



Mill Test Certificate

Bri-Steel Manufacturing
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-2566 Product Size: NPS 24 STD Production Date: Oct 28, 2015
 Production Method: Hot Expansion Product Heat Treatment: As Rolled Certificate No.: MTR- 002145
 Product Standards: ASME B36.10M-2015, ASTM/ASME A333-2015/SA333-2013 Grade 6 LT(M45C) A106-2014/SA106-2013 Grade B/C NDE, A53-2012/SA53-2013 Grade B Type S, NACE MR0175-2009
 Product Markings: MR0103-2012
 NPS 24 STD 0.375 INCHWT SMLS 2015/10 NDE 1180PSI
 HEAT BSM-2566 (PIPE # LENGTH MASS) 94.62lb/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	Geiger μ R/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT ASTM E213	ET ASTM E309	HydroTest 1180PSI/ 5 s	End Condition
BSM-2566	Heat	NPS 24 STD 0.375in. WT	6	DRL	94.62	<5	<20	Pass	Pass	Pass	N12.5 Pass	-	Pass	30° Bevel

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)		
			Heat	0.16	1.14	0.006	0.002	0.26	0.02	0.01	0.01	0.01	0.01	0.02	0.058	0.002	0.001	0.0001	0.0001	0.37
BSM-2566	Blast Furnace: EAF; Ladle Refining: Vacuum Degass; Fully Killed	Product	0.16	1.15	0.009	0.002	0.28	0.05	0.01	0.01	0.01	0.02	0.058	0.002	0.001	0.0003	0.0003	0.38	-	0.37
			0.17	1.24	0.010	0.002	0.28	0.05	0.01	0.01	0.02	0.058	0.002	0.001	0.0003	0.0003	0.40	-	0.40	

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-2566	Heat	Ferrite & Pearlite	84 HRBW	Pass	Longitudinal: 1.5 in. x WT Longitudinal: 1.5 in. x WT	51 000	75 500	0.68	44
				Pass		58 000	81 000	0.72	44

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-2566	ASTM A333	CVN Long 10 x 7.5 mm	-48	(11/11/11) 14	(85/82/92) 86	(40/40/50) 43	(1.82/1.80/1.96) 1.86

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:

[Signature]
 2016 Apr 5.

Kenton Dechant, P.Eng.
 Manager of Quality and R&D