



Mill Test Certificate

Bri-Steel Manufacturing Inc.
2125-64 Avenue, Edmonton, AB Canada T6P 1Z4
Tel: 001 (780) 469-6603
Fax: 001 (780) 469-6986
www.brichemsteel.com

Product: Seamless Carbon Steel Pipe

Product Heat Number: BSM-1621

Product Size: 20XS

Production Date: Feb 10, 2014

Production Method: Hot Expansion

Product Heat Treatment: As-rolled

Certificate No.: MTR- 000849

Product Standards: ASME B36.10-2004, API 5L-45th Ed. Grade B/X42 PSL1, ASTM/ASME A/SA106-2013 Grade B NDE, A/SA53-2012 Grade B Type S, NACE MR0175-2009 MR0103-2010

Product Markings



<API> 5L-0898 API SPEC 5L NPS 20 XS 0.500 INCHWT GR B/X42 PSL1 SMLS 2014/02 NDE 1890PSI
HEAT BSM-1621 (PIPE # LENGTH MASS) 104.1lb/ft ASTM/ASME A/SA106 GR B 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 μ R/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT ASTM E213	ET ASTM	HydroTest 1890 PSI/ 5 s	End Condition
BSM-1621	Heat	NPS 20 XS 0.500in. WT	8	DRL	104.1	<5	<10	Pass	Pass	Pass	Pass	Pass	Pass	32.5" Bevel

Chemical Analysis (wt%)		C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE(IIW)	CE(CSA)
BSM-1621	Steelmaking Method	Test Type	Heat	0.20	0.88	0.012	0.008	0.26	0.04	0.01						
	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Product	0.22	0.92	0.022	0.007	0.30	0.07	0.01	0.00	0.04	0.002	0.003	0.001	0.0003	0.39

Mechanical Properties										Elongation (A)			
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test 50mm GL	Yield (Rt0.5) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)					
BSM-1621	Heat	Ferrite & Pearlite	74 HRBW	Pass	Longitudinal; 38.1 mm x WT	42,500	69,500	0.61		44			

Heat	Test	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy				% Shear				Lateral Expansion			
BSM-1621	Standard			-	J	J	J	AVG	%	%	%	AVG	mm	mm	mm	AVG
					-	-	-	-	-	-	-	-	-	-	-	-

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/SA106-2013 Grade B A/SA53-2012, and the purchase order requirements, and that the results meet the corresponding requirements.

✓ This pipe product meets the sour service requirements of NACE MR0175/ISO 15156-2:2009 Annex A2 for Region 3 Sour Service-2009 NACE MR0103-2010 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:

2014 FEB 12

Paul Sowden, T.T.
Assistant QA Manager



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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-1621 Production Date: Feb 10, 2014
Production Method: Hot Expansion Product Heat Treatment: As-rolled Certificate No.: MTR- 000853
Product Standards: ASME B36.10-2004, ASTM/ASME A/SA106-2013 Grade B NDE, A/SA53-2012 Grade B Type S, NACE MR0175-2009 MR0103-2010

Product Markings



NPS 20 X 0.450 INCHWT SMLS 2014/02 NDE 1890PSI
HEAT BSM-1621 (PIPE # LENGTH MASS) 93.69lb/ft ASTM/ASME A/SA106 GR B 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 μ R/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT ASTM E213	ET ASTM	HydroTest 1890 PSI/ 5 s	End Condition
BSM-1621	Heat	NPS 20 X 0.450in. WT	8	DRL	93.69	<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
			0.20	0.88	0.012	0.008	0.26	0.04	0.01	0.00	0.04	0.002	0.003	0.001
BSM-1621	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.22	0.92	0.022	0.007	0.30	0.07	0.01	0.00	0.04	0.002	0.003	0.001
		Product	0.22	0.92	0.022	0.007	0.30	0.07	0.01	0.00	0.04	0.002	0.003	0.001

Mechanical Properties									
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test 50mm GL	Yield (Rt0.5) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
BSM-1621	Heat	Ferrite & Pearlite	74 HRBW	Pass	Longitudinal: 38.1 mm x WT	42,500	69,500	0.61	44

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy						Lateral Expansion			
				J	J	J	AVG	%	%	AVG	mm	mm	AVG
BSM-1621	-	-	-	-	-	-	-	-	-	-	-	-	-

Additional Details:

✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing Inc. in accordance with ASTM/ASME A/SA106-2013 Grade B A/SA53-2012, and the purchase order requirements, and that the results meet the corresponding requirements.

✓ This pipe product meets the sour service requirements of NACE MR0175/ISO 15156-2:2009 Annex A2 for Region 3 Sour Service-2009 NACE MR0103-2010 Section 2.1

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