



Mill Test Certificate

Bri-Steel Manufacturing
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-3082 Production Date: Mar 13, 2017
 Production Method: Hot Expansion Product Heat Treatment: Normalizing Forming Certificate No.: MTR- 003244
 Product Standards: ASME B36.10M-2015, ASTM/ASME A333-2015 Grade 6 LT(M45C) A106-2014/SA106-2015 Grade B/C NDE, A53-2012/SA53-2015 Grade B Type S, NACE MR0175/ISO 15156-2-2:2009 MR0103/ISO 17495:2015
 Product Markings: NPS 24 SCH 60 0.969 INCHWT SMLS 2017/03 NDE 1900PSI
 HEAT BSM-3082 (PIPE # LENGTH MASS) 238.55lb/ft ASTM/ASME A/SA333 GR 6 LT(M45C) A/SA106 GR B/C 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	Gelger	Res. Mag.	Visual Insp.	OD	UT (WT)	UT	ET	HydroTest	End Condition
BSM-3082	Heat	NPS 24 SCH 60 0.969in. WT	5	DRL	238.55	<5	<10	Pass	Pass	Pass	N12.5 Pass	-	Pass	Plain End

Heat	Steelmaking Method	Test Type	Chemical Analysis (wt%)																
			C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE(IIW)	CE(IIW)Max	CE(CSA)	
BSM-3082	Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed	Heat	0.18	1.24	0.017	0.004	0.26	0.03	0.01	0.01	0.01	0.01	0.050	0.002	0.001	0.0001	0.41	-	0.41
			Product	0.15	1.18	0.013	0.004	0.26	0.05	0.01	0.01	0.01	0.056	0.001	0.001	0.0002	0.37	-	0.36

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) %
BSM-3082	Heat	Ferrite & Pearlite	79 HRBW	Pass	Longitudinal; 0.5 in. Round Bar Longitudinal; 0.5 in. Round Bar	54 000	78 500	0.69	37
				Pass		53 500	79 000	0.68	36

Heat	Test	Result	Impact Test Sample Details	Temp °C	Impact Energy Min. (J)	Impact Energy Results (J)	Shear (%)	Lateral Expansion (mm)
BSM-3082	Standard	Pass	CVN Long 10 x 10 mm	-45	(3 Tests) AVG (14/14/14) 18	(3 Tests) AVG (70/64/75) 70	(3 Tests) AVG (10/10/10) 10	(3 Tests) AVG (1.09/0.91/1.17) 1.06
	ASTM A333	Pass						

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 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:

T Lam MTR/20/2017

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