

Mill Test Certificate

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

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Seamless Carbon Steel Pipe Product Heat Number: BSM-1622 Product Size: 20XS

Production Date:

Feb 11, 2014

Product Standards: Production Method: ASME B36.10-2004, API 5L-45th Ed. Grade B/X42 PSL1, ASTM/ASME A/SA106-2013 Grade B/C NDE, A/SA53-2012 Grade B Type S, NACE MR0175-2009 MR0103-2010 Hot Expansion Product Heat Treatment: As-rolled Certificate No.: MTR- 000848

Product Markings | API | STEEL | API | SL-0898 API SPEC 5L NPS 20 XS 0.500 INCHWT GR B/X42 PSL1 SMLS 2014/02 NDE 1890PSI ANUISAGEIUEINIGIIMI HEAT BSM-1622 (PIPE # LENGTH MASS) 104.11b/ft ASTM/ASME A/SA106 GR B/C A/SA53 GR B NACE MR0175/MR0103 MADE IN CANADA

BSM-1622		Heat	
Heat		Test Type	
NPS 20 XS 0.500in. WT		Product Size	Product: Details
00		Pieces	
DRL		Length	
104.1	lb/ft	Mass	
\$	μR/hr	Geiger	
<10	Gauss	Res. Mag.	
Pass	Insp.	Visual	
Pass		9	Z
Pass	WT	TU	on-Destruc
Pass	ASTM E213 ASTM	UT	Non-Destructive Testing
Pass	ASTM	ET	
Pass	1890 PSI/ 5 s	HydroTest	
34° Bevel	5 s Condition	End	

0.21 0.50 0.020 0.007 0.29 0.07 0.01 0.00 0.04 0.002	Heat BSM-1622	Steelmaking Method Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed	Test Type Heat	C 0.20	0.85	P 0.020	Chemical Analysis (wt%) S Si C 0.006 0.29 0.0	Analysis (Si 0.29	Cr 0.07	Cu 0.01	Mo	0.04 N:			Nb		В	
Blast Furnace; EAF; Ladle Refining; Vacuum Heat 0.20 0.85 0.020 0.006 0.29 0.07 0.01 0.04 0.00 0.09 0.09 0.09 0.00 0.	Heat	Steelmaking Method	Test Type	С	Mn	P	S	iS	Cr	C	Mo	Z.	<	_		Nb	Nb B	٤
Product 0.21 0.90 0.020 0.007 0.29 0.07 0.01 0.00 0.04 0.002	BSM-1622	Blast Furnace; EAF; Ladle Refining; Vacuum	Heat	0.20	0.85	0.020	0.006		70.0	0.01		0.04						
		Degas, Fully Mileo	Product	0.21	0.90	0.020	0.007	0.29	70.0	0.01	0.00	0.04	0.002	0.002		2 0.001		0.001

	В	Г		
	BSM-1622		Heat	
	Heat		Test Type	
	Ferrite & Pearlite		Microstructure	100
	74 HRBW		Hardness	3.0
	Pass		Flattening Test	
	Longitudinal; 38.1 mm x WT	50mm GL	Tension Test	Mechanical Properties
	46,300	psi	Yield (Rt0.5)	
	73,500	psi	Tensile (Rm)	
	0.63	(Rt0.5/Rm)	Υ/Τ	
0.00	41	%	Elongation (A)	

BSM-1622		Heat
	Standard	Test
1	Sample Details	Impact Test
,	3°	Temp
31	J	
-	J	Impact
,	J	Energy
	AVG	
ı	%	
1	%	% Shear
1	%	ear
1	AVG	
	mm	
1	mm	Lateral Expansion
1	mm	pansion
1	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/C 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.
- \checkmark This product has not come into contact with mercury during the Bri-Steel Manufacturing processes.
- \checkmark This certificate represents a quality control system that is compliant with EN 10204:2004 Type 3.1.

Mill Test Certificate approved by:

18 ander 2014 FEB 12

Paul Sowden, T.T. Assistant QA Manager



Mill Test Certificate

2125-64 Avenue, Edmonton, AB Canada T6P 1Z4 Bri-Steel Manufacturing Inc.

Fax: 001 (780) 469-6986 Tel: 001 (780) 469-6603

www.brichemsteel.com

BSM-1622 Product Size: 20 X 0.450 Production Date: Feb 11, 2014

Product Heat Number: Product Heat Treatment: As-rolled Certificate No.: MTR- 000854

Product Standards: ASME B36.10-2004, ASTM/ASME A/SA106-2013 Grade B/C NDE, A/SA53-2012 Grade B Type S, NACE MR0175-2009 MR0103-2010

Production Method:

Hot Expansion

Seamless Carbon Steel Pipe

Product Markings BRI-STEEL] NPS 20 X 0.450 INCHWT SMLS 2014/02 NDE 1890PSI

TANUSAN STATEMENTE HEAT BSM-1622 (PIPE # LENGTH MASS) 93.69lb/ft ASTM/ASME A/SA106 GR B/C A/SA53 GR B NACE MR0175/MR0103 MADE IN CANADA

BSM-1622		Heat	
Heat		Test Type	
NPS 20 X 0.450in. WT		Product Size	Product: Details
8		Pieces	
DRL		Length	
93.69	lb/ft	Mass	
Ġ	μR/hr	Geiger	
<10	Gauss	Res. Mag.	
Pass	insp.	Visual	
Pass		OD	N _C
Pass	TW	TU	on-Destruc
Pass	ASTM E213 ASTM	TU	Non-Destructive Testing
Pass		ΕT	
Pass	1890 PSI/ 5 s Condition	HydroTest	
34° Bevel	Condition	End	

	BSM-1622	Heat	
	Blast Furnace; EAF; Ladle Refining; Vacuum Degas: Fully Killed	Steelmaking Method	
Product	Heat	Test Type	
0.21	0.20	С	
0.90	0.85	Mn	
0.020	0.020	P	
0.007	0.006	S	Chemical
0.29	0.29	Si	Chemical Analysis (wt%)
0.07	0.07	Cr	wt%)
0.01	0.01	Cu	
0.00		Мо	
0.04	0.04	Z:	
0.002		٧	
0.002		Ti	
0.001		Nb	
0.0003		В	
0.38	1	CE(IIW)	
0.38	91	CE(CSA)	

					Mechanical Properties				
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test	Yield (Rt0.5)	Tensile (Rm)	Υ/Τ	Elongation (A)
					50mm GL	psi	psi	(Rt0.5/Rm)	%
BSM-1622	Heat	Ferrite & Pearlite	74 HRBW	Pass	Longitudinal; 38.1 mm x WT	46,300	73,500	0.63	41

Standard Sample Details °C J J AVG % % AVG mm mm	% Shear	% Shear			t Energy	Impac		Temp	Impact Test	Test	Heat
	% % AVG	%	%	AVG	J	ſ	J	റ്	Sample Details	Standard	
BSM-1622	1	t t		1	-	t	ı	t	П	ī	BSM-1622

Additional Details:

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Paul Sowden, T.T.

Assistant QA Manager