

Mill Test Certificate

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

Fax: 001 (780) 469-6986 www.brichemsteel.com Tel: 001 (780) 469-6603

Product: Seamless Carbon Steel Pipe

Product Heat Number: BSM-0649

Product Size:

NPS 24 SCH 60

Production Date:

January 10, 2013

Production Method: Hot Expansion

Product Markings:

Plain End

Product Heat Treatment: As-rolled

Product Standards: ASME B36.10-2004, ASTM/ASME A/SA106-2011 Grade B/C NDE, A/SA53-2012 Grade B Type S, NACE MR0175-2009, MR0103-2010

	1		
BSM-0649	Heat		
Heat	Test Type		
24	NPS		_
SCH 60	Thickness	Wall	Product Detail
6	Pieces		ls
DRL	Length		
238.10	lb/ft	Mass	
<5	μR/hr	Geiger	
<20	Gauss	Res.Mag.	-0
Pass	Insp.	Visual	
Pass	OD		Non-l
Pass	TW	UT	Destructive
Pass	ASTM E213	TD	Testing
Pass	ASTM E309	ET	
*		HydroTest	
Plain End	Condition	End	

.BRI-STEEL MFG ASTM/ASME A/SA106 GR B/C A/SA53 GR B NPS 24 SCH 60 HEAT BSM-0649 (PIPE # LENGTH MASS) 238.11b/ft NDE SMLS NACE MR0175 2013/01 MADE IN CANADA.

CE CE			_		_	
Chemical Analysis (wt%) Analysis C Mn P S Si Cr Cu Mo Ni V Ti Nb B (IIW) Product 0.18 0.92 0.012 0.004 0.30 0.04 0.05 0.03 0.02 0.003 0.002 0.001 0.0002 -	0017	RSM-0649	Heat			
Chemical Analysis (wt%) Chemical Analysis (wt%) CE CI Mn P S Si Cr Cu Mo Ni V Ti Nb B (IIW) CE 0.20 0.94 0.015 0.002 0.011 0.002 0.031 0.04 0.05 0.03 0.003 0.003 0.002 0.001 0.0002 0.35	Vacuum Degas; Fully Killed	Blast Furnace; EAF; Ladle Refining;	Steelmaking Method			
Chemical Analysis (wt%) Mn P S Si Cr Cu Mo Ni V Ti Nb B (IIW)	Product	Heat	Analysis			
Chemical Analysis (wt%) P S Si Cr Cu Mo Ni V Ti Nb B (IIW) 0.015 0.002 0.31 0.04 0.07 0.02 0.03 0.003 0.002 0.001 0.0002 - 0.012 0.004 0.30 0.04 0.05 0.03 0.02 0.003 0.002 0.35	0.18	0.20	C			
Chemical Analysis (wt%) S Si Cr Cu Mo Ni V Ti Nb B (IIW) 0.002 0.31 0.04 0.07 0.02 0.03 0.003 0.002 0.001 0.0002 - 0.004 0.30 0.04 0.05 0.03 0.02 0.003 0.002 0.001 0.0002 0.35	0.92	0.94	Mn			
Analysis (wt%) CE Si Cr Cu Mo Ni V Ti Nb B (IIW)	0.012	0.015	P			
Cu Mo Ni V Ti Nb B (IIW) 4 0.07 0.02 0.03 0.003 0.002 0.001 0.0002 - 4 0.05 0.03 0.02 0.003 0.002 0.001 0.0002 0.35	0.004	0.002	S		Chemical	
Cu Mo Ni V Ti Nb B (IIW) 4 0.07 0.02 0.03 0.003 0.002 0.001 0.0002 - 4 0.05 0.03 0.02 0.003 0.002 0.001 0.0002 0.35	0.30	0.31	Si		Analysis	
Mo Ni V Ti Nb B (IIW) 0.02 0.03 0.003 0.002 0.001 0.0002 - 0.03 0.02 0.003 0.002 0.001 0.0002 0.35	0.04	0.04	₽ C		(wt%)	
Ni V Ti Nb B (IIW) 0.03 0.003 0.002 0.001 0.0002 - 0.02 0.003 0.002 0.001 0.0002 0.35	0.05	0.07	Cu			
V Ti Nb B (IIW) 0.003 0.002 0.001 0.0002 - 0.003 0.002 0.001 0.0002 0.35	0.03	0.02	Mo			
Ti Nb B (IIW) 0.002 0.001 0.0002 - 0.002 0.001 0.0002 0.35	0.02	0.03	N:			
Nb B (IIW) 0.001 0.0002 - 0.001 0.0002 0.35	0.003	0.003	<			
CE B (IIW) 0.0002 - 0.0002 0.35	0.002	0.002	Ŧ			
CE (IIW)	0.001	0.001	Nb			
 	0.0002	0.0002	В			
CE (CSA)	0.35	ı	(IIW)	Œ		
	0.36	T	(CSA)	Œ		

