



Mill Test Certificate

Bri-Steel Manufacturing
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-2911 Product Size: NPS 24 TRUE 80 Production Date: Oct 11, 2016
 Production Method: Hot Expansion Product Heat Treatment: Normalizing Forming Certificate No.: MTR- 002999
 Product Standards: ASME B36.10M-2015, API 5L-45th Ed. Grade 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,
 Grade B Type S,
 Product Markings: <API & L/C No.> API SPEC 5L NPS 24 TRUE 80 1.219 INCHWT GR X42 PSL1 SMLS 2016/10 NDE 2970PSI
 HEAT BSM-2911 (PIPE # LENGTH MASS) 296.4lb/ft ASTM/ASME A/SA333 GR 6 LT(M45C) A/SA106 GR B/C A/SA53 GR B 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-2911	Heat	NPS 24 TRUE 80 1.219in. WT	5	DRL	296.4	<5	<10	Pass	Pass	Pass	N12.5 Pass	-	Pass	Plain End

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)
			Heat	Product	0.16	1.29	0.008	0.002	0.25	0.02	0.01	0.01	0.01	0.01	0.02	0.056	0.002	0.001
BSM-2911	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed (at TPCO China)	Heat	0.13	1.24	0.010	0.003	0.27	0.05	0.01	0.01	0.02	0.056	0.002 <td>0.001 <td>0.0001 <td>0.36</td> <td>-</td> <td>0.32</td> </td></td>	0.001 <td>0.0001 <td>0.36</td> <td>-</td> <td>0.32</td> </td>	0.0001 <td>0.36</td> <td>-</td> <td>0.32</td>	0.36	-	0.32
		Product	0.14	1.10	0.012	0.004	0.26	0.05	0.01	0.01	0.03	0.058	0.001 <td>0.001 <td>0.0002</td> <td>0.35</td> <td>-</td> <td>0.33</td> </td>	0.001 <td>0.0002</td> <td>0.35</td> <td>-</td> <td>0.33</td>	0.0002	0.35	-	0.33

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-2911	Heat	Ferrite & Pearlite	0	Pass	Longitudinal: 0.5 in. Round Bar Longitudinal: 0.5 in. Round Bar	49 500 50 500	76 500 76 000	0.65 0.66	35 36

Heat	Test Standard	Result	Impact Test Sample Details	Temp °C	Impact Energy Min. (J)	Impact Energy Results (J)	Shear (%)	Lateral Expansion (mm)
BSM-2911	ASTM A333	Pass	CVN Long 10 x 10 mm	-45	(14/14/14) 18	(3 Tests) AVG (82/66/76) 75	(3 Tests) AVG (15/10/15) 13	(3 Tests) AVG (1.24/0.89/1.05) 1.06

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 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-9001:2008 (APIQR-1584), API Q1, and PED 2014/68/EU.

- ✓ This pipe product meets the sour service requirements of
- ✓ 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 13 / 2016

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