



Mill Test Certificate

Bri-Steel Manufacturing
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-2827 Product Size: NPS 24 TRUE 40 Production Date: Jul 04, 2016
 Production Method: Hot Expansion Product Heat Treatment: Normalizing Forming Certificate No.: MTR- 002895

Product Standards: ASME B36.10M-2015, ASTM/ASME A333-2016/SA333-2015 Grade 6 LT(M45C) NDE, A53-2012/SA53-2015 Grade B Type S, NACE MR0175/ISO 15156-2:2009 MR0103/ISO 17495:2015

Product Markings
 NPS 24 TRUE 40 0.688 INCHWT SMLS 2016/07 NDE 1200PSI
 HEAT BSM-2827 (PIPE # LENGTH MASS) 171.2lb/ft ASTM/ASME A/SA333 GR 6 LT(M45C) 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 Pass	ET ASTM E309	HydroTest 1200PSI/ 5 s	End Condition
BSM-2827	Heat	NPS 24 TRUE 40 0.688in. WT	10	DRL	171.2	<5	<20	Pass	Pass	N12.5	Pass	-	Pass	30° Bevel

Chemical Analysis (wt%)																		
Heat	Steelmaking Method	Test Type	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE(IIW)	CE(IIW)Max	CE(CSA)
BSM-2827	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.18	1.09	0.020	0.004	0.33	0.08	0.02	0.00	0.01	0.058	0.004	0.001	0.0002	0.39	-	0.40
		Product	0.18	1.12	0.016	0.006	0.33	0.08	0.02	0.01	0.01	0.065	0.003	0.001	0.0003	0.40	-	0.41
			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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-2827	Heat	Ferrite & Pearlite	83 HRBW	Pass	Longitudinal; 1.5 in. x WT	51 000	76 000	0.67	46
				Pass	Longitudinal; 1.5 in. x WT	51 500	74 500	0.69	45

Heat	Test Standard	Result	Impact Test Sample Details	Impact Energy Min. (J) (3 Tests) AVG	Impact Energy Results (J) (3 Tests) AVG	Shear (%) (3 Tests) AVG	Lateral Expansion (mm) (3 Tests) AVG
BSM-2827	ASTM A333	Pass	CVN Long 10 x 10 mm	(14/14/14) 18	(63/58/70) 64	(20/15/30) 22	(0.97/0.95/1.18) 1.03

Additional Details:
 ✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing in accordance with ASTM/ASME A333-2016/SA333-2015, A53-2012/SA53-2015, 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/ISO 17495:2015 Section 13.1
 ✓ 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:

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