



Mill Test Certificate

Bri-Steel Manufacturing
2125-64 Avenue, Edmonton, AB Canada T6P 1Z4
Tel: 001 (780) 469-6603
Fax: 001 (780) 469-6986
www.bri-steel.com

Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-2191 Product Size: NPS 20 SCH 160 Production Date: Dec 11, 2014
Production Method: Hot Expansion Product Heat Treatment: As Rolled Certificate No.: MTR- 002844

Product Standards: ASME B36.10M-2015, ASTM/ASME A106-2014/SA106-2015 Grade B/C NDE, AS3-2012/SA53-2015 Grade B Type S, NACE MR0175/ISO 15156-2:2009 MR0103/ISO 17495:2015

Product Markings



NPS 20 SCH 160 1.969 INCHWT SMLS 2014/12 NDE 2800PSI
HEAT BSM-2191 (PIPE # LENGTH MASS) 379lb/ft ASTM/ASME 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 µR/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT ASTM E213	ET ASTM E309	HydroTest 2800 PSI/ 5 s	End Condition
BSM-2191	Heat	NPS 20 SCH 160 1.969in. WT	1	DRL	379	<5	<20	Pass	Pass	Pass	N12.5 Pass	-	Pass	Plain End

		Chemical Analysis (wt%)																
Heat	Steelmaking Method	Test Type	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE(IIW)	CE(IIW)/Max	CE(CSA)
			Heat	0.20	0.94	0.012	0.002	0.30	0.03	0.05	0.01	0.02	0.004	0.003	0.001	-	0.37	-
		Product	0.20	0.92	0.011	0.004	0.30	0.04	0.06	0.01	0.02	0.004	0.001	0.000	0.0004	0.37	-	0.38
			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BSM-2191	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed																	

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-2191	Heat	Ferrite & Pearlite	73 HRBW	Pass	Longitudinal; 0.75 in. x WT	44 200	72 000	0.61	38				

Heat	Test	Result	Impact Test Sample Details	Temp °C	Impact Energy Min. (J)	Impact Energy (J)	Shear (%)	Lateral Expansion (mm)
BSM-2191	Standard	-	-	-	(3 Tests) AVG	(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 ASTM/ASME A106-2014/SA106-2015, AS3-2012/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 97/23/EC.
- ✓ 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:

Kenton Dechant
2016 June 2

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