



Mill Test Certificate

Bri-Steel Manufacturing
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-2819 Production Date: Jun 29, 2016
 Production Method: Hot Expansion Product Heat Treatment: Normalizing Forming Certificate No.: MTR- 002885
 Product Standards: ASME B36.10M-2015, ASTM/ASME A333-2015 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 24 TRUE 80 1.219 INCHWT SMLS 2016/06 NDE 2130PSI
 HEAT BSM-2819 (PIPE # LENGTH MASS) 296.4lb/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

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 2130PSI/ 5s	End Condition
BSM-2819	Heat	NPS 24 TRUE 80 1.219in. WT	2	DRL	296.4	<5	<20	Pass	Pass	Pass	Pass	N12.5 Pass	-	Pass

Non-Destructive Testing

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)	
																			Heat
BSM-2819	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Product	0.14	1.04	0.006	0.003	0.28	0.05	0.06	0.03	0.03	0.037	0.003	0.001	0.0003	0.34	-	-	0.32
			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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-2819	Heat	Ferrite & Pearlite	75 HRBW	Pass	Longitudinal; 0.5 in. Round Bar	47 500	70 500	0.67	36
				Pass	Longitudinal; 0.5 in. Round Bar	46 700	70 000	0.67	34

Heat	Test	Result	Impact Test Sample Details	Temp °C	Impact Energy Min. (J)	Impact Energy Results (J)	Shear (%)	Lateral Expansion (mm)	
									ASTM A333
BSM-2819	Standard	Pass	CVN Long 10 x 10 mm	-45	(14/14/14) 18	(108/129/198) 145	(70/80/90) 80	(1.58/1.94/2.30) 1.94	

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/SA333-2015, 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.

Mill Test Certificate approved by:

Tonya Lam July 10th 2016

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.