



Mill Test Certificate

Bri-Steel Manufacturing
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-3108 Production Date: Apr 11, 2017
 Production Method: Hot Expansion Product Heat Treatment: Normalizing Forming Certificate No.: MTR- 003293
 Product Standards: ASME B36.10M-2015, API 5L-45th Ed. Grade B NDE, A53-2012/SA53-2015 Grade B Type S, NACE MR0175/ISO 15156-2:2009 MR0103/ISO 17495:2015
 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: <API & L/C No. > API SPEC 5L NPS 24 STD 0.375 INCHWT GR BN/X42N/X46N PSL2 SMLS 2017/04 NDE 1470PSI
 HEAT BSM-3108 (PIPE # LENGTH MASS) 94.76lb/ft CSA Z245.1 GR 241/290 CAT 3 ASTM/ASME A/SA333 GR 6 LT(M45C) A/SA106 GR B A/SA53 GR B NACE MR0175/MR0103 MADE IN CANADA



Product: Details

Heat	Test Type	Product Size	Pieces	Length	Mass lb/ft	Chemical Analysis (wt%)										Non-Destructive Testing					End Condition	
						C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE(IIW)	CE(IIW)Max		CE(CSA)
BSM-3108	Heat	NPS 24 STD 0.375in. WT	7	DRL	94.76	<5	<10	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	35° Bevel

Heat	Test Type	Product Size	Pieces	Length	Mass lb/ft	Chemical Analysis (wt%)										Non-Destructive Testing					End Condition	
						C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE(IIW)	CE(IIW)Max		CE(CSA)
BSM-3108	Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed (at TRCO China)					0.14	1.07	0.009	0.002	0.25	0.04	0.03	0.01	0.02	0.037	0.001	0.002	0.0004	0.34	-	0.32	
	Product					0.14	1.07	0.011	0.002	0.26	0.04	0.02	0.01	0.02	0.002	0.001	0.0004	0.33	0.43	0.31		
						0.14	1.06	0.010	0.003	0.25	0.04	0.02	0.01	0.02	0.002	0.001	0.0003	0.33	0.43	0.31		

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) %
					2 in. GL	Longitudinal; 1.5 in. x WT				
BSM-3108	Heat	Ferrite & Pearlite	78 HRBW	Pass	Pass	Longitudinal; 1.5 in. x WT	48 900	70 000	0.70	41
				Pass	Pass	Longitudinal; 1.5 in. x WT	48 400	69 500	0.70	42

Heat	Test Standard	Result	Impact Test Sample Details	Temp °C	Impact Energy Min. (J)		Impact Energy Results (J)	Shear (%)	Lateral Expansion (mm)
					(3 Tests) AVG	(3 Tests) AVG			
BSM-3108	ASTM A333	Pass	CVN Long 10 x 7.5 mm	-48	(11/11/11) 14	(193/184/184) 187	(100/100/100) 100	(UNB/UNB/UNB) UNB	
BSM-3108	API PSL2/CSA CAT3	Pass	CVN Trans 10 x 7.5 mm	-45	(15/15/15) 20	(194/186/180) 187	(100/100/100) 100	(UNB/UNB/2.33) 2.33	

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., N CSA Z245.1-2014 Grade 241/290 CAT 3, 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 9001:2015 (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

Mill Test Certificate approved by:

[Signature]
 2017 May 16.

Kenton Dechant, P.Eng.
 Manager of Quality and R&D

- ✓ 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.