



Mill Test Certificate

Bri-Steel Manufacturing
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-3116 Production Date: Apr 20, 2017
 Production Method: Hot Expansion Product Heat Treatment: Normalizing Forming Certificate No.: MTR- 003316
 Product Standards: ASME B36.10M-2015, API 5L-45th Ed. Grade BN/X42N PSL2, 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 BN/X42N PSL2 SMLS 2017/04 NDE 1490PSI
 HEAT BSM-3116 (PIPE # LENGTH MASS) 70.69lb/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	Gelger	Res. Mag.	Visual	OD	UT (WT)	UT	ET	HydroTest	End
BSM-3116	Heat	NPS 18 STD 0.375in. WT	14	DRL	70.69 lb/ft	µR/hr	Gauss	Insp.	Pass	ASTM E114	ASTM E213	ASTM E309	1490PSI/ 5s	Condition
						<5	<10	Pass <td>Pass <td>Pass <td>N12.5 Pass <td>-</td> <td>Pass <td>35° Bevel</td> </td></td></td></td>	Pass <td>Pass <td>N12.5 Pass <td>-</td> <td>Pass <td>35° Bevel</td> </td></td></td>	Pass <td>N12.5 Pass <td>-</td> <td>Pass <td>35° Bevel</td> </td></td>	N12.5 Pass <td>-</td> <td>Pass <td>35° Bevel</td> </td>	-	Pass <td>35° Bevel</td>	35° Bevel

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
BSM-3116	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed (at TPCCO China)	Heat	0.16	1.30	0.008	0.002	0.27	0.05	0.04	0.01	0.02	0.048	0.001	0.0001	0.40	-	0.39
			Product	0.16	1.29	0.009	0.003	0.28	0.05	0.04	0.01	0.02	0.043	0.001	0.0004	0.40	0.43
			0.16	1.28	0.009	0.003	0.29	0.05	0.04	0.01	0.02	0.042	0.001	0.0004	0.40	0.43	0.39

Mechanical Properties									
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test	Yield (Rt0.5)	Tensile (Rm)	Y/T	Elongation (A)
BSM-3116	Heat	Ferrite & Pearlite	81 HRBW	Pass	2 in. GL	psi	psi	(Rt0.5/Rm)	%
				Pass	Longitudinal; 1.5 in. x WT	51 000	77 500	0.66	39

Heat	Test Standard	Result	Impact Test		Temp °C	Impact Energy Results (J)		Shear (%)	Lateral Expansion (mm)				
			Sample Details	Temp		(3 Tests) AVG	(3 Tests) AVG						
BSM-3116	API 5L PSL2	Pass	CVN Trans 10 x 7.5 mm	0	0	(15/15/15)	20	(148/165/129)	147	(100/100/100)	100	(2.47/2.38/2.12)	2.32
						(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 API 5L-45th Ed., N 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 APR 25/2017

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