




Mill Test Certificate

Bri-Steel Manufacturing
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-2997 Production Date: Dec 15, 2016
 Production Method: Hot Expansion Product Heat Treatment: Normalizing Forming Certificate No.: MTR- 003130
 Product Standards: ASME B36.10M-2015, API 5L-45th Ed. GradeB/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 24 STD 0.375 INCHWT GRB/X42 PSL1 SMLS 2016/12 NDE 1180PSI
 HEAT BSM-2997 (PIPE # LENGTH MASS) 94.76lb/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	Gelger µR/hr	Res. Mag. Gauss	Visual Insp.	OD	UT (WT) ASTM E114	UT ASTM E213	ET ASTM E309	HydroTest 1180PSI/ 5 s	End Condition
BSM-2997	Heat	NPS 24 STD 0.375in. WT	1	DRL	94.76	<5	<10	Pass	Pass	Pass	N12.5 Pass	-	Pass	35° Bevel

Heat	BSM-2997	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)
				0.20	0.92	0.011	0.007	0.23	0.04	0.01	0.01	0.01	0.003	0.001	0.001	0.001	0.0001	0.37	-
		Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed (at TRCO China)	Heat	0.22 <td>0.91 <td>0.013 <td>0.007 <td>0.23 <td>0.04 <td>0.01 <td>0.00 <td>0.01 <td>0.004 <td>0.001 <td>0.001 <td>0.0002 <td>0.38 <td>-</td> <td>0.39</td> </td></td></td></td></td></td></td></td></td></td></td></td></td>	0.91 <td>0.013 <td>0.007 <td>0.23 <td>0.04 <td>0.01 <td>0.00 <td>0.01 <td>0.004 <td>0.001 <td>0.001 <td>0.0002 <td>0.38 <td>-</td> <td>0.39</td> </td></td></td></td></td></td></td></td></td></td></td></td>	0.013 <td>0.007 <td>0.23 <td>0.04 <td>0.01 <td>0.00 <td>0.01 <td>0.004 <td>0.001 <td>0.001 <td>0.0002 <td>0.38 <td>-</td> <td>0.39</td> </td></td></td></td></td></td></td></td></td></td></td>	0.007 <td>0.23 <td>0.04 <td>0.01 <td>0.00 <td>0.01 <td>0.004 <td>0.001 <td>0.001 <td>0.0002 <td>0.38 <td>-</td> <td>0.39</td> </td></td></td></td></td></td></td></td></td></td>	0.23 <td>0.04 <td>0.01 <td>0.00 <td>0.01 <td>0.004 <td>0.001 <td>0.001 <td>0.0002 <td>0.38 <td>-</td> <td>0.39</td> </td></td></td></td></td></td></td></td></td>	0.04 <td>0.01 <td>0.00 <td>0.01 <td>0.004 <td>0.001 <td>0.001 <td>0.0002 <td>0.38 <td>-</td> <td>0.39</td> </td></td></td></td></td></td></td></td>	0.01 <td>0.00 <td>0.01 <td>0.004 <td>0.001 <td>0.001 <td>0.0002 <td>0.38 <td>-</td> <td>0.39</td> </td></td></td></td></td></td></td>	0.00 <td>0.01 <td>0.004 <td>0.001 <td>0.001 <td>0.0002 <td>0.38 <td>-</td> <td>0.39</td> </td></td></td></td></td></td>	0.01 <td>0.004 <td>0.001 <td>0.001 <td>0.0002 <td>0.38 <td>-</td> <td>0.39</td> </td></td></td></td></td>	0.004 <td>0.001 <td>0.001 <td>0.0002 <td>0.38 <td>-</td> <td>0.39</td> </td></td></td></td>	0.001 <td>0.001 <td>0.0002 <td>0.38 <td>-</td> <td>0.39</td> </td></td></td>	0.001 <td>0.0002 <td>0.38 <td>-</td> <td>0.39</td> </td></td>	0.0002 <td>0.38 <td>-</td> <td>0.39</td> </td>	0.38 <td>-</td> <td>0.39</td>	-	0.39

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-2997	Heat	Ferrite & Pearlite	76 HRBW	Pass	Longitudinal; 1.5 in. x WT	45 400	75 000	0.61	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-2997	-	-	-	-	-	(3 Tests) AVG	(3 Tests) AVG	(3 Tests) AVG	(3 Tests) AVG

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 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:

Tonya Lam / 24/2017

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