



Mill Test Certificate

Bri-Steel Manufacturing
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-3068 Product Size: NPS 20 SCH 60 Production Date: Feb 23, 2017
 Production Method: Hot Expansion Product Heat Treatment: Normalizing Forming Certificate No.: MTR- 003196

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 INCHWHT SMLS 2017/02 NDE 1700PSI
 HEAT BSM-3068 (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	Pieces	Length	Mass lb/ft	Geiger μR/hr	Res. Mag. Gauss	Visual Insp.	OD	UT (WT) ASTM E114	UT ASTM E213	ET ASTM E309	Hydro Test 1700PSI/ 5 s	End Condition
BSM-3068	Heat	NPS 20 SCH 60 0.812in. WT	6	DRL	166.52	<5	<10	Pass	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	B	CE(IIW)	CE(IIW)Max	CE(CSA)
BSM-3068	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.17	1.12	0.011	0.008	0.31	0.04	0.02	0.01	0.02	0.057	0.002	0.001	0.0004	0.38	-	0.38
		Product	0.18	1.12	0.016	0.006	0.35	0.04	0.01	0.00	0.00	0.01	0.056	0.002	0.001	0.0003	0.39	-
			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Mechanical Properties

Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test		Yield (Rt0.5) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
					2 in. GL	psi				
BSM-3068	Heat	Ferrite & Pearlite	81 HRBW	Pass	Longitudinal; 0.5 in. Round Bar	48 900	76 000	0.64	37	
				Pass	Longitudinal; 0.5 in. Round Bar	49 500	76 000	0.65	37	

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 (%) (3 Tests) AVG	Lateral Expansion (mm) (3 Tests) AVG
BSM-3068	ASTM A333	Pass	CVN Long 10 x 10 mm	-45	(14/14/14) 18	(36/32/38) 35	(5/5/5) 5	(0.51/0.50/0.64) 0.55

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.

Mill Test Certificate approved by:

T. Lam MAR/08/2017

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

✓ 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.