 6 LT(M45C) A/SA106 GR B A/SA53 GR B NACE MR0175/MRO103 MADE IN CANADA



Product: Details				Non-Destructive Testing										
Heat	Test Type	Product Size	Pieces	Length	Mass	Geiger	Res. Mag.	Visual	OD	UT	UT	ET	HydroTest	End
BSM-2740	Heat	NPS 24 STD 0.375in. WT	5	DRL	94.62	<5	<20	Pass	Pass	Pass	ASTM E213	ASTM E309	660 PSI/ 5 s	Plain End

Heat	BSM-2740	Steelmaking Method	Test Type	Chemical Analysis (wt%)																
				C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE(IW)	CE(IW)Max	CE(CSA)	
			Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed	0.16	1.18	0.010	0.002	0.26	0.01	0.01	0.01	0.01	0.02	0.050	0.001	0.001	0.0001	0.37	-	0.37
			Product	0.16	1.15	0.009	0.003	0.28	0.04	0.01	0.01	0.01	0.02	0.060	0.002	0.001	0.0003	0.38	-	0.37

Mechanical Properties									
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test	Yield (Rt0.5)	Tensile (Rm)	Y/T	Elongation (A)
BSM-2740	Heat	Ferrite & Pearlite	81 HRBW	Pass	Longitudinal; 1.5 in. x WT Longitudinal; 1.5 in. x WT	49 300 57 500	76 500 77 500	0.64 0.74	44 44

Heat	BSM-2740	Test Standard	ASTM A333	Impact Test		Temp °C	-48	Impact Energy (J)		Shear (%)	Lateral Expansion (mm)
				Sample Details	CVN Long 10 x 7.5 mm			(3 Tests) AVG	(3 Tests) AVG		
								(11/11/11) 14	(71/67/62) 67	(25/20/20) 22	(1.45/1.27/1.21) 1.31

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 May 18/2016

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