



Mill Test Certificate

Bri-Steel Manufacturing
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-2511 Product Size: NPS 18 STD Production Date: Sep 01, 2015
 Production Method: Hot Expansion Product Heat Treatment: ThermoMechanical Formed Certificate No.: MTR- 001927
 Product Standards: ASME B36.10-2004, API 5L-45th Ed. GradeB/X42 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 S, NACE MR0175-2009 MR0103-2012
 Product Markings: <API & L/C No.> API SPEC 5L NPS 18 STD 0.375 INCHWT GRB/X42 PSL1 SMLS 2015/09 NDE 1490PSI
 HEAT BSM-2511 (PIPE # LENGTH MASS) 70.59lb/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-2511	Heat	NPS 18 STD 0.375in. WT	6	DRL	70.59	<5	<20	Pass	Pass	Pass	Pass	Pass	Pass	31° Bevel

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	0.16	1.16	0.010	0.002	0.27	0.01	0.01	0.01	0.01	0.02	0.050	0.001	0.001	0.0001	0.37
BSM-2511	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.18	1.15	0.009	0.003	0.30	0.03	0.01	0.01	0.01	0.02 <td>0.055</td> <td>0.002</td> <td>0.001</td> <td>0.0002</td> <td>0.39</td> <td>0.40</td>	0.055	0.002	0.001	0.0002	0.39	0.40
		Product	0.17	1.16	0.010	0.002	0.29	0.03	0.01	0.01	0.02 <td>0.054</td> <td>0.002</td> <td>0.001</td> <td>0.0003</td> <td>0.38</td> <td>0.38</td> <td></td>	0.054	0.002	0.001	0.0003	0.38	0.38	

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-2511	Heat	Ferrite & Pearlite	81 HRBW	Pass	Longitudinal; 1.5 in. x WT	52,000	76,500	0.68	41
				Pass	Longitudinal; 1.5 in. x WT	51,000	76,000	0.67	41

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy			% Shear			Lateral Expansion					
				J	J	J	%	%	%	AVG	mm	mm	mm	AVG	
BSM-2511	ASTM A333	CVN Long 10 x 7.5 mm	-48	57.0	37.0	77.0	57.0	10	5	20	12	1.31	0.73	1.85	1.30

- 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:

Ilham Sept 103/2015

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