



Mill Test Certificate

Bri-Steel Manufacturing Inc.
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-2113 Product Size: 20STD Production Date: Nov 03, 2014
Production Method: Hot Expansion Product Heat Treatment: As-rolled Certificate No.: MTR- 001441

Product Standards: ASME B36.10-2004, API 5L-45th Ed. Grade B/X42/X46 PSL1, ASTM/ASME A/SA333-2013 Grade 6 LT(M45C) A106-2014/SA106-2013 Grade B/C NDE, A53-2012/SA53-2013 Grade B Type S, NACE MR0175-2009 MR0103-2012

Product Markings



<API & L/C No.> API SPEC 5L NPS 20 STD 0.375 INCHWT GR B/X42/X46 PSL1 SMLS 2014/11 NDE 1570PSI
HEAT BSM-2113 (PIPE # LENGTH MASS) 78.6lb/ft ASTM/ASME A/SA333 GR 6 LT(M45C) 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 μR/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT ASTM E213	ET ASTM	HydroTest 1570PSI/ 5 s	End Condition
BSM-2113	Heat	NPS 20 STD 0.375in. WT	6	DRL	78.6	<5	<10	Pass	Pass	Pass	Pass	Pass	Pass	32.5° Bevel

Chemical Analysis (wt%)																	
Heat	Steelmaking Method	Test Type	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE(IIW)	CE(CSA)
			Heat	0.17	1.14	0.017	0.004	0.23	0.03	0.02	0.01	0.02	0.050				-
		Product	0.18	1.11	0.016	0.005	0.26	0.03	0.02	0.01	0.02	0.053	0.002	0.001	0.0004	0.39	0.39
BSM-2113	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed																

Mechanical Properties													
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test 50mm GL	Yield (Rt0.5) psi	Tensile (Rm) psi	V/T (Rt0.5/Rm)	Elongation (A) %				
BSM-2113	Heat	Ferrite & Pearlite	78 HRBW	Pass	Longitudinal; 38.1 mm x WT	51,500	76,000	0.68	42				

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy				% Shear				Lateral Expansion			
BSM-2113	ASTM A333	CVN Long 10 x 7.5 mm	-48	J	J	J	AVG	%	%	%	AVG	mm	mm	mm	AVG
				80.5	78.0	68.0	75.5	25	23	20	23	1.62	1.67	1.45	1.58

Additional Details:

✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing Inc. in accordance with API 5L-45th Ed., ASTM/ASME A/SA333-2013 Grade 6 LT(M45C) A106-2014/SA106-2013 Grade B/C A53-2012/SA53-2013, and the purchase order requirements, and that the results meet the corresponding requirements. Bri-Steel Manufacturing is registered and certified to ISO-9001:2008 and API Q1.

✓ This pipe product meets the sour service requirements of NACE MR0175/ISO 15156-2:2009 Annex A2 for Region 3 Sour Service-2009 NACE MR0103-2012 Section 2.1

✓ 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, C.E.T.
Assistant QA Manager

Ilana *Nov/05/2014*

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