



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-2791 Product Size: NPS 24 TRUE 40 Production Date: Jun 07, 2016
 Production Method: Hot Expansion Product Heat Treatment: Normalizing Forming Certificate No.: MTR- 002857
 Product Standards: ASME B36.10M-2015, ASTM/ASME A333-2015 Grade 6 LT(M45C) A106-2014/SA106-2015 Grade B NDE, A53-2012/SA53-2015 Grade B Type S, NACE MR0175/ISO 15156-2:2009 MR0103/ISO 17495:2015
 Product Markings: NPS 24 TRUE 40 0.688 INCHWT SMLS 2016/06 NDE 1200PSI
 HEAT BSM-2791 (PIPE # LENGTH MASS) 171.2lb/ft ASTM/ASME A/SA333 GR 6 LT(M45C) A/SA106 GR B 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	Geiger µR/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT	ET	HydroTest	End Condition																						
BSM-2791	Heat	NPS 24 TRUE 40 0.688in. WT	6	DRL	171.2	<5	<20	Pass	Pass	Pass	Pass	ASTM E213	ASTM E309	1200 PSI/ 5 s	Pass	Plain End																				
Chemical Analysis (wt%)																																				
Heat	BSM-2791	Steelmaking Method Blast Furnace: EAF; Ladle Refining; Vacuum Degass; Fully Killed	Test Type	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE(Pcm)	CE(Pcm)Max	CE(CSA)																	
																				Heat	0.10	1.04	0.018	0.001	0.21	0.17	0.16	0.05	0.11	0.030	0.003	0.001	0.0002	0.34	-	0.26
																				Product	0.09	1.01	0.016	0.001	0.21	0.17	0.15	0.05	0.10	0.028	0.002	0.001	0.0003	0.32	-	0.24

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-2791	Heat	Ferrite & Pearlite	71 HRBW	Pass	Longitudinal; 1.5 in. x WT	41 900	64 000	0.65	44
				Pass	Longitudinal; 1.5 in. x WT	42 600	63 000	0.68	43

Heat	Test Standard	Result	Impact Test Sample Details	Temp °C	Impact Energy Min. (J) (3 Tests) AVG	Impact Energy (J) (3 Tests) AVG	Shear (%) (3 Tests) AVG	Lateral Expansion (mm) (3 Tests) AVG
BSM-2791	ASTM A333	Pass	CVN Long 10 x 10 mm	-45	(14/14/14) 18	(288/282/290) 287	(100/100/100) 100	(UNB/UNB/UNB) UNB

- 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/SA333-2015, 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 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:

Theresa Sano / 13/2016

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