



Mill Test Certificate

Bri-Steel Manufacturing
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-2615 Product Size: NPS 16 STD Production Date: Jan 06, 2016
 Production Method: Hot Expansion Product Heat Treatment: ThermoMechanical Formed Certificate No.: MTR- 002050
 Product Standards: ASME B36.10M-2015, ASTM/ASME A333-2015/SA333-2013 Grade 6 LT(M45C) A106-2014/SA106-2013 Grade B NDE, AS3-2012/SA53-2013 Grade B Type S, NACE MR0175-2009
 Product Markings: NPS 16 STD 0.375 INCHWT SMLS 2016/01 NDE
 HEAT BSM-2615 (PIPE # LENGTH MASS) 62.58lb/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	Gelger μR/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT ASTM E213	ET ASTM E309	HydroTest	End Condition
BSM-2615	Heat	NPS 16 STD 0.375in. WT	3	DRL	62.58	<5	<20	Pass	Pass	Pass	Pass	Pass	Pass	31° Bevel

Heat	Test Type	Steelmaking Method	Chemical Analysis (wt%)																
			C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE(IIW)	CE(CSA)		
BSM-2615	Blast Furnace, EAF, Ladle Refining, Vacuum Degas, Fully Killed		Heat	0.16	1.17	0.010	0.002	0.25	0.01	0.01	0.01	0.01	0.01	0.02	0.050	0.001	0.001	0.37	0.36
			Product	0.16	1.16	0.008	0.003	0.28	0.03	0.01	0.01	0.01	0.02	0.056	0.002	0.002	0.0003	0.37	0.37

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-2615	Heat	Ferrite & Pearlite	83 HRBW	Pass	Pass	Longitudinal; 1.5 in. x WT	Longitudinal; 1.5 in. x WT	53,500	80,000	0.67	40								
				Pass	Pass	Longitudinal; 1.5 in. x WT	54,500	80,500	0.68	42									

Heat	Test Standard	Impact Test Sample Details		Temp °C	Impact Energy				% Shear				Lateral Expansion			
		ASTM A333	CVN Long 10 x 7.5 mm		-48	J	J	J	AVG	%	%	%	AVG	mm	mm	mm
BSM-2615	ASTM A333	CVN Long 10 x 7.5 mm	-48	52.0	18.0	32.0	34.0	15	10	10	10	12	1.27	0.33	0.87	0.82

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, AS3-2012/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, 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:

 Tonya Lam, C.E.T.
 Assistant QA Manager