



Mill Test Certificate

Bri-Steel Manufacturing
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-3021 Production Date: Jan 23, 2017
 Production Method: Hot Expansion Product Heat Treatment: Normalizing Forming Certificate No.: MTR- 003121
 Product Standards: ASME B36.10M-2015, API 5L-45th Ed. GradeB/X42 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 MR0103/ISO 17495:2015
 Product Markings: <API & L/C No.> API SPEC 5L NPS 24 TRUE 80 1.219 INCHWT GRB/X42 PSL1 SM1S 2017/01 NDE 2970PSI
 HEAT BSM-3021 (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/MR0103 MADE IN CANADA

Product: Details				Non-Destructive Testing											
Heat	Test Type	Product Size	Pieces	Length	Mass lb/ft	Geliger	Res. Mag.	Visual	OD	UT (WT)	UT	ET	HydroTest	End Condition	
BSM-3021	Heat	NPS 24 TRUE 80 1.219in. WT	5	DRL	296.84	<5	<10	Pass	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(IIW)	CE(IIW)Max	CE(CSA)	
			0.15	1.15	0.010	0.002	0.25	0.02	0.01	0.01	0.01	0.01	0.02	0.054	0.001	0.001	0.0002	0.36	-
BSM-3021	Blast Furnace, EAF, Ladle Refining, Vacuum Degass, Fully Killed (at TRCO China)	Heat	0.15	1.15	0.010	0.002	0.25	0.02	0.01	0.01	0.01	0.02	0.054	0.001	0.001	0.0002	0.36	-	0.34
		Product	0.14	1.11	0.014	0.004	0.26	0.04	0.01	0.01	0.02	0.056	0.001	0.001	0.0002	0.34	-	0.32	
			0.13	1.10	0.010	0.002	0.26	0.05	0.01	0.01	0.02	0.056	0.001	0.001	0.0002	0.34	-	0.31	

Mechanical Properties									
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test 2 in. GL	Yield (Rt0.5) psi	Tensile (Rm) psi	Y/T	Elongation (A) %
BSM-3021	Heat	Ferrite & Pearlite	81 HRBW	Pass	Longitudinal; 0.5 in. Round Bar	48 800	74 500	0.66	37
				Pass	Longitudinal; 0.5 in. Round Bar	51 500	75 000	0.69	39

Heat	Test Standard	Result	Impact Test Sample Details	Temp °C	Impact Energy Min. (J)	Impact Energy Results (J)	Shear (%)	Lateral Expansion (mm)
BSM-3021	ASTM A333	Pass	CVN Long 10 x 10 mm	-45	(3 Tests) AVG (14/14/14) 18	(3 Tests) AVG (76/77/72) 75	(15/15/15) 15	(3 Tests) AVG (1.07/1.22/0.97) 1.09

Additional Details:

✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing in accordance with GRX42 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, 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:

T. Lam Jan 25 / 2017

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