



Mill Test Certificate

Bri-Steel Manufacturing
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-3109 Product Size: NPS 20 STD Production Date: Apr 11, 2017
 Production Method: Hot Expansion Product Heat Treatment: Normalizing Forming Certificate No.: MTR- 003294
 Product Standards: ASME B36.10M-2015, API 5L-45th Ed. Grade 8N PSL2, ASTM/ASME A106-2014/SA106-2015 Grade B/C NDE, A53-2012/SA53-2015 Grade B Type S, NACE MR0175/ISO 15156-2:2009 MR0103/ISO 17495:2015
 Product Markings: <API & L/C No.> API SPEC 5L NPS 20 STD 0.375 INCHWT GR BN PSL2 SMLS 2017/04 NDE 900PSI
 HEAT BSM-3109 (PIPE # LENGTH MASS) 78.71lb/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 μR/hr	Res. Mag. Gauss	Visual Insp.	OD	UT (WT) ASTM E114	UT ASTM E213	ET ASTM E309	HydroTest 900PSI/ 5s	End Condition
BSM-3109	Heat	NPS 20 STD 0.375in. WT	27	DRL	78.71	<5	<10	Pass	Pass	Pass	N12.5 Pass	-	Pass	35° Bevel

Heat	BSM-3109	Steelmaking Method Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed (at TPCC China)	Chemical Analysis (wt%)																
			Test Type	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE(IIW)	CE(IIW)Max	CE(CSA)
			Heat	0.21	0.93	0.009	0.004	0.23	0.04	0.01	0.01	0.01	0.01	0.003	0.001	0.001	0.0001	0.38	-
Product	0.24	0.91	0.010	0.005	0.23	0.05	0.01	0.00	0.01	0.003	0.002	0.001	0.0002	0.40	0.43	0.41	0.42	0.43	

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-3109	Heat	Ferrite & Pearlite	78 HRBW	Pass	Longitudinal; 1.5 in. x WT	42 700	74 500	0.57	43

Heat	BSM-3109	Test Standard	Result	Impact Test Sample Details	Temp °C	Impact Energy Min. (J)		Shear (%)	Lateral Expansion (mm)
						(3 Tests) AVG	(15/15/15) 20		
Heat	BSM-3109	API 5L PSL2	Pass	CVN Trans 10 x 7.5 mm	0	(3 Tests) AVG	(15/15/15) 20	(40/34/46) 40	(UNB/0.38/UNB) 0.38

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. N ASTM/ASME A106-2014/SA106-2015, A53-2012/SA53-2015, and the purchase order requirements, and that the results meet the corresponding requirements. Bri-Steel Manufacturing is registered and certified to ISO-9001:2008 (APIQR-1584), API Q1, and PED 2014/68/EU.

✓ 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/ISO 17495:2015 Section 13.1

✓ 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:

APR 19 2017

Tonya Lam, P. Tech (Eng.)
 Assistant QA Manager