



Mill Test Certificate

Bri-Steel Manufacturing
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Product: Seamless Carbon Steel Pipe
 Production Method: Hot Expansion
 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 Heat Number: BSM-2731
 Product Size: NPS 24 STD
 Production Date: Apr 20, 2016
 Certificate No.: MTR- 002186

Product Markings: NPS 24 STD 0.375 INCHWT SMLS 2016/04 NDE 660PSI
 HEAT BSM-2731 (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 Pass	ET ASTM E309	HydroTest 660 PSI/ 5 s	End Condition
BSM-2731	Heat	NPS 24 STD 0.375in. WT	6	DRL	94.62	<5	<20	Pass	Pass	N12.5 Pass	Pass	-	Pass	31° Bevel

Chemical Analysis (wt%)																	
Heat	Steelmaking Method	Test Type	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	CE(IIW)	CE(IIW)Max	CE(CSA)
BSM-2731	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.15	1.18	0.011	0.002	0.25	0.01	0.01	0.01	0.02	0.050	0.001	0.001	0.0001	0.36	0.35
		Product	0.15	1.12	0.011	0.003	0.26	0.05	0.01	0.01	0.02	0.057	0.002	0.001	0.0003	0.36	0.35
			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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-2731	Heat	Ferrite & Pearlite	80 HRBW	Pass	Longitudinal; 1.5 in. x WT	54 500	76 000	0.72	43
				Pass	Longitudinal; 1.5 in. x WT	54 500	76 000	0.72	46

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy Min. (J) (3 Tests) AVG	Impact Energy (J) (156/150/142) 149	Shear (%) (3 Tests) AVG	Lateral Expansion (mm) (3 Tests) AVG
BSM-2731	ASTM A333	CVN Long 10 x 7.5 mm	-48	(11/11/11) 14	(156/150/142) 149	(100/90/90) 93	(2.02/1.69/1.74) 1.82

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 APR/26/2016
 Tonya Lam, P. Tech (Eng.)
 Assistant QA Manager