




# Mill Test Certificate

Bri-Steel Manufacturing Inc.  
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Product: Seamless Carbon Steel Pipe      Product Heat Number: BSM-2172      Product Size: 20STD      Production Date: Dec 08, 2014  
Production Method: Hot Expansion      Product Heat Treatment: As-rolled      Certificate No.: MTR- 001497  
Product Standards: ASME B36.10-2004, API 5L-45th Ed. Grade B/X42 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 20 STD 0.375 INCHWT GR B/X42 PSL1 SMLS 2014/12 NDE 1420PSI  
HEAT BSM-2172 (PIPE # LENGTH MASS) 78.6lb/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	UT	ET	HydroTest 1420 PSI/ 5 s	End Condition
BSM-2172	Heat	NPS 20 STD 0.375in. WT	2	DRL	78.6	<5	<10	Pass	Pass	Pass	Pass	Pass	Pass	32.5° Bevel

Chemical Analysis (wt%)														
Heat	Steelmaking Method	Test Type	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb
BSM-2172	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.19	0.85	0.009	0.012	0.22	0.05	0.08	0.02	0.05			0.0003
		Product	0.22	0.87	0.008	0.020	0.22	0.05	0.10	0.01	0.01	0.003	0.001	0.0004

Mechanical Properties									
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test 50mm GL	Yield (Rt0.5) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
BSM-2172	Heat	Ferrite & Pearlite	76 HRBW	Pass	Longitudinal; 38.1 mm x WT	42,400	70,500	0.60	37

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy J			AVG	% Shear			AVG	Lateral Expansion mm			AVG
BSM-2172	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

## Additional Details:

✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing Inc. in accordance with API 5L-45th Ed., ASTM/ASME A106-2014/SA106-2013 Grade B/C 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-2009 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:

  
Tonya Lam, C.E.T.  
Assistant QA Manager  
Dec 11/0/2014