



Mill Test Certificate

Bri-Steel Manufacturing
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-2690 Product Size: NPS 22 SCH 60 Production Date: Mar 16, 2016
 Production Method: Hot Expansion Product Heat Treatment: As Rolled Certificate No.: MTR- 002138
 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 MR0103-2012
 Product Markings: NPS 22 SCH 60 0.875 INCH WT SMLS 2016/03 NDE 1700PSI
 HEAT BSM-2690 (PIPE # LENGTH MASS) 197.4lb/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 1700 PSI/ 5 s	End Condition	
BSM-2690	Heat	NPS 22 SCH 60 0.875in. WT	4	DRL	197.4	<5	<10	Pass	Pass	Pass	N12.5 Pass	-	Pass	Plain End	

Heat	Steelmaking Method	Test Type	Chemical Analysis (wt%)																	
			C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE(IIW)	CE(IIW)Max	CE(CSA)		
			Heat	0.18	1.18	0.011	0.001	0.26	0.03	0.01	0.01	0.01	0.01	0.01	0.01	0.045	-	-	0.39	0.40
BSM-2690	Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed	Heat	Product	0.16	1.22	0.010	0.003	0.28	0.03	0.01	0.01	0.01	0.01	0.01	0.050	0.002	0.001	0.0005	0.38	0.38

Mechanical Properties									
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test 2 in. GL	Yield (Rt0.5) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
BSM-2690	Heat	Ferrite & Pearlite	77 HRBW	Pass	Longitudinal; 0.5 in. Round Bar	47 900	74 000	0.65	40

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy Min. (J)	Impact Energy (J)	Shear (%)	Lateral Expansion (mm)
BSM-2690	-	-	-	-	(3 Tests) AVG	(3 Tests) AVG	(3 Tests) AVG

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 (APIQR-1584), 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:

[Signature]
 2016 Apr 6

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