



Mill Test Certificate

Bri-Steel Manufacturing
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-3083 Product Size: NPS 24 SCH 60 Production Date: Mar 14, 2017
 Production Method: Hot Expansion Product Heat Treatment: Normalizing Forming Certificate No.: MTR- 003248
 Product Standards: ASME B36.10M-2015, ASTM/ASME A333-2015 Grade 6 LT(M45C) A106-2014/SA106-2015 Grade B/C NDE, A53-2012/SA53-2015 Grade B Type S, NACE MR0175/ISO 15156-2:2009 MR0103/ISO 17495:2015
 Product Markings: NPS 24 SCH 60 0.969 INCHWWT SMLS 2017/03 NDE 1900PSI
 HEAT BSM-3083 (PIPE # LENGTH MASS) 238.55lb/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 μR/hr	Res. Mag. Gauss	Visual Insp.	OD	UT (WT) ASTM E114	UT ASTM E213	ET ASTM E309	HydroTest 1900PSI/ 5s	End Condition
BSM-3083	Heat	NPS 24 SCH 60 0.969in. WT	14	DRL	238.55	<5	<10	Pass	Pass	Pass	N12.5 Pass	-	Pass	Plain End

Heat	BSM-3083	Steelmaking Method Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed	Test Type	Chemical Analysis (wt%)																
				C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE(IIW)	CE(IIW)Max	CE(CSA)	
			Heat	0.18	1.24	0.017	0.004	0.26	0.03	0.01	0.01	0.01	0.01	0.050	0.002	0.001	0.0001	0.41	-	0.41
			Product	0.17	1.23	0.015	0.006	0.27	0.05	0.01	0.00	0.01	0.056	0.001	0.001	0.0002	0.40	-	-	0.40

Heat	BSM-3083	Test Type	Microstructure	Hardness	Flattening Test	Tension Test		Yield (Rt0.5) psi	Tensile (Rm) psi	V/T (Rt0.5/Rm)	Elongation (A) %
						2 in. GL	0.5 in. Round Bar				
			Heat	Ferrite & Pearlite	80 HRBW	Pass	Longitudinal; 0.5 in. Round Bar	52 500	78 000	0.67	35
					Pass	Pass	Longitudinal; 0.5 in. Round Bar	54 000	77 500	0.70	35

Heat	BSM-3083	Test Standard	Result	Impact Test Sample Details	Temp °C	Impact Energy Results (J)		Shear (%)	Lateral Expansion (mm)
						(3 Tests) AVG	(3 Tests) AVG		
		ASTM A333	Pass	CVN Long 10 x 10 mm	-45	(14/14/14) 18	(76/70/62) 69	(5/5/5) 5	(1.08/1.10/1.04) 1.07

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 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

✓ 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 MAR 21 / 2017

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