	BSM-0649 Heat	Heat		
	Heat	Test Type		
	Ferrite & Pearlite	Microstructure	Charles Comment	
	777	HRBW	Hardness	
	Pass	Flattening Test		Mechar
Longitudinal; 38.1mm x WT	Transverse; 38.1mm x WT	50mm GL	Tension Test	Mechanical Properties
49,200	40,800	psi	Yield (Rt0.5)	
50,500	44,100	psi	Yield (Rp0.2)	
70,500	71,000	psi	Tensile (Rm)	
0.70	0.57	(Rt0.5/Rm)	Τ/Υ	
56	59	%	Elongation (A)	

Additional Details:

results meet the corresponding requirements. Inc. in accordance with ASTM/ASME A/SA106-2011, A/SA53-2012 and the purchase order requirements, and that the We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing

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

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.

*Note that this product was hydrotested to 1000 psi for 5 seconds.

Mill Test Certificate approved by:

Manager of Quality and R&D Kenton Dechant, P.Eng.

2018 Jan 30



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Production Method: Hot Expansion Product Heat Treatment: As-rolled

Product:

Seamless Carbon Steel Pipe

Product Heat Number:

BSM-0649

Product Standards: ASME B36.10-2004, ASTM/ASME A/SA106-2011 Grade B/C NDE, A/SA53-2012 Grade B Type S, NACE MR0175-2009, MR0103-2010

Product Markings: .BRI-STEEL MFG ASTM/ASME A/SA106 GR B/C A/SA53 GR B NPS 24 TRUE40 HEAT BSM-0649 (PIPE # LENGTH MASS) 238.11b/ft NDE SMLS NACE MR0175 2013/01 MADE IN CANADA.

BSM-0649	Heat		
Heat	Test Type		
24	NPS		7
TRUE 40	Thickness	Wall	Product Detail
6	Pieces		S
DRL	Length		
238.10	lb/ft	Mass	
ŝ	μR/hr	Geiger	
<20	Gauss	Res.Mag.	
Pass	Insp.	Visual	
Pass	OD		Non-I
Pass	WT	TU	Destructive
Pass	ASTM E213	TU	Testing
Pass	ASTM E309	ET	
*		HydroTest	
Plain End	Condition	End	

						Chemical	Chemical Analysis (wt%)	(wt%)									
																CE	CE
Heat	Steelmaking Method	Analysis	С	Mn	Р	S	Si	C.	Cu	Mo	Z.	<	⊒!	Nb	00	(IV)	(CSA)
RSM-0649	Blast Furnace; EAF; Ladle Refining;	Heat	0.20	0.94	0.015	0.002	0.31	0.04	0.07	0.02	0.03	0.003	0.002	0.001	0.0002	1	
1	Vacuum Degas; Fully Killed	Product	0.18	0.92	0.012	0.004	0.30	0.04	0.05	0.03	0.02	0.003	0.002	0.001	0.0002	0.35	0.36

	BSM-0649 Heat	Heat		
	Heat	Test Type		
	Ferrite & Pearlite	Microstructure		
	77	HRBW	Hardness	
	Pass	Flattening Test		Mechar
Longitudinal; 38.1mm x WT	Transverse; 38.1mm x WT	50mm GL	Tension Test	Mechanical Properties
49,200	40,800	psi	Yield (Rt0.5)	
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70,500	71,000	psi	Tensile (Rm)	
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Kenton Dechant, P.Eng. Manager of Quality and R&D