



Mill Test Certificate

Bri-Steel Manufacturing
 2125-64 Avenue, Edmonton, AB Canada T6P 1Z4
 Tel: 001 (780) 469-6603
 Fax: 001 (780) 469-6986
 www.bri-steel.com

Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-3086 Product Size: NPS 24 SCH 60 Production Date: Mar 15, 2017
 Production Method: Hot Expansion Product Heat Treatment: Normalizing Forming Certificate No.: MTR- 003251
 Product Standards: ASME B36.10M-2015, API 5L-45th Ed. Grade B/X42/X46 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 PSL1 SMLS 2017/03 NDE 2970PSI
 HEAT BSM-3086 (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	Gelger	Res. Mag. Gauss	Visual Insp.	OD	UT (WT)	UT	ET	HydroTest	End Condition		
BSM-3086	Heat	NPS 24 SCH 60 0.969in. WT	4	DRL	238.55	<5	<10	Pass	Pass	Pass	ASTM E114	ASTM E213	ASTM E309	2970PSI/ 5s	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(IIW)	CE(IIW)/Max	CE(CSA)
			0.18	1.15	0.016	0.004	0.25	0.03	0.01	0.01	0.01	0.01	0.01	0.050	0.002	0.001	0.0001	0.39
BSM-3086	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed (at TPCO China)	Heat	0.15	1.25	0.013	0.004	0.34	0.04	0.01	0.00	0.02	0.056	0.001	0.001	0.0003	0.38	-	0.37
		Product	0.17	1.11	0.014	0.005	0.25	0.05	0.01	0.00	0.01	0.057	0.001	0.001	0.0002	0.38	-	0.38

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-3086	Heat	Ferrite & Pearlite	79 HRBW	Pass	Longitudinal; 0.5 in. Round Bar	51 000	73 500	0.69	38
				Pass	Longitudinal; 0.5 in. Round Bar	51 000	76 000	0.67	40

Heat	Test Standard	Result	Impact Test Sample Details	Temp °C	Impact Energy Min. (J)	Impact Energy Results (J)	Shear (%)	Lateral Expansion (mm)
BSM-3086	ASTM A333	Pass	CVN Long 10 x 10 mm	-45	(14/14/14) 18	(3 Tests) AVG (76/118/88) 94	(10/30/20) 20	(3 Tests) AVG (1.11/1.75/1.30) 1.39

Additional Details:
 ✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing in accordance with GR42X46 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
 ✓ 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:

T. Lam MTR/22/2017

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