



Mill Test Certificate

Bri-Steel Manufacturing
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-2697 Product Size: NPS 24 TRUE 40 Production Date: Mar 23, 2016
 Production Method: Hot Expansion Product Heat Treatment: As Rolled Certificate No.: MTR- 002143
 Product Standards: ASME B36.10M-2015, ASTM/ASME A333-2013 Grade 6 LT(M45C) A106-2014/SA106-2013 Grade B NDE, A53-2012/SA53-2013 Grade B Type S, NACE MR0175-2009
 MR0103-2012
 Product Markings: NPS 24 TRUE 40 0.688 INCHWT SMLS 2016/03 NDE 1200PSI
 HEAT BSM-2697 (PIPE # LENGTH MASS) 171.2lb/ft ASTM/ASME A/SA333 GR 6 LT(M45C) A/SA106 GR B 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 1200 PSI/ 5 s	End Condition
BSM-2697	Heat	NPS 24 TRUE 40 0.688in. WT	9	DRL	171.2	<5	<20	Pass	Pass	Pass	N12.5 Pass	-	Pass	30° Bevel

Heat	BSM-2697	Steelmaking Method Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed	Chemical Analysis (wt%)																																	
			Test Type		C		Mn		P		S		Si		Cr		Cu		Mo		Ni		V		Ti		Nb		B		CE(IIW)		CE(IIW)Max		CE(CSA)	
			Heat	Product	0.18	0.16	1.20	1.12	0.011	0.012	0.002	0.002	0.24	0.26	0.04	0.05	0.01	0.01	0.01	0.01	0.03	0.03	0.050	0.056	0.001	0.001	0.001	0.001	0.0001	0.0001	0.40	0.37	-	-	0.40	0.37
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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-2697	Heat	Ferrite & Pearlite	80 HRBW	Pass	Longitudinal; 1.5 in. x WT	52 500	77 000	0.68	43
				Pass	Longitudinal; 1.5 in. x WT	53 000	78 500	0.68	41

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy Min. (J)	Impact Energy (J) (3 Tests) AVG	Shear (%) (3 Tests) AVG	Lateral Expansion (mm) (3 Tests) AVG
BSM-2697	ASTM A333	CVN Long 10 x 10 mm	-45	(14/14/14) 18	(96/94/97) 96	(40/40/40) 40	(1.56/1.48/1.71) 1.58

Additional Details:

✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing in accordance with ASTM/ASME A333-2015/SA333-2013, 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.

Mill Test Certificate approved by:

✓ 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

T. Lam
 Tonya Lam, P. Tech (Eng.)
 Assistant QA Manager

- ✓ 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.

April 105/2016