



# Mill Test Certificate

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

Product Heat Number: BSM-2138

Product Size: 18STD

Production Date: Nov 20, 2014

Production Method: Hot Expansion

Product Heat Treatment: As-rolled

Certificate No.: MTR- 001467

Product Standards: ASME B36.10-2004, API 5L-45th Ed. Grade B/X42 PSL1, ASTM/ASME A/SA333-2013 Grade 6 LT(M45C) 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 18 STD 0.375 INCHWT GR B/X42 PSL1 SMLS 2014/11 NDE 1490PSI  
HEAT BSM-2138 (PIPE # LENGTH MASS) 70.59lb/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<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>1490 PSI/<br>5 s | End<br>Condition |
| BSM-2138         | Heat      | NPS 18 STD 0.375in. WT | 15     | DRL    | 70.59         | <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) |   |
|                         |   | Heat      | 0.18 | 1.15 | 0.018 | 0.003 | 0.23 | 0.12 | 0.02 | 0.01 | 0.02 | 0.052 |       |       |        |         | -       | - |
|                         |   | Product   | 0.18 | 1.12 | 0.018 | 0.006 | 0.21 | 0.12 | 0.02 | 0.01 | 0.02 | 0.052 | 0.003 | 0.001 | 0.0004 | 0.41    | 0.41    |   |
| BSM-2138                | 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-2138              | Heat      | Ferrite & Pearlite | 76 HRBW  | Pass            | Longitudinal; 38.1 mm x WT | 53,500            | 73,500           | 0.73           | 40               |

| Heat     | Test Standard | Impact Test Sample Details | Temp °C | Impact Energy |       |       |       | % Shear |    |   |     | Lateral Expansion |      |      |      |
|----------|---------------|----------------------------|---------|---------------|-------|-------|-------|---------|----|---|-----|-------------------|------|------|------|
|          |               |                            |         | J             | J     | J     | AVG   | %       | %  | % | AVG | mm                | mm   | mm   | AVG  |
| BSM-2138 | ASTM A333     | CVN Long 10 x 7.5 mm       | -48     | 76.2          | 185.4 | 159.0 | 140.2 | 16      | 33 | 5 | 18  | 1.87              | 1.77 | 2.00 | 1.88 |

## 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/SA333-2013 Grade 6 LT(M45C) 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* *Nov 126/2014*

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

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