



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-0553

Product Size: NPS 20 SCH 60

Production Date: November 8, 2012

Production Method: Hot Expansion

Product Heat Treatment: As-rolled

Product Standards: ASME B36.10-2004, API 5L-44th Ed. Grade B PSL1, ASTM/ASME A/SA106-2011 Grade B Type S, NACE MR0175-2009, MR0103-2010

Product Markings: BRI-STEEL MFG ASTM/ASME A/SA106 GR B A/SAS3 GR B NPS 20 SCH 60 HEAT BSM-0553 (PIPE # LENGTH MASS) 166.4lb/ft NDE 1000PSI SMLS NACE MR0175 2012/11 MADE IN CANADA.

Table with columns: Product Details (Heat, Test Type, Wall Thickness, Pieces, Length, Mass, Geiger, Res. Mag., Visual Insp., OD, WT, UT, ET, HydroTest, End Condition) and Non-Destructive Testing (UT, WT, ASTM E213, ASTM E309, 1000 psi/5s, Pass).

Table with columns: Heat, Steelmaking Method, Analysis (C, Mn, P, S, Si, Cr, Cu, Mo, Ni, V, Ti, Nb, B, CE (I/W), CE (CSA)), and Blast Furnace/Vacuum Degass/Fully Killed details.

Table with columns: Heat, Test Type, Microstructure (Ferrite & Pearlite), Hardness (HRBW), Flattening Test (Pass), and Mechanical Properties (Tension Test, Yield (Rp0.5), Yield (Rp0.2), Tensile (Rm), Y/T, Elongation (A)).

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-44th Ed., ASTM/ASME A/SA106-2011, A/SAS3-2012 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.

Mill Test Certificate approved by:

Handwritten signature and date: 2012 NOV 17

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

#234



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Product: **Seamless Carbon Steel Pipe**

Product Heat Number: **BSM-0553**

Product Size: **NPS 20 X 0.750**

Production Date: **November 8, 2012**

Production Method: **Hot Expansion**

Product Heat Treatment: **As-rolled**

Product Standards: **ASME B36.10-2004, API 5L-44th Ed. Grade B PSL1, ASTM/ASME A/SA106-2011 Grade B NDE, A/SA53-2012 Grade B Type S, NACE MR0175-2009, MR0103-2010**

Product Markings: **.BRI-STEEL MFG ASTM/ASME A/SA106 GR B A/SA53 GR B NPS 20 X 0.750 INCHWT HEAT BSM-0553 (PIPE # LENGTH MASS) 154.2lb/ft NDE 1000PSI SMILS NACE MR0175 2012/11 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-0553	Heat	20	0.750 inch	3	DRL	154.20	<5	<20	Pass	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 (I/W)	CE (CSA)
BSM-0553	Blast Furnace; EAF; ladle Refining; Vacuum Degass; Fully Killed	Heat	0.19	0.87	0.011	0.002	0.20	0.05	0.05	0.01	0.02	0.003	0.002	0.001	0.0004	-	-
		Product	0.20	0.88	0.012	0.005	0.19	0.04	0.05	0.02	0.02	0.003	0.002	0.001	0.0003	0.36	0.37

Mechanical Properties										
Heat	Test Type	Microstructure	Hardness HRBW	Flattening Test	Tension Test	Yield (Rt0.5)	Yield (Rp0.2)	Tensile (Rm)	Y/T (Rt0.5/Rm)	Elongation (A)
BSM-0553	Heat	Ferrite & Pearlite	77	Pass	50mm GL	psi	psi	psi	0.67	52
					Transverse; 38.1mm x WT	48,500	44,000	69,000	0.74	51
					Longitudinal; 38.1mm x WT	48,500	48,900	65,500		

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-44th Ed., 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.

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

[Signature]
 2012 Nov 17

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