



Mill Test Certificate

Bri-Steel Manufacturing
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-2880 Product Size: NPS 20 SCH 60 Production Date: Sep 14, 2016
 Production Method: Hot Expansion Product Heat Treatment: Normalizing Forming Certificate No.: MTR- 002957
 Product Standards: ASME B36.10M-2015, API 5L-45th Ed. Grade X42 PSL1, ASTM/ASME 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 20 SCH 60 0.812 INCHWT GR X42 PSL1 SMLS 2016/09 NDE 2970PSI
 HEAT BSM-2880 (PIPE # LENGTH MASS) 166.4lb/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 Insp.	UT (WT) ASTM E114	UT ASTM E213	ET ASTM E309	HydroTest 2970PSI/ 5 s	End Condition
BSM-2880	Heat	NPS 20 SCH 60 0.812in. WT	5	DRL	166.4	<5	<10	Pass	Pass	Pass	N12.5 Pass	-	Pass	30° Bevel

Heat	BSM-2880	Steelmaking Method Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed (at PFCO China)	Chemical Analysis (wt%)																	
			Test Type		C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE(IIW)	CE(IIW)Max	CE(CSA)
			Heat	Product	0.17	1.12	0.016	0.004	0.33	0.03	0.02	0.01	0.01	0.055	0.003	0.001	0.0005	0.38	-	0.38
			0.18	1.12	0.016	0.008	0.34	0.03	0.01	0.01	0.01	0.056	0.002	0.001	0.0004	0.39	-	0.39		
			0.17	1.13	0.018	0.008	0.34	0.03	0.01	0.01	0.01	0.057	0.002	0.001	0.0003	0.38	-	0.38		

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-2880	Heat	Ferrite & Pearlite	84 HRBW	Pass	Longitudinal; 0.5 in. Round Bar	58 500	79 500	0.74	36

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-2880	-	-	-	-	-	-	-	-

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., X42 ASTM/ASME 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.

Mill Test Certificate approved by:

- ✓ 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.

T. Lam
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 Assistant QA Manager
 Sept 19 2016