



Mill Test Certificate

Bri-Steel Manufacturing
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-2971 Product Size: NPS 32 TRUE 40 Production Date: Nov 30, 2016
 Production Method: Hot Expansion Product Heat Treatment: Normalizing Forming Certificate No.: MTR- 003071
 Product Standards: ASME B36.10M-2015, CSA Z245.1-2007 Grade 241/290 CAT 1, NACE MR0175/ISO 15156-2:2009 MR0103/ISO 17495:2015
 Product Markings: NPS 32 TRUE 40 0.688 INCHWT SMLS 2016/11 NDE 1630PSI
 HEAT BSM-2971 (PIPE # LENGTH MASS) 230.35lb/ft CSA Z245.1 GR 241/290 CAT 1 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 1630PSI/ 5 s	End Condition	
BSM-2971	Heat	NPS 32 TRUE 40 0.688in. WT	8	DRL	230.35	<5	<10	Pass	Pass	Pass	Pass	N12.5 Pass	-	Pass	Plain End

Heat	BSM-2971	Steelmaking Method Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed	Chemical Analysis (wt%)																		
			Test Type		C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE(IW)	CE(IIW)Max	CE(CSA)	
			Heat	Product	0.16	1.29	0.010	0.004	0.32	0.04	0.03	0.00	0.01	0.041	0.002	0.001	0.0006	0.39	-	0.39	
						0.15	1.28	0.009	0.002	0.35	0.04	0.03	0.01	0.01	0.042	0.002	0.001	0.0004	0.38	-	0.37

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-2971	Heat	Ferrite & Pearlite	79 HRBW	Pass	Longitudinal; 1.5 in. x WT	49 100	74 500	0.66	50

Heat	Test Standard	Result	Impact Test Sample Details	Temp °C	Impact Energy Min. (J)	Impact Energy Results (J)	Shear (%)	Lateral Expansion (mm)
BSM-2971	-	-	-	-	-	(3 Tests) AVG	(3 Tests) AVG	(3 Tests) AVG

Additional Details:
 ✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing in accordance with CSA Z245.1-2007 Grade 241/290 CAT 1, 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, P. Tech (Eng.)
 Assistant QA Manager