

Mill Test Certificate

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

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Product: Seamless Carbon Steel Pipe

Product Heat Number:

BSM-2046 Product Size: 24S60

Production Date: Sep 29, 2014

Production Method: **Hot Expansion**

Product Heat Treatment: As-rolled

ASME B36.10-2004, API 5L-45th Ed. Grade B PSL1, ASTM/ASME A/SA106-2014 Grade B NDE, A/SA53-2012 Grade B Type S, NACE MR0175-2009 MR0103-2010

Certificate No.: MTR- 001382

Product Markings

Product Standards:

<API & L/C No.> API SPEC 5L NPS 24 SCH 60 0.969 INCHWT GR B PSL1 SMLS 2014/09 NDE 1900PSI HEAT BSM-2046 (PIPE # LENGTH MASS) 238.1lb/ft ASTM/ASME A/SA106 GR B A/SA53 GR B NACE MR0175/MR0103 MADE IN CANADA

		Product: Details							Z	Non-Destructive Testing	tive Testii	9.	ng B	ng
Heat 1	Test Type	Product Size	Pieces	Length	Mass	Geiger	Res. Mag.	Visual	OD		UT	UT UT		
					lb/ft	μR/hr	Gauss	Insp.			TW	WT ASTM E213	WT ASTM E213 ASTM	WT ASTM E213 ASTM 1900 PSI/ 5 s Condition
BSM-2046	Heat	NPS 24 SCH 60 0.969in. WT	2	DRL	238.1	Ġ	<10	Pass	Pass	SS	ss Pass		Pass	Pass Pass

		BSM-2046	Heat	
	Degas, rully silled	Blast Furnace; EAF; Ladle Refining; Vacuum	Steelmaking Method	
Contract of the Contract of th	Product 0.20	Heat	Test Type	
	0.20	0.20	С	
	0.93	0.91	Mn	
	0.014	0.014	Р	
	0.014 0.002	0.003	S	Chemical
	0.32	0.32	Si	Chemical Analysis (wt%)
	0.06	0.05	Cr	wt%)
100000	0.05	0.06	Си	
And the second	0.01	0.01	Mo	
100	0.03	0.02	N:	
S 1123	0.004	0.004	٧	
	0.002	0.002	Ti	
	0.001	0.001	Nb	
	0.0003	0.0003	В	
	0.37		CE(IIW)	
	0.37	•	CE(CSA)	

Heat Test Type Microstructure Hardness Flattening Test Tension Test Yield (Rt0.5) Tensile (Rm) Y/T Elongation (A) 50mm GL psi psi (Rt0.5/Rm) % 35M-2046 Heat Ferrite & Pearlite 78 HRBW Pass Longitudinal; 19.05 mm x WT 46,900 68,500 0.68 47	i	m	_	_	
Mechanical Properties Mechanical Properties Mechanical Properties Tension Test 50mm GL psi psi (Rt0.5/Rm) Ferrite & Pearlite 78 HRBW Pass Longitudinal; 19.05 mm x WT 46,900 68,500 0.68		BSM-2046		Heat	
Hardness Flattening Test Tension Test S0mm GL Psi (Rt0.5) Tensile (Rm) Y/T S0mm GL Psi (Rt0.5/Rm) Pass Longitudinal; 19.05 mm x WT 46,900 68,500 0.68		Heat		Test Type	
Mechanical Properties Flattening Test Tension Test 50mm GL Pass Longitudinal; 19.05 mm x WT Yield (Rt0.5) Tensile (Rm) y/T psi psi (Rt0.5/Rm) 46,900 68,500 0.68		Ferrite & Pearlite		Microstructure	
Mechanical Properties Tension Test 50mm GL Longitudinal; 19.05 mm x WT Yield (Rt0.5) Yield (Rt0.5) Yield (Rt0.5) Psi psi psi (Rt0.5/Rm) 46,900 68,500 0.68		78 HRBW		Hardness	
Test Yield (Rt0.5) Tensile (Rm) Y/T GL psi psi (Rt0.5/Rm) 05 mm x WT 46,900 68,500 0.68		Pass		Flattening Test	
) Tensile (Rm) Y/T psi (Rt0.5/Rm) 68,500 0.68		Longitudinal; 19.05 mm x WT	50mm GL	Tension Test	Mechanical Properties
) Y/T (Rt0.5/Rm) 0.68		46,900	psi	Yield (Rt0.5)	
		68,500	psi	Tensile (Rm)	
Elongation (A) % 47		0.68	(Rt0.5/Rm)	Т/Ү	
		47	%	Elongation (A)	

BSM-2046		Heat
i	Standard	Test
	Sample Details	Impact Test
	റ്	Temp
-	J	
,	ľ	Impact Er
	ſ	t Energy
ı	AVG	
	%	
	%	% Sh
,	%	Shear
ı	AVG	
-	mm	
1	mm	Lateral Ex
-	mm	pansion
ı	AVG	

Additional Details:

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

✓ 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:

Oct 101/2014

Tonya Lam, C.E.T.

Assistant QA Manager