



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-2545 Product Size: NPS 24 SCH 60 Production Date: Sep 30, 2015
 Production Method: Hot Expansion Product Heat Treatment: ThermoMechanical Formed Certificate No.: MTR- 001964
 Product Standards: ASME B36.10-2004, ASTM/ASME A/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 MR0103-2012
 Product Markings: NPS 24 SCH 60 0.9691 INCH WT SMLS 2015/09 NDE 1900PSI
 HEAT BSM-2545 (PIPE # LENGTH MASS) 238.1lb/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 1900PSI/ 5 s	End Condition	
BSM-2545	Heat	NPS 24 SCH 60 0.9691in. WT	6	DRL	238.1	<5	<10	Pass	Pass	Pass	Pass	Pass	Pass	Plain End	

Heat	BSM-2545	Steelmaking Method Blast Furnace; FA; Ladle Refining; Vacuum Degass; Fully Killed	Chemical Analysis (wt%)																	
			Test Type		C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE(IIW)	CE(CSA)	
			Heat	Product	0.17	1.19	0.014	0.001	0.28	0.04	0.02	0.02	0.01	0.01	0.050	0.002	0.002	0.002	0.0005	0.39

Mechanical Properties									
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test 2 in. GL	Yield (Rt0.5) psi	Tensile (Rm) psi	V/T (Rt0.5/Rm)	Elongation (A) %
BSM-2545	Heat	Ferrite & Pearlite	77 HRBW	Pass	Longitudinal; 0.5 in. Round Bar	48,800	73,500	0.66	40
				Pass	Longitudinal; 0.5 in. Round Bar	48,900	73,000	0.67	40

Heat	BSM-2545	Test Standard	ASTM A333	Impact Test Sample Details	Temp °C	Impact Energy				% Shear				Lateral Expansion			
						J	J	J	AVG	%	%	%	AVG	mm	mm	mm	AVG
				CVN Long 10 x 10 mm	-45	76.0	80.0	64.0	73.3	30	30	20	27	1.18	1.44	0.88	1.17

Additional Details:
 We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing in accordance with ASTM/ASME A/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 and API Q1.

- ✓ 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:

Tony Lam *T. Lam*
 Tony Lam, C.E.T.
 Assistant QA Manager