




Mill Test Certificate

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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-2963 Product Size: NPS 24 STD Production Date: Nov 24, 2016
 Production Method: Hot Expansion Product Heat Treatment: Normalizing Forming Certificate No.: MTR- 003063
 Product Standards: ASME B36.10M-2015, API 5L-45th Ed. Grade B PSL1, ASTM/ASME A333-2016/SA333-2015 Grade 6 LT(M45C) A106-2014/SA106-2015 Grade B/C NDE, A53-2012/SA53-2015 Grade B Type 5, NACE MR0175/ISO 15156-2:2009 MR0103/ISO 17495:2015
 Product Markings

 <API & L/C No.> API SPEC 5L NPS 24 STD 0.375 INCH WT GRB PSL1 SMLS 2016/11 NDE 750PSI
 HEAT BSM-2963 (PIPE # LENGTH MASS) 94.62lb/ft ASTM/ASME A/SA333 GR 6 LT(M45C) A/SA106 GR B/C 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) ASTM E114	UT ASTM E213	ET ASTM E309	HydroTest 750PSI/ 5s	End Condition
BSM-2963	Heat	NPS 24 STD 0.375in. WT	5	DRL	94.62	<5	~20	Pass	Pass	Pass	N12.5 Pass	-	Pass	30° Bevel

Heat	BSM-2963	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed (at TRCO China)	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	0.17	1.12	0.010	0.003	0.32	0.04	0.03	0.01	0.01	0.057	0.002	0.003	0.0005	0.38	-	0.38
					0.18	1.12	0.011	0.007	0.32	0.03	0.02	0.01	0.01	0.059	0.002	0.001	0.0004	0.39	-	0.39
					0.18	1.14	0.009	0.004	0.33	0.03	0.02	0.01	0.01	0.060	0.002	0.002	0.0003	0.39	-	0.40

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-2963	Heat	Ferrite & Pearlite	82 HRBW	Pass	Longitudinal: 1.5 in. x WT Longitudinal: 1.5 in. x WT	51 000	78 000	0.65	42
				Pass		50 000	77 500	0.65	42

Heat	Test Standard	Result	Impact Test Sample Details	Temp °C	Impact Energy Min. (J)	Impact Energy Results (J)	Shear (%)	Lateral Expansion (mm)
BSM-2963	ASTM A333	Pass	CVN Long 10 x 7.5 mm	-48	(11/11/11) 14	(3 Tests) AVG (11/18/37) 22	(0/0/10) 3	(3 Tests) AVG (0.24/0.28/0.90) 0.47

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 A333-2016/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 2014/68/EU.

- ✓ 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 Nov 30 / 2016

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