



Mill Test Certificate

Bri-Steel Manufacturing
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-3023 Product Size: NPS 24 STD Production Date: Jan 23, 2017
 Production Method: Hot Expansion Product Heat Treatment: Normalizing Forming Certificate No.: MTR- 003139
 Product Standards: ASME B36.10M-2015, API 5L-45th Ed. Grade BN/X42N/X46N PSL2, CSA Z245.1-2014 Grade 24L/290 CAT 1, 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 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 2017/01 NDE 1300PSI
 HEAT BSM-3023 (PIPE # LENGTH MASS) 94.76lb/ft CSA Z245.1 GR 24L/290 CAT 1 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-3023	Heat	NPS 24 STD 0.375in. WT	3	DRL	94.76	<5	<10	Pass	Pass	Pass	N12.5 Pass	-	Pass	35° 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(IW)/Max	CE(CSA)
			0.15	1.06	0.014	0.003	0.25	0.06	0.01	0.01	0.01	0.038	0.002	0.002	0.0005	0.35	-	0.34
BSM-3023	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed (at TPCCO China)	Heat	0.15	1.06	0.014	0.003	0.25	0.06	0.01	0.01	0.01	0.038	0.002	0.002	0.0005	0.35	-	0.34
		Product	0.15	1.07	0.010	0.003	0.26	0.06	0.02	0.01	0.01	0.040	0.002	0.001	0.0004	0.35	-	0.34
			0.14	1.05	0.011	0.003	0.25	0.06	0.02	0.01	0.01	0.040	0.002	0.001	0.0004	0.34	-	0.32

Mechanical Properties									
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test	Yield (Rt0.5)	Tensile (Rm)	Y/T	Elongation (A)
BSM-3023	Heat	Ferrite & Pearlite	79 HRBW	Pass	Longitudinal: 1.5 in. x WT Longitudinal: 1.5 in. x WT	53 000 psi	73 500 psi	0.72	48
				Pass		47 300	71 500	0.66	41

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	(3 Tests) AVG	(3 Tests) AVG	(3 Tests) AVG	(3 Tests) AVG		
BSM-3023	ASTM A333	Pass	CVN Long 10 x 7.5 mm	-48	(11/11/11) 14	(178/181/172) 177	(100/100/100) 100	(1.81/2.30/2.30) 2.14				
BSM-3023	API 5L PSL2	Pass	CVN Trans 10 x 7.5 mm	0	(15/15/15) 20	(190/181/183) 185	(100/100/100) 100	(UNB/UNB/UNB) UNB				

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 24L/290 CAT 1, 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:

Tonya Lam Feb 10 2017

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