



Mill Test Certificate

Bri-Steel Manufacturing
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-2862 Production Date: Aug 15, 2016
 Production Method: Hot Expansion Product Heat Treatment: Normalizing Forming Certificate No.: MTR- 002934
 Product Standards: ASME B36.10M-2015, ASTM/ASME A333-2015 Grade 6 LT(M45C) A106-2014/SA106-2015 Grade B/C NDE, AS3-2012/SA53-2015 Grade B Type S, NACE MR0175/ISO 15156-2:2009 MR0103/ISO 17495:2015
 Product Markings: NPS 28 STD 0.375 INCH WT SMLS 2016/08 NDE 650PSI
 HEAT BSM-2862 (PIPE # LENGTH MASS) 110.6lb/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	Gelger	Res. Mag. Gauss	Visual Insp.	OD	UT (WT)	UT	ET	HydroTest	End Condition
BSM-2862	Heat	NPS 28 STD 0.375in. WT	5	DRL	110.6	<5	<30	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	
			0.18	1.12	0.015	0.005	0.31	0.06	0.03	0.01	0.01	0.059	0.003	0.004	0.0005	0.40
BSM-2862	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.18	1.12	0.015	0.005	0.31	0.06	0.03	0.01	0.01	0.059	0.003	0.004	0.0005	0.40
		Product	0.18	1.14	0.014	0.006	0.32	0.06	0.03	0.01	0.01	0.063	0.002	0.001	0.0003	0.40

Mechanical Properties									
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test	Yield (Rt0.5) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
BSM-2862	Heat	Ferrite & Pearlite	84 HRBW	Pass	Longitudinal: 1.5 in. x WT Longitudinal: 1.5 in. x WT	58 000	80 500	0.72	44
				Pass		59 000	84 000	0.70	44

Heat	Test	Result	Impact Test Sample Details	Temp °C	Impact Energy Min. (J)	Impact Energy Results (J)	Shear (%)	Lateral Expansion (mm)
BSM-2862	Standard	Pass	CVN Long 10 x 7.5 mm	-48	(11/11/11) 14	(3 Tests) AVG (56/63/63) 61	(3 Tests) AVG (20/30/30) 27	(3 Tests) AVG (1.26/1.51/1.55) 1.44
	ASTM A333	Pass						

- 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, AS3-2012/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 Aug 23/2016

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