



Mill Test Certificate

Bri-Steel Manufacturing
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-3146 Production Date: May 24, 2017
 Production Method: Hot Expansion Product Heat Treatment: Normalizing Forming Certificate No.: MTR- 003360
 Product Standards: ASME B36.10M-2015, API SL-45th Ed. Grade BN PSL2, ASTM/ASME A106-2014/SA106-2015 Grade B/C NDE, A53-2012/SA53-2015 Grade B Type S, NACE MR0175/ISO 15156-2:2015 MR0103/ISO 17495:2015
 Product Markings: <API & L/C No. > API SPEC 5L NPS 20 STD 0.375 INCHWT GR BN PSL2 SMLS 2017/05 NDE 1420PSI
 HEAT BSM-3146 (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)	UT	ET	HydroTest	End Condition
BSM-3146	Heat	NPS 20 STD 0.375in. WT	25	DRL	78.71	<5	<10	Pass	Pass	Pass	N12.5 Pass	-	Pass	35° 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(IIW)Max	CE(CSA)
BSM-3146	Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed (at TRCO China)	Heat	0.19	0.90	0.011	0.004	0.23	0.06	0.03	0.01	0.01	0.003	0.001	0.001	0.0001	0.36	-	0.36
			Product	0.21	0.92	0.009	0.006	0.24	0.05	0.03	0.00	0.01	0.004	0.001	0.001	0.0003	0.38	-
			0.21	0.91	0.012	0.006	0.24	0.06	0.03	0.00	0.01	0.004	0.001	0.001	0.0003	0.38	-	0.39

Mechanical Properties									
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test	Yield (Rt0.5)	Tensile (Rm)	Y/T	Elongation (A)
BSM-3146	Heat	Ferrite & Pearlite	75 HRBW	Pass	Longitudinal; 1.5 in. x WT	psi 40 600	psi 71 500	(Rt0.5/Rm) 0.57	% 41

Heat	Test Standard	Result	Impact Test Sample Details	Temp °C	Impact Energy Min. (J)		Impact Energy Results (J)		Shear (%)	Lateral Expansion (mm)	
					(3 Tests) AVG	(15/15/15) 20	(3 Tests) AVG	(36/33/44) 38			
BSM-3146	API 5L PSL2	Pass	CVN Trans 85TR 10X7.5mm	0	(3 Tests) AVG	(15/15/15) 20	(3 Tests) AVG	(36/33/44) 38	(5/5/5) 5	(3 Tests) AVG	(0.96/0.91/1.16) 1.01

Additional Details:
 ✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing in accordance with API SL-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 9001:2015 (APIQR-1584), API Q1, and PED 2014/68/EU.
 ✓ This pipe product meets the SOUR SERVICE requirements of ANSI/NACE MR0175/ISO 15156-2A:2015 (Annex A2 for Region 3 Sour Service), and ANSI/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:
 June 10 / 2017

Kenton Dechant, P.Eng.
 Manager of Quality and R&D