



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.bri-steel.com

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 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**

Product Markings: **.BRI-STEEL MFG ASTM/ASME A/SA106 GR B/C A/SA53 GR B NPS 24 SCH 60 HEAT BSM-0649 (PIPE # LENGTH MASS) 238.1lb/ft NDE SMLS NACE MR0175 2013/01 MADE IN CANADA.**

Product Details				Non-Destructive Testing												
Heat	Test Type	NPS	Wall Thickness	Pieces	Length	Mass lb/ft	Geiger $\mu\text{R/hr}$	Res. Mag. Gauss	Visual Insp.	OD	WT	UT	UT	ET	HydroTest	End Condition
BSM-0649	Heat	24	SCH 60	6	DRL	238.10	<5	<20	Pass	Pass	Pass	Pass	Pass	Pass	*	Plain End

Heat		Steelmaking Method	Chemical Analysis (wt%)														
BSM-0649	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Analysis	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE (IIW)	CE (CSA)
			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	-
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		

Mechanical Properties											
Heat	Test Type	Microstructure	Hardness HRBW	Flattening Test	Tension Test		Yield (Rt0.5) psi	Yield (Rp0.2) psi	Tensile (Rm) psi	V/T (Rt0.5/Rm)	Elongation (A) %
					50mm GL	Transverse; 38.1mm x WT					
BSM-0649	Heat	Ferrite & Pearlite	77	Pass	Longitudinal; 38.1mm x WT	49,200	50,500	70,500	0.70	56	

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/SA106-2011, 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, and 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.

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

Mill Test Certificate approved by:


 2013 Jan 30

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



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Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0649** Product Size: **NPS 24 TRUE 40** Production Date: **January 10, 2013**

Production Method: **Hot Expansion** 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**

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) 238.1lb/ft NDE SMIS NACE MR0175 2013/01 MADE IN CANADA.**

Product Details						Non-Destructive Testing											
Heat	Test Type	NPS	Wall Thickness	Pieces	Length	Mass lb/ft	Geiger μ R/hr	Res. Mag. Gauss	Visual Insp.	OD	WT	UT	UT	ET	HydroTest	End Condition	
BSM-0649	Heat	24	TRUE 40	6	DRL	238.10	<5	<20	Pass	Pass	Pass	Pass	Pass	Pass		*	Plain End

Chemical Analysis (wt%)																	
Heat	Steelmaking Method	Analysis															
		C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE (IIV)	CE (CSA)	
BSM-0649	Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed	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	-	-
		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

Mechanical Properties											
Heat	Test Type	Microstructure	Hardness HRBW	Flattening Test	Tension Test		Yield (Rt0.5) psi	Yield (Rp0.2) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
					50mm GL	Transverse: 38.1mm x WT					
BSM-0649	Heat	Ferrite & Pearlite	77	Pass	Longitudinal: 38.1mm x WT		49,200	50,500	70,500	0.70	59

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

Mill Test Certificate approved by:

[Signature]
 2013 Jan 30

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 Manager of Quality and R&D