



Mill Test Certificate

Bri-Steel Manufacturing
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-2918 Production Date: Oct 18, 2016
 Production Method: Hot Expansion Product Heat Treatment: Normalizing Forming Certificate No.: MTR- 003005
 Product Standards: ASME B36.10M-2015, API SL-45th Ed. Grade X52N PSL2, ASTM/ASME A106-2014/SA106-2015 Grade B 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 24 X 0.438 INCHWT GR X52N PSL2 SMLS 2016/10 NDE 1710PSI
 HEAT BSM-2918 (PIPE # LENGTH MASS) 110.22lb/ft ASTM/ASME A/SA106 GR B 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	Geliger μR/hr	Res. Mag. Gauss	Visual Insp.	OD	UT (WT)	UT	ET	HydroTest	End Condition	
BSM-2918	Heat	NPS 24 X 0.438 0.438in. WT	5	DRL	110.22	<5	<10	Pass	Pass	ASTM E114	ASTM E213	ASTM E309	1710PSI/ 5 s	Pass	30° Bevel

Heat	Test Type	Steelmaking Method	Test Type	Chemical Analysis (wt%)														
				C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE(IIW)	CE(IIIW)Max
BSM-2918	Heat	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed (at TRCO China)	Heat	0.17	1.28	0.011	0.004	0.32	0.05	0.01	0.01	0.04	0.003	0.002	0.0006	0.41	-	0.41
			Product	0.17	1.29	0.014	0.006	0.39	0.06	0.01	0.01	0.04	0.041	0.003	0.001	0.0005	0.41	-
				0.17	1.30	0.014	0.006	0.39	0.06	0.01	0.01	0.04	0.041	0.003	0.001	0.0005	0.41	0.41

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-2918	Heat	Ferrite & Pearlite	79 HRBW	Pass	Longitudinal; 1.5 in. x WT	53 000	77 500	0.68	41

Heat	Test	Test Standard	Result	Impact Test Sample Details	Temp °C	Impact Energy Min. (J)	Impact Energy Results (J)	Shear (%)	Lateral Expansion (mm)
BSM-2918	Standard	API 5L PSL2	Pass	CVN Trans 10 x 10 mm	-5	(20/20/20) 27	(3 Tests) AVG (172/148/199) 173	(60/50/70) 60	(3 Tests) AVG (2.26/2.00/2.32) 2.19

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., 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:

T. Lam Oct 19 / 2016

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