



Mill Test Certificate

Bri-Steel Manufacturing
 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-2577 Product Size: NPS 20 XS Production Date: Nov 11, 2015
 Production Method: Hot Expansion Product Heat Treatment: As Rolled Certificate No.: MTR- 002074
 Product Standards: ASME B36.10M-2015, API 5L-45th Ed. Grade B/X42 PSL1, ASTM/ASME A106-2014/SA106-2013 Grade B/C NDE, A53-2012/SA53-2013 Grade B Type S, NACE MR0175-2009 MR0103-2012
 Product Markings: <API & L/C No.> API SPEC 5L NPS 20 XS 0.500 INCH-WT GRB/X42 PSL1 SMLS 2015/11 NDE 1890PSI
 HEAT BSM-2577 (PIPE # LENGTH MASS) 104.1lb/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 WT	UT ASTM E213	ET ASTM E309	HydroTest 1890 PSI/ 5 s	End Condition
BSM-2577	Heat	NPS 20 XS 0.500in. WT	6	DRL	104.1	<5	<20	Pass	Pass	Pass	Pass	-	Pass	32° Bevel

Heat	Steelmaking Method	Test Type	Chemical Analysis (wt%)														
			C	Mn	P	S	SI	Cr	Cu	Mo	NI	V	TI	Nb	B	CE(IW)	CE(CSA)
BSM-2577	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.20	1.18	0.014	0.006	0.27	0.02	0.04	0.01	0.01	0.046	0.020	0.002	0.0005	0.42	0.42
		Product	0.18	1.18	0.012	0.006	0.26	0.03	0.04	0.01	0.01	0.051	0.021	0.001	0.0004	0.40	0.40

Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test 2 In. Gt				Yield (Rt0.5) psi	Tensile (Rm) psi	V/T (Rt0.5/Rm)	Elongation (A) %
					Longitudinal: 1.5 in. x WT	Transverse: 1.5 in. x WT	AVG	%				
BSM-2577	Heat	Ferrite & Pearlite	81 HRBW	Pass	54,000	75,500	0.72	50				

Heat	Test Type	Impact Test Sample Details	Temp °C	Impact Energy			% Shear			Lateral Expansion		
				J	J	J	%	%	%	mm	mm	mm
BSM-2577	Standard	-	-	-	-	-	-	-	-	-	-	-

Additional Details:

✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing in accordance with GRX42 ASTM/ASME A106-2014/SA106-2013, A53-2012/SA53-2013, and the purchase order requirements, and that the results meet the corresponding requirements. Bri-Steel Manufacturing is registered and certified to ISO-9001:2008, API Q1, and PED 97/23/EC.

✓ This pipe product meets the sour service requirements of NACE MR0175/ISO 15156-2:2009 Annex A2 for Region 3 Sour Service, and NACE MR0103-2012 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:

T. Lam Feb 10 9 / 2016

Tonya Lam, C.E.T.
 Assistant QA Manager



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 Production Method: Hot Expansion
 Product Standards: ASME B36.10M-2015, ASTM/ASME A106-2014/SA106-2013 Grade B/C NDE, A53-2012/SA53-2013 Grade B Type S, NACE MR0175-2009
 Product Markings: NPS 20 XS 0.500 INCHWT SMLS 2015/11 NDE 1890PSI
 HEAT BSM-2577 (PIPE # LENGTH MASS) 104.1lb/ft ASTM/ASME A/SA106 GR B/C A/SA53 GR B NACE MR0175 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	WT	UT	ET	HydroTest	End Condition
BSM-2577	Heat	NPS 20 XS 0.500in. WT	6	DRL	104.1	<5	<20	Pass	Pass	Pass	Pass	Pass	Pass	32° Bevel

Heat	Test Type	Steelmaking Method	Chemical Analysis (wt%)														
			C	Mn	P	S	Si	Cr	Cu	Mo	NI	V	Ti	Nb	B	CE(IW)	CE(CSA)
BSM-2577	Heat	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	0.20	1.18	0.014	0.006	0.27	0.02	0.04	0.01	0.01	0.046	0.020	0.002	0.0005	0.42	0.42
			Product	0.18	1.18	0.012	0.006	0.26	0.03	0.04	0.01	0.01	0.051	0.021	0.001	0.0004	0.40

Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test		Yield (Rt0.5) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
					2 in. GI	1.5 in. x WT				
BSM-2577	Heat	Ferrite & Pearlite	81 HRBW	Pass	Longitudinal; 1.5 in. x WT	54,000	75,500	0.72	50	

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy			% Shear			Lateral Expansion			
				J	J	J	%	%	%	mm	mm	mm	AVG
BSM-2577	-	-	-	-	-	-	-	-	-	-	-	-	-

Additional Details:

- ✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing in accordance with ASTM/ASME A106-2014/SA106-2013, A53-2012/SA53-2013, and the purchase order requirements, and that the results meet the corresponding requirements. Bri-Steel Manufacturing is registered and certified to ISO-9001:2008, API Q1, and PED 97/23/EC.
- ✓ This pipe product meets the sour service requirements of NACE MR0175/ISO 15156-2:2009 Annex A2 for Region 3 Sour Service

Mill Test Certificate approved by:

T. Lam Nov 16/2015

Tonya Lam, C.E.T.
 Assistant QA Manager

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