



Mill Test Certificate

Bri-Steel Manufacturing
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-2678 Product Size: NPS 24 STD Production Date: Mar 09, 2016
 Production Method: Hot Expansion Product Heat Treatment: As Rolled Certificate No.: MTR- 002147
 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 2016/03 NDE 660PSI
 HEAT BSM-2678 (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 μR/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT ASTM E213	ET ASTM E309	HydroTest 660 PSI/ 5 s	End Condition
BSM-2678	Heat	NPS 24 STD 0.375in. WT	1	DRL	94.62	<5	<20	Pass	Pass	Pass	N12.5 Pass	-	Pass	32° 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)		
BSM-2678	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.16	1.14	0.005	0.002	0.25	0.01	0.01	0.01	0.01	0.01	0.02	0.050	0.001	0.001	0.0001	0.37	-	0.36
			Product	0.16	1.10	0.008	0.002	0.27	0.04	0.01	0.01	0.02	0.053	0.001	0.001	0.0003	0.37	-	-	0.36

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-2678	Heat	Ferrite & Pearlite	85 HRBW	Pass	Longitudinal; 1.5 in. x WT	53 500	78 500	0.68	42

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy Min. (J)		Shear (%)	Lateral Expansion (mm)
				(3 Tests) AVG	(11/11,11) 14		
BSM-2678	ASTM A333	CVN Long 10 x 7.5 mm	-48	(3 Tests) AVG	(47/29/70) 48	(3 Tests) AVG	(3 Tests) AVG
				(15/10/20) 15		(0.90/0.45/1.41) 0.92	

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