



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-1357 Product Size: 18 SCH 140 Production Date: Oct 28, 2013
 Production Method: Hot Expansion Product Heat Treatment: As-rolled Certificate No.: MTR- 000640

Product Standards: ASME B36.10-2004, ASTM/ASME A/SA106-2011 Grade B/C NDE, A/SA53-2012 Grade B Type 5, NACE MR0175-2009 MR0103-2010

Product Markings



NPS 18 SCH 140 1.562 INCHWT SMLS 2013/10 NDE
 HEAT BSM-1357 (PIPE # LENGTH MASS) 274.2lb/ft ASTM/ASME A/SA106 GR B/C A/SA53 GR B NACE MR0175/MR0103 MADE IN CANADA

Product Details				Non-Destructive Testing										
Heat	Test Type	Product Size	Pieces	Length	Mass lb/ft	Geiger µR/hr	Res. Mag. Gauss	Visual Insp.	OD	UT	UT	ET	HydroTest	End Condition
BSM-1357	Heat	NPS 18 SCH 140 1.562in. WT	10	DRL	274.2	<5	<10	Pass	Pass	Pass	Pass	Pass	*	Plain End

Chemical Analysis (wt%)																	
Heat	Steelmaking Method	Test Type	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE(IIW)	CE(CSA)
BSM-1357	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.20	0.92	0.001	0.002	0.32	0.06	0.06	0.01	0.03	0.005	0.002	0.001	0.00002	-	-
		Product	0.20	0.91	0.015	0.004	0.30	0.06	0.02	0.01	0.03	0.003	0.002	0.001	0.00002	0.37	0.37

Mechanical Properties									
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test 50mm GL	Yield (Rt0.5) psi	Tensile (Rm) psi	V/T (Rt0.5/Rm)	Elongation (A) %
BSM-1357	Heat	Ferrite & Pearlite	75 HRBW	Pass	Longitudinal; 19.05 mm x WT	44,900	70,500	0.64	50

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy			% Shear			Lateral Expansion				
				J	J	J	%	%	%	mm	mm	mm	AVG	
BSM-1357	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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 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.

✓ 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:

Paul Sowden
 2013 NOV 28

Paul Sowden, T.T.
 Assistant QA Manager



Mill Test Certificate

Bri-Steel Manufacturing Inc.
 2125-64 Avenue, Edmonton, AB Canada T6P 1Z4
 Tel: 001 (780) 465-6603
 Fax: 001 (780) 465-6986
 www.BriChemSteel.com

Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-1357 Product Size: 18 SCH 160 Production Date: Oct 28, 2013
 Production Method: Hot Expansion Product Heat Treatment: As-rolled Certificate No.: MTR- 000569
 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: NPS 18 SCH 160 1.781 INCH WT 5MLS 2013/10 NDE
 HEAT BSM-1357 (PIPE # LENGTH MASS) 308.5 lb/ft ASTM/ASME A/SA106 GR B/C A/SA53 GR B NACE MR0175/MR0103 MADE IN CANADA

Product Details				Non-Destructive Testing										
Heat	Test Type	Product Size	Pieces	Length	Mass lb/ft	Geiger μ R/hr	Res. Mag. Gauss	Visual Insp.	OD**	UT WT	UT ASTM E213	ET ASTM E309	HydroTest	End Condition
BSM-1357	Heat	NPS 18 SCH 160 1.781in. WT	10	DRL	308.5	<5	<10	Pass	Pass	Pass	Pass	Pass		Plain End

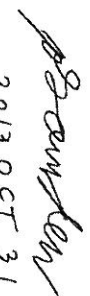
Heat	Test Type	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	Chemical Analysis (wt%)	
															CE(IIW)	CE(CSA)
BSM-1357	Steelmaking Method Basic Furnace EAF, Ladle Refining, Vacuum Degass, Fully Killed	Heat	0.20	0.92	0.001	0.002	0.32	0.06	0.01	0.03	0.005	0.002	0.001	0.0002	-	-
		Product	0.20	0.91	0.015	0.004	0.30	0.06	0.02	0.01	0.03	0.003	0.002	0.001	0.0002	0.37

Mechanical Properties									
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test 50mm GL	Yield (Rt0.5) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
BSM-1357	Heat	Ferrite & Pearlite	75 HRBW	Pass	Longitudinal; 19.05 mm x WT	44,900	70,500	0.64	50

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy			% Shear			Lateral Expansion			
				J	J	J	%	%	%	mm	mm	mm	AVG
BSM-1357	-	-	-	-	-	-	-	-	-	-	-	-	-

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 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.
- ✓ 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.
- **OD Tolerances as per API

Mill Test Certificate approved by:

 2013 OCT 31

Paul Sawden, T.T.
 Assistant QA Manager