



# 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-2720      Product Size: NPS 24 X 0.650      Production Date: Apr 11, 2016  
 Production Method: Hot Expansion      Product Heat Treatment: As Rolled      Certificate No.: MTR- 002177  
 Product Standards: ASME B36.10M-2015, ASTM/ASME A333-2015/SA333-2013 Grade 6 LT(M45C) A106-2014/SA106-2013 Grade B NDE, A53-2012/SA53-2013 Grade B Type S, NACE MR0175-2009  
 Product Markings: MRO103-2012  
 NPS 24 X 0.650 0.650 INCHWT SMLS 2016/04 NDE 1200PSI  
 HEAT BSM-2720 (PIPE # LENGTH MASS) 162.1lb/ft ASTM/ASME A/SA333 GR 6 LT(M45C) A/SA106 GR B A/SA53 GR B NACE MR0175/MRO103 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 1200 PSI/ 5 s	End Condition	
BSM-2720	Heat	NPS 24 X 0.650 0.650in. WT	23	DRL	162.1	<5	<20	Pass	Pass	Pass	N12.5 Pass	-	Pass	30° Bevel	

Heat	BSM-2720	Steelmaking Method Blast Furnace: EAF; Ladle Refining; Vacuum Degass; Fully Killed	Chemical Analysis (wt%)																																	
			Test Type		C		Mn		P		S		Si		Cr		Cu		Mo		Ni		V		Ti		Nb		B		CE(IIW)		CE(IIW)Max		CE(CSA)	
			Heat	Product	0.16	0.17	1.22	1.22	0.016	0.013	0.001	0.002	0.27	0.27	0.04	0.03	0.02	0.02	0.01	0.01	0.01	0.01	0.051	0.053	0.002	0.002	0.001	0.001	0.0007	0.39	0.39	-	-	0.38	0.39	
			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

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-2720	Heat	Ferrite & Pearlite	80 HRBW	Pass	Longitudinal; 1.5 in. x WT	46 800	73 000	0.64	44
				Pass	Longitudinal; 1.5 in. x WT	47 200	73 000	0.65	46

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy Min. (J)	Impact Energy (J) (3 Tests) AVG	Shear (%) (3 Tests) AVG	Lateral Expansion (mm) (3 Tests) AVG
BSM-2720	ASTM A333	CVN Long 10 x 10 mm	-45	(14/14/14) 18	(83/72/72) 76	(40/30/20) 30	(1.35/1.02/1.08) 1.15

Additional Details:  
 ✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing in accordance with ASTM/ASME A333-2015/SA333-2013, A106-2014/SA106-2013, A53-2012/SA53-2013, 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 MR0103-2012 Section 2.1  
 ✓ 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:  
  
 Tonya Lam, P. Tech (Eng.)  
 Assistant QA Manager