



Bri-Steel Manufacturing
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Mill Test Certificate

Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-3062 Product Size: NPS 20 SCH 60 Production Date: Feb 21, 2017
 Production Method: Hot Expansion Product Heat Treatment: Normalizing Forming Certificate No.: MTR- 003220

Product Standards: ASME B36.10M-2015, ASTM/ASME A333-2016/SA333-2015 Grade 6 LT(M45C) A106-2014/SA106-2015 Grade B NDE, A53-2012/SA53-2015 Grade B Type S, NACE MR0175/ISO 15156-2:2009 MR0103/ISO 17495:2015

Product Markings: NPS 20 SCH 60 0.812 INCHWT SMLS 2017/02 NDE 1700PSI
 HEAT BSM-3062 (PIPE # LENGTH MASS) 166.52lb/ft ASTM/ASME A/SA333 GR 6 LT(M45C) A/SA106 GR B A/SA53 GR B NACE MR0175/MR0103 MADE IN CANADA

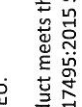
Product: Details		Non-Destructive Testing												
Heat	Test Type	Product Size	Length	Pieces	Mass lb/ft	Geiger µR/hr	Res. Mag. Gauss	Visual Insp.	OD	UT (WT) ASTM E114	UT ASTM E213	ET ASTM E309	HydroTest 1700PSI/ 5 s	End Condition
BSM-3062	Heat	NPS 20 SCH 60 0.812in. WT	DRL	7	166.52	<5	<10	Pass	Pass	N12.5	Pass	-	Pass	Plain End

Chemical Analysis (wt%)																	
Heat	Steelmaking Method	Test Type	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	CE(IIW)	CE(IIW)Max	CE(CSA)
BSM-3062	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.17	1.12	0.016	0.004	0.33	0.03	0.02	0.01	0.01	0.055	0.003	0.001	0.0005	0.38	0.38
		Product	0.18	1.12	0.017	0.007	0.34	0.03	0.01	0.00	0.01	0.056	0.002	0.001	0.0003	0.39	0.39
			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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-3062	Heat	Ferrite & Pearlite	79 HRBW	Pass	Longitudinal; 0.5 in. Round Bar	47 500	77 500	0.61	38
				Pass	Longitudinal; 0.5 in. Round Bar	47 700	80 500	0.59	36

Heat	Test Standard	Result	Impact Test Sample Details	Temp °C	Impact Energy Min. (J) (3 Tests) AVG	Impact Energy Results (J) (3 Tests) AVG	Shear (%) (0/5/5) 3	Lateral Expansion (mm) (3 Tests) AVG
BSM-3062	ASTM A333	Pass	CVN Long 10 x 10 mm	-45	(14/14/14) 18	(16/40/34) 30	(0/5/5) 3	(0.21/0.67/0.56) 0.48

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, A106-2014/SA106-2015, 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 2014/68/EU.
 ✓ 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