



Mill Test Certificate

Bri-Steel Manufacturing
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-3085 Product Size: NPS 20 TRUE 40 Production Date: Mar 15, 2017
 Production Method: Hot Expansion Product Heat Treatment: Normalizing Forming Certificate No.: MTR- 003250

Product Standards: ASME B36.10M-2015, ASTM/ASME A333-2016/SA333-2015 Grade 6 LT(M45C) A106-2014/SA106-2015 Grade B NDE, A53-2012/SA53-2015 Grade B Type S, NACE MR0175/ISO 15156-2:2009 MR0103/ISO 17495:2015

Product Markings: NPS 20 TRUE 40 0.594 INCHWT SMLS 2017/03 NDE 1250PSI
 HEAT BSM-3085 (PIPE # LENGTH MASS) 123.24lb/ft ASTM/ASME A/SA333 GR 6 LT(M45C) A/SA106 GR B 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	Geiger µR/hr	Res. Mag. Gauss	Visual Insp.	OD	UT (WT) ASTM E114	UT	ET	HydroTest	End Condition
BSM-3085	Heat	NPS 20 TRUE 40 0.594in. WT	11	DRL	123.24	<5	<21	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	CE (IIW)	CE (IIW)Max	CE (CSA)
BSM-3085	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.16	0.99	0.013	0.004	0.27	0.09	0.04	0.04	0.02	0.036	0.002	0.001	0.0005	-	0.36
		Product	0.15	0.98	0.017	0.004	0.27	0.08	0.03	0.04	0.02	0.004	0.002	0.001	0.0003	-	0.33
			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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-3085	Heat	Ferrite & Pearlite	75 HRBW	Pass	Longitudinal; 1.5 in. x WT	49 200	70 000	0.70	49
				Pass	Longitudinal; 1.5 in. x WT	47 000	69 500	0.68	49

Heat	Test Standard	Test Result	Impact Test Sample Details	Temp °C	Impact Energy Min. (J) (3 Tests) AVG	Shear (%) (3 Tests) AVG	Lateral Expansion (mm) (3 Tests) AVG
BSM-3085	ASTM A333	Pass	CVN Long 10 x 10 mm	-45	(14/14/14) 18	(30/30/30) 30	(1.82/1.94/1.68) 1.81
			Impact Energy Results (J) (3 Tests) AVG		(118/123/101) 114		

Additional Details:
 ✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing in accordance with ASTM/ASME A333-2016/SA333-2015, 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.
 ✓ 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