



Mill Test Certificate

Bri-Steel Manufacturing
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-2718 Production Date: Apr 11, 2016
 Production Method: Hot Expansion Product Heat Treatment: As Rolled Certificate No.: MTR- 002168
 Product Standards: ASME B36.10M-2015, ASTM/ASME A333-2015/SA333-2013 Grade 6 LT(M45C) A106-2014/SA106-2013 Grade B NDE, AS3-2012/SA53-2013 Grade B Type S, NACE MR0175-2009
 Product Markings: MRO103-2012
 NPS 24 TRUE 40 0.688 INCHWT SMLS 2016/04 NDE 1200PSI
 HEAT BSM-2718 (PIPE # LENGTH MASS) 171.2lb/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 lb/ft	Geliger µR/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT ASTM E213	ET ASTM E309	HydroTest 1200PSI/ 5 s	End Condition
BSM-2718	Heat	NPS 24 TRUE 40 0.688in. WT	2	DRL	171.2	<5	<20	Pass	Pass	Pass	N12.5 Pass	-	Pass	30° Bevel

Heat	BSM-2718	Steelmaking Method	Test Type	Chemical Analysis (wt%)															
				C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE(IW)	CE(IIW)Max	CE(CSA)
		Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.17	1.19	0.020	0.003	0.27	0.02	0.01	0.01	0.01	0.01	0.01	0.043	0.001	0.002	0.0005	0.38
			Product	0.17	1.22	0.017	0.004	0.29	0.02	0.01	0.01	0.01	0.01	0.048	0.002	0.001	0.0003	0.39	0.39

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-2718	Heat	Ferrite & Pearlite	77 HRBW	Pass	Longitudinal; 1.5 in. x WT Longitudinal; 1.5 in. x WT	46 800	72 000	0.65	42
				Pass		47 400	72 500	0.65	39

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy Min. (J)	Impact Energy (J) (3 Tests) AVG	Shear (%) (3 Tests) AVG	Lateral Expansion (mm) (3 Tests) AVG
BSM-2718	ASTM A333	CVN Long 10 x 10 mm	-45	(14/14/14) 18	(101/111/120) 111	(20/30/40) 30	(0.98/1.70/1.72) 1.47

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, AS3-2012/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:

Tony Lam
 April 14 / 2016

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