



Mill Test Certificate

Bri-Steel Manufacturing
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-3129 Product Size: NPS 20 TRUE 80 Production Date: May 04, 2017
 Production Method: Hot Expansion Product Heat Treatment: Normalizing Forming Certificate No.: MTR- 003350
 Product Standards: ASME B36.10M-2015, API 5L-45th Ed. GradeB/X42 PSL1, ASTM/ASME A333-2016/SA333-2015 Grade 6 LT(M45C) 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 TRUE 80 1.031 INCHWT GRB/X42 PSL1 SMLS 2017/05 NDE 2970PSI
 HEAT BSM-3129 (PIPE # LENGTH MASS) 209.08lb/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-3129	Heat	NPS 20 TRUE 80 1.031in. WT	3	DRL	209.08	<5	<10	Pass	Pass	Pass	Pass	Pass	Pass	Plain End	

Heat	Test Type	Steelmaking Method	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	Product	0.20	1.18	0.014	0.006	0.27	0.02	0.04	0.01	0.01	0.046	0.020	0.002	0.0005	0.42	-	0.42
BSM-3129	Heat	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed (at TPCO China)	0.16	1.14	0.011	0.006	0.26	0.02	0.04	0.00	0.01	0.045	0.027	0.001	0.0005	0.37	-	0.36		
			0.17	1.15	0.018	0.006	0.26	0.03	0.04	0.03	0.01	0.046	0.022	0.001	0.0005	0.39	-	0.38		

Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test		Yield (Rt0.5) psi	Tensile (Rm) psi	V/T (Rt0.5/Rm)	Elongation (A) %
					2 in. GL	0.5 in. Round Bar				
BSM-3129	Heat	Ferrite & Pearlite	77 HRBW	Pass	Pass	Longitudinal; 0.5 in. Round Bar	51 500	72 500	0.71	36
				Pass	Pass	Longitudinal; 0.5 in. Round Bar	45 700	72 500	0.63	36

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	(14/14/14) 18	(3 Tests) AVG	(62/118/65) 82		
BSM-3129	ASTM A333	Pass	CVN Long 10 x 10 mm	-45						

Additional Details:
 ✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing in accordance with GRX42 ASTM/ASME A333-2016/SA333-2015, 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 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:
 Tonya Lam, P. Tech (Eng.)
 Assistant QA Manager
 May 125/2017 T. Lam