



Mill Test Certificate

Bri-Steel Manufacturing
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Product: **Seamless Alloy Steel Pipe** Product Heat Number: **BSM-2531** Product Size: **NPS 22 STD** Production Date: **September 21, 2015**

Production Method: **Hot Expansion** Product Heat Treatment: **Normalized (920°C) and Tempered (750°C)** MTR **1957**

Product Standards: **ASME B36.10-2004, ASTM A335/ASME SA335-2015 GRADE P22, NACE MR0175-2009 MR0103-2012**

Product Markings: **BRI-STEEL MFG NPS 22 STD 0.375 INCHWT ASTM/ASME A/SA335 GR. P22 NDE(UT) 614PSI SMLS 2015/09**
HEAT BSM-2531 (PIPE# LENGTH MASS) 86.61 lb/ft NACE MR0175/MR0103 MADE IN CANADA

Product Details					Non-Destructive Testing									
Heat	Test Type	Product Size*	Pieces	Length	Mass lb/ft	Geiger μ R/hr	Res.Mag. Gauss	Visual Insp.	OD	UT WT	UT ASTM E213	ET ASTM E309	HydroTest 614 psi/5s	End Condition
BSM-2531	Heat	NPS 22 STD 0.375 in.WT	2	DRL	86.61	<5	<20	Pass	Pass	Pass	Pass	-	Pass	32.5° Bevel

Chemical Analysis (wt%)																	
Heat	Steelmaking Method	Analysis	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE (Pcm)	CE (CSA)
BSM-2531	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.11	0.45	0.017	0.003	0.33	2.05	-	0.91	-	-	-	-	-	-	-
		Product	0.11	0.45	0.016	0.004	0.34	2.05	0.01	0.89	0.02	0.004	0.001	0.003	0.0004	0.31	0.59
		Product	0.11	0.45	0.016	0.003	0.34	2.04	0.01	0.89	0.02	0.004	0.001	0.003	0.0004	0.31	0.59

Mechanical Properties										
Heat	Test Type	Microstructure	Hardness HRBW	Flattening Test	Tension Test		Yield (Rt0.5) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
					50mm GL	Longitudinal; 38.1mm x WT				
BSM-2531	Heat	Ferrite & Carbide	NA	Pass	Longitudinal; 38.1mm x WT	Pass	47,200	71,300	0.71	43
					Longitudinal; 38.1mm x WT		47,200	82,000	0.58	38

- Additional Details:
- ✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing Inc. in accordance with ASTM/ASME A/SA335-2015, and the purchase order requirements, and that the results meet the corresponding requirements. Bri-Steel Manufacturing is registered and certified to ISO-9001:2008 and API Q1.
 - ✓ 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.
 - ✓ No weld repairs have been performed on this product.
 - ✓ This pipe meets the sour service requirements of NACE MR0175/ISO 15156-2:2009 Annex A2 for Region 3 Sour Service, and NACE MR0103-2012 Section 2.1

Mill Test Certificate approved by:

T. Lam Oct 107/2015

Tonya Lam, C.E.T.
 Assistant QA Manager