




# Mill Test Certificate

Bri-Steel Manufacturing  
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Product: Seamless Carbon Steel Pipe      Product Heat Number: BSM-2603      Product Size: NPS 18 STD      Production Date: Dec 10, 2015  
 Production Method: Hot Expansion      Product Heat Treatment: ThermoMechanical Formed      Certificate No.: MTR- 002031  
 Product Standards: ASME B36.10M-2015, API 5L-45th Ed. GradeB PSL1, ASTM/ASME 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 PSL1 SMLS 2015/12 NDE 1000PSI  
 HEAT BSM-2603 (PIPE # LENGTH MASS) 70.59lb/ft ASTM/ASME 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 $\mu$ R/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT ASTM E213	ET ASTM E309	HydroTest 1000 PSI/ 5 s	End Condition
BSM-2603	Heat	NPS 18 STD 0.375in. WT	7	DRL	70.59	<5	<10	Pass	Pass	Pass	Pass	Pass	Pass	32° 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(GSA)				
			0.16	1.18	0.010	0.002	0.26	0.01	0.01	0.01	0.01	0.02	0.050	0.001	0.001	0.0001	0.37	0.37			
BSM-2603	Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed	Heat	0.16	1.18	0.010	0.002	0.26	0.01	0.01	0.01	0.01	0.01	0.01	0.02 <td>0.050</td> <td>0.001</td> <td>0.001</td> <td>0.0001</td> <td>0.37</td> <td>0.37</td>	0.050	0.001	0.001	0.0001	0.37	0.37	
		Product	0.17	1.16	0.009	0.003	0.28	0.04	0.01	0.01	0.01	0.01	0.02 <td>0.061</td> <td>0.002</td> <td>0.002</td> <td>0.001</td> <td>0.0003</td> <td>0.39</td> <td>0.39</td>	0.061	0.002	0.002	0.001	0.0003	0.39	0.39	
			0.17	1.16	0.009	0.003	0.28	0.04	0.01	0.01	0.02	0.061	0.002	0.061	0.002	0.001	0.0003	0.39	0.39		

Heat		Test Type		Microstructure		Hardness		Flattening Test		Tension Test		Yield (Rt0.5)		Tensile (Rm)		Y/T		Elongation (A)	
		Heat		Ferrite & Pearlite		83 HRBW		Pass		2 in. GI		50,000 psi		75,000 psi		0.67		44	
BSM-2603		Heat		Ferrite & Pearlite		83 HRBW		Pass		Longitudinal: 1.5 in. x WT		50,000 psi		75,000 psi		0.67		44	

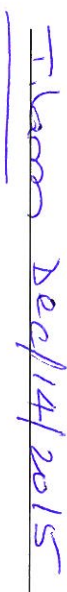
Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy					% Shear			Lateral Expansion							
				J	J	J	AVG	%	%	%	AVG	mm	mm	mm	AVG				
BSM-2603	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

**Mechanical Properties**

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 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, 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 MR0103-2012 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:

 Dec 14/2015

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