



Mill Test Certificate

Bri-Steel Manufacturing
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-2743 Product Size: NPS 20 TRUE 40 Production Date: Apr 27, 2016
 Production Method: Hot Expansion Product Heat Treatment: As Rolled Certificate No.: MTR- 002802
 Product Standards: ASME B36.10M-2015, ASTM/ASME A333-2015/SA333-2013 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 20 TRUE 40 0.594 INCHWT SMLS 2016/04 NDE 1250PSI
 HEAT BSM-2743 (PIPE # LENGTH MASS) 122.9lb/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 1250 PSI/ 5 s	End Condition	
BSM-2743	Heat	NPS 20 TRUE 40 0.594in. WT	1	DRL	122.9	<5	<20	Pass	Pass	Pass	N12.5 Pass	-	Pass	Plain End	

Heat	BSM-2743	Steelmaking Method Blast Furnace; EAF; Ladle Refining; Vacuum Degass; 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	0.99	0.009	0.005	0.24	0.06	0.04	0.04	0.04	0.03	0.001	0.001	0.001	0.0004	0.37	-	0.37
						0.17	0.95	0.008	0.005	0.25	0.06	0.05	0.04	0.03	0.003	0.002	0.001	0.0004	0.35	-	0.35

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-2743	Heat	Ferrite & Pearlite	77 HRBW	Pass	Longitudinal; 1.5 in. x WT	47 300	72 500	0.65	43

Heat	BSM-2743	Test Standard	ASTM A333	Impact Test Sample Details CVN Long 10 x 10 mm	Temp °C	-45	Impact Energy Min. (J)		Shear (%)	Lateral Expansion (mm)
							(3 Tests) AVG	(14/14/14) 18		
							(3 Tests) AVG	(29/59/56) 48	(3 Tests) AVG	(3 Tests) AVG
							(5/10/10) 8	(0.46/0.95/0.92) 0.78		

- 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 (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:

IT Lam May 10/2/2016
 Tonya Lam, P. Tech (Eng.)
 Assistant QA Manager