




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-2794 Product Size: NPS 24 X 0.438 Production Date: Jun 08, 2016
 Production Method: Hot Expansion Product Heat Treatment: Normalizing Forming Certificate No.: MTR- 002858
 Product Standards: ASME B36.10M-2015, API 5L-45th Ed. Grade X52N PSL2, ASTM/ASME A106-2014/SA106-2015 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 X 0.438 0.438 INCHWT GR X52N PSL2 SMLS 2016/06 NDE 1710PSI**
HEAT BSM-2794 (PIPE # LENGTH MASS) 110.22lb/ft ASTM/ASME A/SA106 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	UT ASTM E213	ET ASTM E309	HydroTest 1710PSI/ 5 s	End Condition
BSM-2794	Heat	NPS 24 X 0.438 0.438in. WT	15	DRL	110.22	<5	<20	Pass	Pass	Pass	N12.5 Pass	-	Pass	30° Bevel

Heat	BSM-2794	Steelmaking Method Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed (at TPCO China)	Chemical Analysis (wt%)																
			Test Type	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE(IW)	CE(IW)Max	CE(CSA)
			Heat	0.16	1.23	0.012	0.003	0.26	0.03	0.01	0.01	0.01	0.01	0.050	0.001	0.001	0.0005	0.38	-
Product	0.18	1.26	0.011	0.005	0.32	0.03	0.01	0.01	0.01	0.01	0.056	0.003	0.001	0.0003	0.41	0.43	0.42	0.42	
			0.19	1.24	0.016	0.004	0.31	0.03	0.01	0.01	0.054	0.003	0.001	0.0004	0.42	0.43	0.42	0.42	

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-2794	Heat	Ferrite & Pearlite	80 HRBW	Pass	Longitudinal; 1.5 in. x WT	55 000	76 500	0.72	42

Heat	Test Standard	Result	Impact Test Sample Details	Temp °C	Impact Energy Min. (J)	Impact Energy Results (J)	Shear (%)	Lateral Expansion (mm)
BSM-2794	API 5L PSL2	Pass	CVN Trans 10 x 10 mm	-5	(3 Tests) AVG (20/20/20) 27	(3 Tests) AVG (196/189/190) 192	(3 Tests) AVG (100/100/100) 100	(3 Tests) AVG (2.11/2.03/2.20) 2.11

Additional Details:

✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing in accordance with API 5L-45th Ed., ASTM/ASME A106-2014/SA106-2015, 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 97/23/EC.

✓ 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:

Kenton Dechant
 2016 June 20

Kenton Dechant, P.Eng.
 Manager of Quality and R&D