



Mill Test Certificate

Bri-Steel Manufacturing
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-3090 Product Size: NPS 24 TRUE 80 Production Date: Mar 16, 2017
 Production Method: Hot Expansion Product Heat Treatment: Normalizing Forming Certificate No.: MTR- 003264

Product Standards: ASME B36.10M-2015, API 5L-45th Ed. GradeB/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 TRUE 80 1.219 INCHWT GRB/X42/X46 PSL1 SMLS 2017/03 NDE 2970PSI
 HEAT BSM-3090 (PIPE # LENGTH MASS) 296.84lb/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 μ R/hr	Res. Mag. Gauss	Visual Insp.	OD	UT (WT) ASTM E114	UT	ET	HydroTest	End Condition
BSM-3090	Heat	NPS 24 TRUE 80 1.219in. WT	10	DRL	296.84	<5	<10	Pass	Pass	N12.5 Pass	-	-	Pass	Plain End

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)
BSM-3090	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed (at TPCO China)	Heat	0.16	1.16	0.010	0.003	0.25	0.03	0.01	0.02	0.02	0.050	0.002	0.001	0.0001	0.38	-	0.37
		Product	0.15	1.11	0.012	0.004	0.26	0.05	0.01	0.01	0.03	0.057	0.001	0.001	0.0002	0.36	-	0.35
			0.16	1.20	0.012	0.003	0.27	0.05	0.01	0.01	0.02	0.056	0.002	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-3090	Heat	Ferrite & Pearlite	74 HRBW	Pass	Longitudinal; 0.5 in. Round Bar	54 000	78 500	0.69	38
				Pass	Longitudinal; 0.5 in. Round Bar	52 000	76 000	0.68	37

Heat	Test Standard	Test Result	Impact Test Sample Details	Temp °C	Impact Energy Min. (J) (3 Tests) AVG	Impact Energy Results (J) (3 Tests) AVG	Shear (%) (3 Tests) AVG	Lateral Expansion (mm) (3 Tests) AVG
BSM-3090	ASTM A333	Pass	CVN Long 10 x 10 mm	-45	(14/14/14) 18	(69/73/51) 64	(5/5/5) 5	(0.94/1.13/0.77) 0.95

Additional Details:

✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing in accordance with GRX42X46 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.

Mill Test Certificate approved by:

T. Lam APR/05/2017

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

✓ 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.