



Mill Test Certificate

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

Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0663** Product Size: **NPS 24 XS** Production Date: **January 22, 2013**

Production Method: **Hot Expansion** Product Heat Treatment: **As-rolled**

Product Standards: **ASME B36.10-2004, API 5L-44th Ed. Grade B PSL1, ASTM/ASME A/SA106-2011 Grade B NDE, A/SA53-2012 Grade B Type S, NACE MR0175-2009, MR0103-2010**

Product Markings: **BRI-STEEL MFG <API> 5L-0898 API 5L GR B PSL1 ASTM/ASME A/SA106 GR B A/SA53 GR B NPS 24 XS HEAT BSM-0663 (PIPE # LENGTH MASS) 125.5lb/ft NDE 970 PSI SMLS NACE MR0175 2013/01 MADE IN CANADA.**

Product Details				Non-Destructive Testing											
Heat	Test Type	NPS	Wall Thickness	Pieces	Length	Mass	Geiger	Res. Mag.	Visual	OD	UT	UT	ET	HydroTest	End Condition
BSM-0663	Heat	24	XS	14	DRL	lb/ft	µR/hr	Gauss	Insp.	Pass	Pass	Pass	Pass	Pass	37.5" Bevel

Chemical Analysis (wt%)																	
Heat	Steelmaking Method	Analysis	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE (IIW)	CE (CSA)
BSM-0663	Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed	Product	0.21	0.91	0.014	0.010	0.26	0.05	0.10	0.01	0.07	-	-	-	0.0003	-	-

Mechanical Properties											
Heat	Test Type	Microstructure	Hardness HRBW	Flattening Test	Tension Test		Yield (Rt0.5) psi	Yield (Rp0.2) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
					50mm GL	Transverse; 38.1mm x WT					
BSM-0663	Heat	Ferrite & Pearlite	74	Pass	Longitudinal; 38.1mm x WT	43,600	43,700	72,500	0.60	45	

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-44th Ed., ASTM/ASME A/SA106-2011, 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, and 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:

Kenton Dechant
 2013 Jan 29

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



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Product: **Seamless Carbon Steel Pipe**

Product Heat Number: **BSM-0663**

Product Size: **NPS 24 STD**

Product Markings: **.BRI-STEEL MFG <API> 5L-0898 API 5L GR B PSL1 ASTM/ASME A/SA106 GR B A/SA53 GR B NPS 24 STD HEAT BSM-0663 (PIPE # LENGTH MASS) 125.5lb/ft NDE 970 PSI SMIS NACE MR0175 2013/01 MADE IN CANADA.**

Production Method: **Hot Expansion**

Production Standards: **ASME B36.10-2004, API 5L-44th Ed. Grade B PSL1, ASTM/ASME A/SA106-2011 Grade B NDE, A/SA53-2012 Grade B Type S, NACE MR0175-2009, MR0103-2010**

Product Heat Treatment: **As-rolled**

Production Date: **January 22, 2013**

Product Details

Product Details				Non-Destructive Testing											
Heat	Test Type	NPS	Wall Thickness	Pieces	Length	Mass	Geiger	Res. Mag.	Visual	OD	UT	UT	ET	HydroTest	End Condition
BSM-0663	Heat	24	STD	14	DRL	125.50	<5	<20	Pass	Pass	Pass	Pass	Pass	Pass	37.5° Bevel

Chemical Analysis (wt%)

Heat	Steelmaking Method	Analysis	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE	CE
BSM-0663	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.21	0.91	0.014	0.010	0.26	0.05	0.10	0.01	0.07	-	-	-	0.0003	-	-
		Product	0.20	0.86	0.009	0.019	0.23	0.03	0.10	0.01	0.04	0.002	0.001	0.001	0.0002	0.36	0.37


Mechanical Properties

Heat	Test Type	Microstructure	Hardness	Tension Test		Yield (Rt0.5)	Yield (Rp0.2)	Tensile (Rm)	Y/T	Elongation (A)
				HRBW	Flattening Test					
BSM-0663	Heat	Ferrite & Pearlite	74	Pass	Transverse; 38.1mm x WT Longitudinal; 38.1mm x WT	47,300	46,200	67,000	0.71	45

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-44th Ed., ASTM/ASME A/SA106-2011, 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, and 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.

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Kenton Dechant, P.Eng.
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Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0663A** Product Size: **NPS 24 XS** Production Date: **January 22, 2013**

Production Method: **Hot Expansion** Product Heat Treatment: **As-rolled**

Product Standards: **ASME B36.10-2004, API 5L-44th Ed. Grade B PSL1, ASTM/ASME A/SAA106-2011 Grade B/C NDE, A/SAS3-2012 Grade B Type S, NACE MR0175-2009, MR0103-2010**

Product Markings: **.BRI-STEEL MFG <API> 5L-0898 API 5L GR B PSL1 ASTM/ASME A/SAA106 GR B/C A/SAS3 GR B NPS 24 XS HEAT BSM-0663A (PIPE # LENGTH MASS) 125.5lb/ft NDE 970 PSI SMIS NACE MR0175 2013/01 MADE IN CANADA.**

Product Details				Non-Destructive Testing											
Heat	Test Type	NPS	Wall Thickness	Pieces	Length	Mass lb/ft	Geiger μ R/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT ASTM E213	ET ASTM E309	HydroTest 970 psi/5s	End Condition
BSM-0663A	Heat	24	XS	14	DRL	125.50	<5	<20	Pass	Pass	Pass	Pass	Pass	Pass	37.5° Bevel

