



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-1655 Product Size: NPS 16 XS Production Date: Feb 20, 2014
Production Method: Hot Expansion Product Heat Treatment: ThermoMechanical Formed Certificate No.: MTR- 002063
Product Standards: ASME B36.10M-2015, API 5L-45th Ed. Grade B/X42 PSL1, ASTM/ASME A333-2015/SA333-2013 Grade 6 LT(M45C) A106-2014/SA106-2013 Grade B/C NDE, A53-2012/SA53-2013 Grade B Type 5, NACE MR0175-2009 MR0103-2012
Product Markings: <API & L/C No.> API SPEC 5L NPS 16 XS 0.500 INCHWT GRB/X42 PSL1 SMLS 2014/02 NDE 2240PSI
HEAT BSM-1655 (PIPE # LENGTH MASS) 82.77lb/ft ASTM/ASME A/SA333 GR 6 LT(M45C) 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	Geiger µR/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT ASTM E213	ET ASTM E309	HydroTest 2240PSI/ 5 s	End Condition 34° Bevel
BSM-1655	Heat	NPS 16 XS 0.500in. WT	18	DRL	82.77	<5	<10	Pass	Pass	Pass	Pass	Pass	Pass	

Chemical Analysis (wt%)														
Heat	Steelmaking Method	Test Type	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb
BSM-1655	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.19	0.94	0.010	0.004	0.25	0.03	0.07	0.01	0.04	-	-	-
		Product	0.20	0.96	0.009	0.004	0.26	0.03	0.09	0.02	0.04	0.004	0.001	0.001
			0.20	0.96	0.009	0.004	0.26	0.03	0.09	0.02	0.04	0.004	0.001	0.001

Mechanical Properties									
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test 2 in. GL	Yield (Rt0.5) psi	Tensile (Rm) psi	V/T (Rt0.5/Rm)	Elongation (A) %
BSM-1655	Heat	Ferrite & Pearlite	78 HRBW	Pass	Longitudinal; 1.5 in. x WT	47,000	74,500	0.63	43
				Pass	Longitudinal; 1.5 in. x WT	47,000	74,500	0.63	43

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy J				% Shear				Lateral Expansion mm			
BSM-1655	ASTM A333	CVN long 10 x 10 mm	-45	J	J	J	AVG	%	%	%	AVG	mm	mm	mm	AVG
				32.0	22.0	15.0	23.0	0	0	0	0	0.68	0.45	0.28	0.47

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., ASTM/ASME A333-2015/SA333-2013, A106-2014/SA106-2013, A53-2012/SA53-2013, and the purchase order requirements, and that the results meet the corresponding requirements. Bri-Steel Manufacturing is registered and certified to ISO 9001:2008, 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 MR0103-2012 Section 2.1

✓ 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:

Tony Lam Jan 25 / 2016

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



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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-1655 Product Size: 16XS Production Date: Feb 20, 2014
Production Method: Hot Expansion Product Heat Treatment: As-rolled Certificate No.: MTR- 000898
Product Standards: ASME B36.10-2004, API 5L-45th Ed. Grade B/X42 PSL1, ASTM/ASME A/SA106-2013 Grade B/C NDE, A/SA53-2012 Grade B Type S, NACE MR0175-2009 MR0103-2010

Product Markings  <API & L/C No. > API SPEC 5L NPS 16 XS 0.500 INCHWT GR B/X42 PSL1 SMLS 2014/02 NDE 2240PSI
HEAT BSM-1655 (PIPE # LENGTH MASS) 82.77lb/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	Geliger µR/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT ASTM E213	ET ASTM	HydroTest 2240PSI/ 5 s	End Condition
BSM-1655	Heat	NPS 16 XS 0.500in. WT	18	DRL	82.77	<5	<10	Pass	Pass	Pass	Pass	Pass	Pass	34° Bevel

Chemical Analysis (wt%)															
Heat	Steelmaking Method	Test Type													
			C	Min	P	S	SI	Cr	Cu	Mo	Ni	V	Ti	Nb	B
			Heat	0.19	0.94	0.010	0.004	0.25	0.03	0.07	0.01	0.04			0.0005
BSM-1655	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Product	0.20	0.96	0.009	0.004	0.26	0.03	0.09	0.02	0.04	0.004	0.001	0.001	0.0003

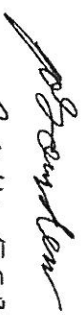
Mechanical Properties									
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test 50mm GL	Yield (Rt0.5) psi	Tensile (Rm) psi	V/T (Rt0.5/Rm)	Elongation (A) %
BSM-1655	Heat	Ferrite & Pearlite	78 HRBW	Pass	Longitudinal; 38.1 mm x WT	47,000	74,500	0.63	43

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy						Lateral Expansion			
				J	J	J	AVG	%	%	%	AVG	mm	mm
				-	-	-	-	-	-	-	-	-	-
BSM-1655	-	-	-	-	-	-	-	-	-	-	-	-	-

Additional Details:

- ✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing Inc. in accordance with API 5L-45th Ed., ASTM/ASME A/SA106-2013 Grade B/C A/SA53-2012, and the purchase order requirements, and that the results meet the corresponding requirements.
- ✓ This pipe product meets the sour service requirements of NACE MR0175/ISO 15156-2:2009 Annex A2 for Region 3 Sour Service-2009 NACE MR0103-2010 Section 2.1
- ✓ 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:


2014 FEB 25

Paul Sowden, T.T.
Assistant QA Manager