



Mill Test Certificate

Bri-Steel Manufacturing
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-3087 Product Size: NPS 24 SCH 60 Production Date: Mar 15, 2017
 Production Method: Hot Expansion Product Heat Treatment: Normalizing Forming Certificate No.: MTR- 003252
 Product Standards: ASME B36.10M-2015, API 5L-45th Ed. Grade B/X42/X46/X52 PSL1, ASTM/ASME A333-2016/SA333-2015 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
 Product Markings: <API & L/C No.> API SPEC 5L NPS 24 SCH 60 0.969 INCHWT GRB/X42/X46/X52 PSL1 SMLS 2017/03 NDE 2970PSI
 HEAT BSM-3087 (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 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)	UT	ET	HydroTest	End Condition
BSM-3087	Heat	NPS 24 SCH 60 0.969in. WT	1	DRL	238.55	<5	<10	Pass	Pass	Pass	N12.5 Pass	-	Pass	Plain End

Heat	Steelmaking Method	Test Type	Chemical Analysis (wt%)																	
			C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE(IW)	CE(IW)Max	CE(CSA)		
			BSM-3087	Blast Furnace: EAF; Ladle Refining: Vacuum Degas; Fully Killed (at TRCO China)	Heat	0.18	1.15	0.016	0.004	0.25	0.03	0.01	0.01	0.01	0.01	0.02	0.057	0.002	0.001	0.0001
		Product	0.17	1.28	0.014	0.004	0.34	0.04	0.01	0.00	0.02	0.057	0.002	0.001	0.0003	0.41	-	-	0.41	-

Mechanical Properties									
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test	Yield (Rt0.5)	Tensile (Rm)	Y/T	Elongation (A)
BSM-3087	Heat	Ferrite & Pearlite	81 HRBW	Pass	Longitudinal; 0.5 in. Round Bar	53 000 psi	76 500 psi	0.69 (Rt0.5/Rm)	40 %

Heat	Test Standard	Result	Impact Test Sample Details	Temp °C	Impact Energy Min. (J)	Impact Energy Results (J)	Shear (%)	Lateral Expansion (mm)
BSM-3087	ASTM A333	Pass	CVN Long 10 x 10 mm	-45	(14/14/14) 18	(3 Tests) AVG (90/80/66) 79	(3 Tests) AVG (20/20/20) 20	(3 Tests) AVG (1.44/1.35/1.16) 1.32

Additional Details:

- ✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing in accordance with GRX42446K52 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 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

Mill Test Certificate approved by:

T. Lam *MAR 13/2017*

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.