



Mill Test Certificate

Bri-Steel Manufacturing
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-2712 Production Date: Apr 06, 2016
 Production Method: Hot Expansion Product Heat Treatment: As Rolled Certificate No.: MTR- 002161
 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: MR0103-2012
 NPS 24 TRUE 40 0.688 INCHWT SMLS 2016/04 NDE 1200PSI
 HEAT BSM-2712 (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-2712	Heat	NPS 24 TRUE 40 0.688in. WT	8	DRL	171.2	<5	<20	Pass	Pass	Pass	N12.5 Pass	-	Pass	30° Bevel	

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)	
			Heat	1.14	0.014	0.002	0.26	0.05	0.01	0.01	0.01	0.02	0.050	0.001	0.001	0.0001	0.37	-	0.37
BSM-2712	Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed	Heat	0.16	1.14	0.014	0.002	0.26	0.05	0.01	0.01	0.01	0.02	0.050	0.001 <td>0.001 <td>0.0001 <td>0.37</td> <td>-</td> <td>0.37</td> </td></td>	0.001 <td>0.0001 <td>0.37</td> <td>-</td> <td>0.37</td> </td>	0.0001 <td>0.37</td> <td>-</td> <td>0.37</td>	0.37	-	0.37
		Product	0.15	1.13	0.013	0.002	0.25	0.05	0.01	0.01	0.03	0.057	0.001 <td>0.001 <td>0.0002 <td>0.36</td> <td>-</td> <td>0.35</td> </td></td>	0.001 <td>0.0002 <td>0.36</td> <td>-</td> <td>0.35</td> </td>	0.0002 <td>0.36</td> <td>-</td> <td>0.35</td>	0.36	-	0.35	

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-2712	Heat	Ferrite & Pearlite	81 HRBW	Pass	Longitudinal; 1.5 in. x WT	51 500	77 500	0.66	44
				Pass	Longitudinal; 1.5 in. x WT	47 400	73 000	0.65	42

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy Min. (J)	Impact Energy (J)	Shear (%)	Lateral Expansion (mm)
BSM-2712	ASTM A333	CVN Long 10 x 10 mm	-45	(14/14/14) 18	(3 Tests) AVG (24/36/38) 33	(3 Tests) AVG (0/5/10) 5	(3 Tests) AVG (0.26/0.55/0.67) 0.49

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, 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
 Date: April 12/2016