



Mill Test Certificate

Bri-Steel Manufacturing
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-2931 Product Size: NPS 18 STD Production Date: Oct 31, 2016
 Production Method: Hot Expansion Product Heat Treatment: Normalizing Forming Certificate No.: MTR- 003021
 Product Standards: ASME B36.10M-2015, API 5L-45th Ed. Grade X42 PSL1, 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 18 STD 0.375 INCHWT GR X42 PSL1 SMLS 2016/10 NDE 1490PSI
 HEAT BSM-2931 (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 μ R/hr	Res. Mag. Gauss	Visual Insp.	OD	ET	HydroTest	End Condition	Heat	Test Type	UT (WT)	UT	ET	CE(IIW)	CE(IIW)Max	CE(CSA)	
BSM-2931	Heat	NPS 18 STD 0.375in. WT	4	DRL	70.59	<5	~24	Pass	Pass	ASTM E114	ASTM E213	ASTM E309	1490PSI/ 5s	Pass	Pass	N12.5 Pass	-	-	-	Pass	32° Bevel

Heat	BSM-2931	Steelmaking Method Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed (at TPCO 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	Product	0.21	0.92	0.013	0.005	0.23	0.03	0.01	0.01	0.01	0.01	0.004	0.001	0.001	0.0003	0.37	-
			Product	0.20	0.92	0.010	0.004	0.25	0.03	0.01	0.01	0.01	0.003	0.001	0.001	0.0004	0.36	-	0.37	
				0.20	0.98	0.009	0.004	0.21	0.08	0.03	0.01	0.02	0.004	0.005	0.001	0.0006	0.39	-	0.39	

Mechanical Properties									
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test	Yield (Rt0.5) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
BSM-2931	Heat	Ferrite & Pearlite	79 HRBW	Pass	2 in. GL Longitudinal; 1.5 in. x WT	47 800	74 500	0.64	44

Heat	Test Standard	Result	Impact Test Sample Details	Temp °C	Impact Energy Min. (J) (3 Tests) AVG	Impact Energy Results (J) (3 Tests) AVG	Shear (%) (3 Tests) AVG	Lateral Expansion (mm) (3 Tests) AVG
BSM-2931	-	-	-	-	-	-	-	-

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, X42 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.

Mill Test Certificate approved by:

- ✓ 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.

T. Lam *Nov 10 2016*

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 Assistant QA Manager