Chemical Analysis (wt%)																	
Heat	Steelmaking Method	Analysis	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE (IIW)	CE (CSA)
BSM-0663A	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.19	0.87	0.010	0.018	0.25	0.05	0.04	0.01	0.10	-	-	-	0.0003	-	-
		Product	0.21	0.86	0.009	0.009	0.24	0.05	0.12	0.01	0.06	0.002	0.001	0.001	0.0002	0.38	0.39

Mechanical Properties											
Heat	Test Type	Microstructure	Hardness HRBW	Flattening Test	Tension Test		Yield (Rp0.2) psi	Yield (Rt0.5) psi	Tensile (Rm) psi	V/YT (Rt0.5/Rm)	Elongation (A) %
					50mm GL	Pass					
BSM-0663A	Heat	Ferrite & Pearlite	77	Pass	Transverse; 38.1mm x WT	Longitudinal; 38.1mm x WT	45,300	59,500	74,500	0.80	46

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-44th Ed., ASTM/ASME A/SAA106-2011, A/SAS3-2012 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, and NACE MR0103-2010 Section 2.1.
- ✓ No weld repairs have been performed on this product.
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Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0663B** Product Size: **NPS 24 STD** Production Date: **January 22, 2013**

Production Method: **Hot Expansion** Product Heat Treatment: **As-rolled**

Product Standards: **ASME B36.10-2004, API 5L-44th Ed. Grade B PSL1, ASTM/ASME A/SA106-2011 Grade B/C NDE, A/SA53-2012 Grade B Type S, NACE MR0175-2009, MR0103-2010**

Product Markings: **BRI-STEEL MFG <API> 5L-0898 API 5L GR B PSL1 ASTM/ASME A/SA106 GR B/C A/SA53 GR B NPS 24 STD HEAT BSM-0663B (PIPE # LENGTH MASS) 125.5lb/ft NDE 970 PSI SWIS NACE MR0175 2013/01 MADE IN CANADA.**


Product Details				Non-Destructive Testing												
Heat	Test Type	NPS	Wall Thickness	Pieces	Length DRL	Mass lb/ft	Geiger μ R/hr	Res. Mag. Gauss	Visual Insp.	OD	WT	UT	UT	ET	HydroTest 970 psi/5s	End Condition
BSM-0663B	Heat	24	STD	14		125.50	<5	<20	Pass	Pass	Pass	Pass	Pass	Pass	Pass	37.5" Bevel

Chemical Analysis (wt%)																	
Heat	Steelmaking Method	Analysis	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE (IIW)	CE (CSA)
BSM-0663B	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.19	0.83	0.009	0.015	0.25	0.07	0.08	0.01	0.06	-	-	-	-	-	-
		Product	0.19	0.90	0.012	0.014	0.21	0.03	0.07	0.01	0.03	0.003	0.001	0.001	0.0002	0.36	0.36

Mechanical Properties											
Heat	Test Type	Microstructure	Hardness HRBW	Flattening Test	Tension Test		Yield (Rp0.2) psi	Yield (Rp0.2) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
					50mm GL	Transverse: 38.1mm x WT					
BSM-0663B	Heat	Ferrite & Pearlite	76	Pass	Longitudinal: 38.1mm x WT		44,700	47,000	72,500	0.62	46
							44,900	44,800	72,500	0.62	44

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 - ✓ This pipe product meets the sour service requirements of NACE MR0175/ISO 15156-2:2009 Annex A2 for Region 3 Sour Service, and NACE MR0103-2010 Section 2.1.
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Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0663C** Product Size: **NPS 24 STD** Production Date: **January 22, 2013**

Production Method: **Hot Expansion** Product Heat Treatment: **As-rolled**

Product Standards: **ASME B36.10-2004, API SL-44th Ed. Grade B PSL1, ASTM/ASME A/SA106-2011 Grade B/C NDE, A/SAS3-2012 Grade B Type S, NACE MR0175-2009, MR0103-2010**

Product Markings: **.BRI-STEEL MFG <API> SL-0898 API SL GR B PSL1 ASTM/ASME A/SA106 GR B/C A/SAS3 GR B NPS 24 STD HEAT BSM-0663C (PIPE #LENGTH MASS) 125.5lb/ft NDE 970 PSI SMLS NACE MR0175 2013/01 MADE IN CANADA.**

Product Details				Non-Destructive Testing												
Heat	Test Type	NPS	Wall Thickness	Pieces	Length	Mass lb/ft	Geiger μ R/hr	Res. Mag. Gauss	Visual Insp.	OD	WT	UT	UT	ET	HydroTest	End Condition
BSM-0663C	Heat	24	STD	14	DRL	125.50	<5	<20	Pass	Pass	Pass	Pass	Pass	Pass	Pass	37.5° Bevel


Chemical Analysis (wt%)																	
Heat	Steelmaking Method	Analysis	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE	CE (CSA)
BSM-0663C	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.19	0.91	0.010	0.010	0.22	0.03	0.07	0.01	0.05	-	-	-	0.0003	-	-
		Product	0.20	0.92	0.017	0.012	0.22	0.03	0.08	0.01	0.03	0.003	0.001	0.001	0.0002	0.37	0.38

Mechanical Properties											
Heat	Test Type	Microstructure	Hardness HRBW	Flattening Test	Tension Test		Yield (Rt0.5) psi	Yield (Rp0.2) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
					50mm GL	Transverse: 38.1mm x WT					
BSM-0663C	Heat	Ferrite & Pearlite	77	Pass	Longitudinal: 38.1mm x WT		46,600	46,700	73,500	0.73	40

Additional Details:

- ✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing Inc. in accordance with API SL-44th Ed., ASTM/ASME A/SA106-2011, A/SAS3-2012 and the purchase order requirements, and that the results meet the corresponding requirements.
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