



Mill Test Certificate

Bri-Steel Manufacturing
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-3143 Production Date: May 17, 2017
 Production Method: Hot Expansion Product Heat Treatment: Normalizing Forming Certificate No.: MTR- 003352
 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 16 TRUE 80 0.844 INCHWT SMLS 2017/05 NDE
 HEAT BSM-3143 (PIPE # LENGTH MASS) 136.76lb/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	Res. Mag. Gauss	Visual Insp.	OD	UT (WT)	UT	ET	HydroTest	End Condition	
BSM-3143	Heat	NPS 16 TRUE 80 0.844in. WT	20	DRL	136.76	<5	<10	Pass	Pass	Pass	Pass	N12.5 Pass	-	Plain End	

Heat	Test Type	Steelmaking Method	Test Type	Chemical Analysis (wt%)															
				C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE(l/w)	CE(l/w)Max	CE(CSA)
BSM-3143	Heat	Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed	Heat	0.15	1.28	0.011	0.002	0.30	0.05	0.02	0.01	0.01	0.039	0.003	0.001	0.0003	0.39	-	0.37
			Product	0.17	1.28	0.012	0.005	0.32	0.05	0.02	0.00	0.01	0.041	0.002	0.001	0.0003	0.40	-	0.40

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-3143	Heat	Ferrite & Pearlite	80 HRBW	Pass	Longitudinal; 0.5 in. Round Bar	48 900	76 000	0.64	36
				Pass	Longitudinal; 0.5 in. Round Bar	49 400	76 000	0.65	35

Heat	Test Standard	Result	Impact Test Sample Details	Temp °C	Impact Energy Min. (J)	Impact Energy Results (J)	Shear (%)	Lateral Expansion (mm)
BSM-3143	ASTM A333	Pass	CVN Long 10 x 10 mm	-45	(14/14/14) 18	(138/122/102) 121	(50/40/30) 40	(3 Tests) AVG (2.28/1.99/1.44) 1.90

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 9001:2015 (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

Mill Test Certificate approved by:

T. Lam May 12/5/2017

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

- ✓ 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.