



Mill Test Certificate

Bri-Steel Manufacturing Inc.
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Product: Seamless Carbon Steel Pipe

Product Heat Number: BSM-1697

Product Size: 20STD

Production Date: Mar 12, 2014

Production Method: Hot Expansion

Product Heat Treatment: As-rolled

Certificate No.: MTR- 000950

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 20 STD 0.375 INCHWT GR B/X42 PSL1 SMLS 2014/03 NDE 1420PSI

HEAT BSM-1697 (PIPE # LENGTH MASS) 78.6lb/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 | Geiger μ R/hr | Res. Mag. Gauss | Visual Insp. | OD | UT WT | UT ASTM E213 | ET ASTM | HydroTest 1420 PSI/ 5 s | End Condition |
| BSM-1697 | Heat | NPS 20 STD 0.375in. WT | 11 | DRL | 78.6 | <5 | <10 | Pass | Pass | Pass | Pass | Pass | Pass | 32.5° Bevel |

| Chemical Analysis (wt%) | | | | | | | | | | | | | | |
|-------------------------|---|-----------|---------|------|------|-------|-------|------|------|------|------|------|-------|-------|
| Heat | Steelmaking Method | Test Type | C | Mn | P | S | Si | Cr | Cu | Mo | Ni | V | Ti | Nb |
| | | | Heat | 0.21 | 0.86 | 0.015 | 0.007 | 0.28 | 0.05 | 0.01 | 0.03 | | | |
| | | | Product | 0.19 | 0.89 | 0.020 | 0.005 | 0.29 | 0.07 | 0.01 | 0.01 | 0.04 | 0.003 | 0.003 |
| BSM-1697 | Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed | | | | | | | | | | | | | |

| Mechanical Properties | | | | | | | | | |
|-----------------------|-----------|--------------------|----------|-----------------|----------------------------|-------------------|------------------|----------------|------------------|
| Heat | Test Type | Microstructure | Hardness | Flattening Test | Tension Test 50mm GL | Yield (Rt0.5) psi | Tensile (Rm) psi | Y/T (Rt0.5/Rm) | Elongation (A) % |
| BSM-1697 | Heat | Ferrite & Pearlite | 78 HRBW | Pass | Longitudinal; 38.1 mm x WT | 44,600 | 71,500 | 0.62 | 45 |

| Heat | Test | Test Standard | Impact Test Sample Details | Temp °C | Impact Energy | | | | % Shear | | | | Lateral Expansion | | | |
|----------|------|---------------|----------------------------|---------|---------------|---|---|-----|---------|---|---|-----|-------------------|----|----|-----|
| BSM-1697 | | | | | J | J | J | AVG | % | % | % | AVG | mm | mm | mm | AVG |
| | | | | | - | - | - | - | - | - | - | - | - | - | - | - |

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 Mar 14

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