



# Mill Test Certificate

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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-2226 Product Size: 24STD Production Date: Jan 22, 2015  
Production Method: Hot Expansion Product Heat Treatment: As-rolled Certificate No.: MTR- 001549

Product Standards: ASME B36.10-2004, API 5L-45th Ed. Grade B/X42 PSL1, ASTM/ASME A106-2014/SA106-2013 Grade B/C NDE, A53-2012/SA53-2013 Grade B Type S, NACE MR0175-2009 MR0103-2012

Product Markings



<API & L/C No.> API SPEC 5L NPS 24 STD 0.375 INCHWT GR B/X42 PSL1 SMLS 2015/01 NDE 1180PSI  
HEAT BSM-2226 (PIPE # LENGTH MASS) 94.62lb/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<br>lb/ft           | Geiger<br>µR/hr | Res. Mag.<br>Gauss | Visual<br>Insp. | OD   | UT<br>WT | UT<br>ASTM E213 | ET<br>ASTM | HydroTest<br>1180 PSI/ 5 s | End<br>Condition |  |  |
| BSM-2226         | Heat      | NPS 24 STD 0.375in. WT | 50     | DRL    | 94.62                   | <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    | B      | CE(IIW) | CE(CSA) |
| BSM-2226                | Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed | Heat      | 0.19 | 0.97 | 0.010 | 0.007 | 0.20 | 0.09 | 0.04 | 0.01 | 0.02 | 0.001 | -     | -     | -      | -       | -       |
|                         |   | Product   | 0.22 | 0.97 | 0.006 | 0.006 | 0.20 | 0.10 | 0.03 | 0.01 | 0.02 | 0.003 | 0.003 | 0.001 | 0.0002 | 0.41    | 0.41    |

| Mechanical Properties |           |                    |          |                 |                            |                      |                     |                   |                     |  |  |
|-----------------------|-----------|--------------------|----------|-----------------|----------------------------|----------------------|---------------------|-------------------|---------------------|--|--|
| Heat                  | Test Type | Microstructure     | Hardness | Flattening Test | Tension Test<br>50mm GL    | Yield (Rt0.5)<br>psi | Tensile (Rm)<br>psi | V/T<br>(Rt0.5/Rm) | Elongation (A)<br>% |  |  |
| BSM-2226              | Heat      | Ferrite & Pearlite | 78 HRBW  | Pass            | Longitudinal; 38.1 mm x WT | 43,600               | 73,500              | 0.59              | 41                  |  |  |

| Heat     | Test Standard | Impact Test<br>Sample Details | Temp<br>°C | Impact Energy |   |   |     | % Shear |   |   |     | Lateral Expansion |    |    |     |
|----------|---------------|-------------------------------|------------|---------------|---|---|-----|---------|---|---|-----|-------------------|----|----|-----|
| BSM-2226 | -             | -                             | -          | 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 A106-2014/SA106-2013 Grade B/C 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 and API Q1.

✓ This pipe product meets the sour service requirements of NACE MR0175/ISO 15156-2:2009 Annex A2 for Region 3 Sour Service-2009 NACE MR0103-2012 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:

*T. Lam*  
Tonya Lam, C.E.T.  
Assistant QA Manager

*Sam. 23.2015*