



Mill Test Certificate

Bri-Steel Manufacturing
 2125-64 Avenue, Edmonton, AB Canada T6P 1Z4
 Tel: 001 (780) 469-6603
 Fax: 001 (780) 469-6986
 www.bri-steel.com

Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-2810 Product Size: NPS 24 STD Production Date: Jun 22, 2016
 Production Method: Hot Expansion Product Heat Treatment: Normalizing Forming Certificate No.: MTR- 002874

Product Standards: ASME B36.10M-2015, ASTM/ASME A333-2016/SA333-2015 Grade 6 LT(M45C) A106-2014/SA106-2015 Grade B/C NDE, A53-2012/SA53-2015 Grade B Type S, NACE MR0175/ISO 15156-2:2009 MR0103/ISO 17495:2015

Product Markings
 NPS 24 STD 0.375 INCHWT SMLS 2016/06 NDE 750PSI
 HEAT BSM-2810 (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 µR/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT ASTM E213	ET ASTM E309	HydroTest 750PSI/ 5 s	End Condition
BSM-2810	Heat	NPS 24 STD 0.375in. WT	8	DRL	94.62	<5	<50	Pass	Pass	N12.5 Pass	-	-	Pass	30° Bevel

Chemical Analysis (wt%)

Heat	Steelmaking Method	Test Type	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE (IIW)	CE (IIW)Max	CE (CSA)
BSM-2810	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.21	0.92	0.006	0.007	0.26	0.03	0.01	0.01	0.01	0.001	0.019	0.001	0.0002	0.37	-	0.38
		Product	0.22	0.92	0.010	0.004	0.26	0.03	0.01	0.01	0.01	0.001	0.003	0.001	0.001	0.0002	0.38	-
			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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) %
					2 in. GL	1.5 in. x WT				
BSM-2810	Heat	Ferrite & Pearlite	78 HRBW	Pass	Pass	Longitudinal; 1.5 in. x WT	49 000	75 500	0.65	42
				Pass	Pass	Longitudinal; 1.5 in. x WT	49 000	75 500	0.65	42

Heat	Test Standard	Result	Impact Test Sample Details	Temp °C	Impact Energy Results (J)		Shear (%)	Lateral Expansion (mm)
					(3 Tests) AVG	(10/10/10) 10		
BSM-2810	ASTM A333	Pass	CVN Long-10 x 7.5 mm	-48	(11/11/11) 14	(36/45/40) 40	(10/10/10) 10	(0.83/0.94/0.77) 0.85

Additional Details:

- ✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing in accordance with ASTM/ASME A333-2016/SA333-2015, 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 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/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 June 23/2016

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