



Mill Test Certificate

Bri-Steel Manufacturing
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-2644 Product Size: NPS 20 XS Production Date: Feb 09, 2016
Production Method: Hot Expansion Product Heat Treatment: As Rolled Certificate No.: MTR- 002088

Product Standards: ASME B36.10M-2015, API 5L-45th Ed. Grade X42 PSL1, ASTM/ASME A106-2014/SA106-2013 Grade B NDE, A53-2012/SA53-2013 Grade B Type S, NACE MRO175-2009 MRO103-2012

Product Markings  <API & L/C No.> API SPEC 5L NPS 20 XS 0.500 INCHWT GR X42 PSL1 SMLS 2016/02 NDE 1890PSI HEAT BSM-2644 (PIPE # LENGTH MASS) 104.1lb/ft ASTM/ASME A/SA106 GR B A/SA53 GR B NACE MRO175/MRO103 MADE IN CANADA

Product: Details				Non-Destructive Testing										
Heat	Test Type	Product Size	Pieces	Length	Mass lb/ft	Geiger μ R/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT Pass	ET ASTM E213	HydroTest 1890PSI/ 5 s	End Condition
BSM-2644	Heat	NPS 20 XS 0.500in. WT	36	DRL	104.1	<5	<20	Pass	Pass	Pass	Pass	-	Pass	33° Bevel

Chemical Analysis (wt%)																	
Heat	Steelmaking Method	Test Type	C	Min	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE(IIW)	CE(CSA)
BSM-2644	Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed	Heat	0.16	1.17	0.008	0.002	0.25	0.01	0.01	0.01	0.02	0.050	0.002	0.001	0.0001	0.37	0.36
		Product	0.15	1.14	0.008	0.003	0.27	0.03	0.01	0.01	0.02	0.053	0.002	0.001	0.0003	0.36	0.35
			0.16	1.13	0.007	0.003	0.27	0.03	0.01	0.01	0.02	0.053	0.002	0.001	0.0003	0.37	0.36

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-2644	Heat	Ferrite & Pearlite	78 HRBW	Pass	Longitudinal; 1.5 in. x WT	48,400	73,000	0.66	46

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy			% Shear			Lateral Expansion														
				J	J	J	%	%	%	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm			
BSM-2644	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Additional Details:

Mill Test Certificate approved by:

✓ 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 A106-2014/SA106-2013, 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, API Q1, and PED 97/23/EC.

✓ This pipe product meets the sour service requirements of NACE MRO175/ISO 15156-2:2009 Annex A2 for Region 3 Sour Service, and NACE MRO103-2012 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.

T. Lam Feb/10/2016

Tonya Lam, C.E.T.
Assistant QA Manager