



Mill Test Certificate

Bri-Steel Manufacturing
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-2780 Product Size: NPS 30 STD Production Date: May 30, 2016
 Production Method: Hot Expansion Product Heat Treatment: Normalizing Forming Certificate No.: MTR-002849

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

Product Markings
 NPS 30 STD 0.375 INCHWT SMLS 2016/05 NDE 950PSI
 HEAT BSM-2780 (PIPE # LENGTH MASS) 118.6lb/ft ASTM/ASME A/SA333 GR 6 LT(M45C) A/SA106 GR B/C 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 μ R/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT Pass	UT ASTM E213	ET	ET ASTM E309	HydroTest 950PSI/ 5s	End Condition
BSM-2780	Heat	NPS 30 STD 0.375in. WT	5	DRL	118.6	<5	<20	Pass	Pass	Pass	N12.5 Pass	-	-	Pass	35° Bevel	

Chemical Analysis (wt%)

Heat	Steelmaking Method	Test Type	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE (I/W)	CE (I/W)Max	CE (CSA)
BSM-2780	Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed	Heat	0.19	1.26	0.011	0.001	0.29	0.03	0.01	0.01	0.01	0.050	0.001	0.001	0.0005	0.42	-	0.43
		Product	0.16	1.23	0.012	0.004	0.28	0.02	0.01	0.01	0.01	0.052	0.003	0.003	0.001	0.0004	0.38	-
			0.16	1.22	0.011	0.004	0.27	0.02	0.01	0.01	0.01	0.052	0.003	0.003	0.0004	0.38	-	0.37

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-2780	Heat	Ferrite & Pearlite	79 HRBW	Pass	Longitudinal; 1.5 in. x WT	49 900	76 000	0.66	47	
				Pass	Longitudinal; 1.5 in. x WT	49 400	76 000	0.65	42	

Heat	Test Standard	Result	Impact Test Sample Details	Temp °C	Impact Energy Min. (J)		Shear (%)	Lateral Expansion (mm)
					(3 Tests) AVG	(30/30/30) 30		
BSM-2780	ASTM A333	Pass	CVN Long 10 x 7.5 mm	-48	(11/11/11) 14	(78/68/71) 72	(30/30/30) 30	(1.59/1.48/1.46) 1.51

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 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:

 T. Lam July/27/2016
 Tonya Lam, P. Tech (Eng.)
 Assistant QA Manager