



Mill Test Certificate

Bri-Steel Manufacturing
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-2972 Product Size: NPS 30 X 0.688 Production Date: Dec 01, 2016
 Production Method: Hot Expansion Product Heat Treatment: Normalizing Forming Certificate No.: MTR- 003072

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 30 X 0.688 INCHWT SMLS 2016/12 NDE 1740PSI
 HEAT BSM-2972 (PIPE # LENGTH MASS) 215.58lb/ft CSA Z245.1 GR 241/290 CAT 1 NACE MR0175/MR103 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 1740PSI/ 5s	End Condition
BSM-2972	Heat	NPS 30 X 0.688 0.688in. WT	2	DRL	215.58	<5	<10	Pass	Pass	N12.5 Pass	-	-	Pass	Plain End

Chemical Analysis (wt%)														
Heat	Steelmaking Method	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	CE(IIW) Max
BSM-2972	Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed	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
	Product	0.15	1.29	0.010	0.010	0.34	0.04	0.03	0.01	0.01	0.040	0.001	0.001	0.0001
		-	-	-	-	-	-	-	-	-	-	-	-	-

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-2972	Heat	Ferrite & Pearlite	80 HRBW	Pass	Longitudinal; 1.5 in. x WT	51 000	74 000	0.69	49

Heat	Test Standard	Result	Impact Test Sample Details	Temp °C	Impact Energy Min. (J) (3 Tests) AVG	Impact Energy Results (J) (3 Tests) AVG	Shear (%) (3 Tests) AVG	Lateral Expansion (mm) (3 Tests) AVG
BSM-2972	-	-	-	-	-	-	-	-

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:

T. Lam *NOV 10 2016*

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