



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-2789 Product Size: NPS 24 TRUE 40 Production Date: Jun 06, 2016
 Production Method: Hot Expansion Product Heat Treatment: Normalizing Forming Certificate No.: MTR- 002853
 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-2789 (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 ASTM E213	ET ASTM E309	HydroTest 1200PSI/ 5 s	End Condition	
BSM-2789	Heat	NPS 24 TRUE 40 0.688in. WT	5	DRL	171.2	<5	<20	Pass	Pass	Pass	N12.5 Pass	-	Pass	Plain End	

Heat	BSM-2789	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	0.20	0.93	0.011	0.003	0.23	0.10	0.12	0.02	0.09	0.020	0.002	0.001	0.0002	0.40	-	0.40
						0.19	0.95	0.009	0.002	0.24	0.10	0.12	0.03	0.08	0.003	0.002 <td>0.001 <td>0.0002 <td>0.39 <td>0.39</td> </td></td></td>	0.001 <td>0.0002 <td>0.39 <td>0.39</td> </td></td>	0.0002 <td>0.39 <td>0.39</td> </td>	0.39 <td>0.39</td>	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-2789	Heat	Ferrite & Pearlite	76 HRBW	Pass	Longitudinal; 1.5 in. x WT	47 800	71 500	0.67	44
				Pass	Longitudinal; 1.5 in. x WT	49 000	71 500	0.69	44

Heat	Test Standard	Result	Impact Test Sample Details	Temp °C	Impact Energy Min. (J)	Impact Energy (J)	Shear (%)	Lateral Expansion (mm)
BSM-2789	ASTM A333	Pass	CVN Long 10 x 10 mm	-45	(14/14/14) 18	(3 Tests) AVG (50/44/34) 43	(25/20/25) 23	(3 Tests) AVG (1.04/0.98/1.10) 1.04

- 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:

T. Lam June 10/2016

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