



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-2950 Product Size: NPS 24 STD Production Date: Nov 14, 2016
 Production Method: Hot Expansion Product Heat Treatment: Normalizing Forming Certificate No.: MTR- 003044
 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 2016/11 NDE 750PSI
 HEAT BSM-2950 (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	ET	HydroTest	End Condition	
BSM-2950	Heat	NPS 24 STD 0.375in. WT	6	DRL	94.62	<5	<10	Pass	Pass	ASTM E114	ASTM E213	ASTM E309	750PSI/ 5s	30° Bevel	

Heat	Steelmaking Method	Test Type	Chemical Analysis (wt%)															
			C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE(IW)	CE(IW)Max	CE(CSA)
			0.17	1.14	0.011	0.003	0.32	0.03	0.03	0.01	0.01	0.058	0.002	0.003	0.0005	0.38	-	0.38
BSM-2950	Blast Furnace: EAF; Ladle Refining: Vacuum Degass: Fully Killed	Heat	0.16	1.13	0.011	0.003	0.35	0.03	0.02	0.01	0.01	0.062	0.001	0.002	0.0003	0.37	-	0.37
		Product	0.18	1.17	0.009	0.003	0.35	0.03	0.02	0.01	0.01	0.065	0.002	0.002	0.0004	0.40	-	0.41

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-2950	Heat	Ferrite & Pearlite	81 HRBW	Pass	Longitudinal; 1.5 in. x WT	50 000	78 500	0.64	41
				Pass	Longitudinal; 1.5 in. x WT	51 500	79 000	0.65	42

Heat	Test Standard	Result	Impact Test Sample Details	Temp °C	Impact Energy Min. (J)	Impact Energy Results (J)	Shear (%)	Lateral Expansion (mm)
BSM-2950	ASTM A333	Pass	CVN Long 10 x 7.5 mm	-48	(11/11/11) 14	(3 Tests) AVG (53/53/44) 50	(3 Tests) AVG (15/15/10) 13	(3 Tests) AVG (1.18/1.20/0.90) 1.09

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 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:
Tillem Nov 21/2016

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