




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-2534 Product Size: NPS 24 TRUE 80 Production Date: Sep 22, 2015
 Production Method: Hot Expansion Product Heat Treatment: ThermoMechanical Formed Certificate No.: MTR- 001954
 Product Standards: ASME B36.10-2004, API 5L-45th Ed. GradeB PSL1, ASTM/ASME A/SA333-2013 Grade 6 LT(M45C) A106-2014/SA106-2013 Grade B/C NDE, A53-2012/SA53-2013 Grade B Type 5, NACE MR0175-2009 MR0103-2012
 Product Markings:  <API & L/C No.> API SPEC 5L NPS 24 TRUE 80 1.219 INCHWT GRB PSL1 SMLS 2015/09 NDE 2160PSI
 HEAT BSM-2534 (PIPE # LENGTH MASS) 296.4lb/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 WT	ET	HydroTest	End Condition	
BSM-2534	Heat	NPS 24 TRUE 80 1.219in. WT	3	DRL	296.4	<5	<20	Pass	Pass	Pass	Pass	Pass	Pass	Plain End	

Heat	Steelmaking Method	Test Type	Chemical Analysis (wt%)														
			C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE(IIW)	CE(CSA)
			Heat	Heat	Heat	Product	0.17	1.17	0.012	0.003	0.26	0.02	0.01	0.01	0.02	0.050	0.001
BSM-2534	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.17	1.17	0.012	0.003	0.26	0.02	0.01	0.01	0.01	0.02	0.050	0.001	0.001	0.38	0.38
		Product	0.16	1.12	0.014	0.005	0.28	0.04	0.01	0.01	0.03	0.069	0.002	0.001	0.0003	0.37	0.37
			0.17	1.13	0.014	0.005	0.29	0.04	0.01	0.01	0.03	0.070	0.003	0.001	0.0002	0.39	0.38

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	0.5 in. Round Bar				
BSM-2534	Heat	Ferrite & Pearlite	78 HRBW	Pass	Longitudinal; 0.5 in. Round Bar	Longitudinal; 0.5 in. Round Bar	51,500	74,500	0.69	39
				Pass	Longitudinal; 0.5 in. Round Bar	Longitudinal; 0.5 in. Round Bar	51,500	74,500	0.69	37

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy			% Shear			Lateral Expansion					
				J	J	J	%	%	%	mm	mm	mm	mm	AVG	
BSM-2534	ASTM A333	CVN Long 10 x 10 mm	-45	72.0	36.0	48.0	52.0	20	15	20	18	0.95	0.75	0.62	0.77

Additional Details:

✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing in accordance with API 5L-45th Ed., 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:

T. Lam Sept 28/2015

Tonya Lam, C.E.T.
 Assistant QA Manager