



# Mill Test Certificate

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Product: Seamless Carbon Steel Pipe      Product Heat Number: BSM-3105      Production Date: Apr 11, 2017  
 Production Method: Hot Expansion      Product Heat Treatment: Normalizing Forming      Certificate No.: MTR- 003291  
 Product Standards: ASME B36.10M-2015, API 5L-45th Ed. GradeB/X42 PSL1, ASTM/ASME A333-2016/SA333-2015 Grade 6 LT(M45C) A106-2014/SA106-2015 Grade B/C NDE, A53-2012/SA53-2015 Grade B Type S, NACE MR0175/ISO 15156-2:2009 MR0103/ISO 17495:2015  
 Product Markings: <API & L/C No.> API SPEC 5L NPS 24 TRUE 40 0.688 INCHWT GRB/X42 PSL1 SML5 2017/04 NDE 2170PSI  
 HEAT BSM-3105 (PIPE # LENGTH MASS) 171.5lb/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 | Geliger µR/hr | Res. Mag. Gauss | Visual Insp. | OD   | UT (WT)   | UT        | ET        | HydroTest    | End Condition |
| BSM-3105         | Heat      | NPS 24 TRUE 40 0.688in. WT | 3      | DRL                     | 171.5      | <5            | <10             | Pass         | Pass | ASTM E114 | ASTM E213 | ASTM E309 | 2170PSI/ 5 s | Plain End     |

| Heat     | Steelmaking Method   | Test Type | Chemical Analysis (wt%) |      |       |       |       |      |      |      |      |       |       |       |        |         |            |         |      |
|----------|--|-----------|-------------------------|------|-------|-------|-------|------|------|------|------|-------|-------|-------|--------|---------|------------|---------|------|
|          |  |           | C                       | Mn   | P     | S     | Si    | Cr   | Cu   | Mo   | Ni   | V     | Ti    | Nb    | B      | CE(IIW) | CE(IIW)Max | CE(CSA) |      |
| BSM-3105 | Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed (at TRCO China) | Heat      | 0.17                    | 1.09 | 0.013 | 0.003 | 0.31  | 0.02 | 0.01 | 0.01 | 0.01 | 0.01  | 0.057 | 0.001 | 0.002  | 0.0004  | 0.37       | -       | 0.37 |
|          |  |           | Product                 | 0.17 | 1.08  | 0.014 | 0.005 | 0.32 | 0.05 | 0.02 | 0.00 | 0.01  | 0.057 | 0.004 | 0.001  | 0.0004  | 0.37       | -       | 0.38 |
|          |  |           | 0.17                    | 1.07 | 0.016 | 0.005 | 0.31  | 0.05 | 0.01 | 0.00 | 0.01 | 0.058 | 0.004 | 0.001 | 0.0004 | 0.37    | -          | 0.37    |      |

| Heat     | Test Type | Microstructure     | Hardness | Flattening Test |              |              |                            | Yield (Rt0.5) psi | Tensile (Rm) psi | Y/T (Rt0.5/Rm) | Elongation (A) % |
|----------|-----------|--------------------|----------|-----------------|--------------|--------------|----------------------------|-------------------|------------------|----------------|------------------|
|          |           |                    |          | 2 in. GL        | 1.5 in. x WT | 1.5 in. x WT | Longitudinal: 1.5 in. x WT |                   |                  |                |                  |
| BSM-3105 | Heat      | Ferrite & Pearlite | 80 HRBW  | Pass            | Pass         | Pass         | 51 500                     | 77 000            | 0.67             | 50             |                  |
|          |           |                    |          | Pass            | Pass         | Pass         | 49 400                     | 76 000            | 0.65             | 51             |                  |

| Heat     | Test Standard | Result | Impact Test Sample Details | Temp °C | Impact Energy Min. (J) |               | Shear (%)  | Lateral Expansion (mm) |
|----------|---------------|--------|----------------------------|---------|------------------------|---------------|------------|------------------------|
|          |               |        |                            |         | (3 Tests) AVG          | (3 Tests) AVG |            |                        |
| BSM-3105 | ASTM A333     | Pass   | CVN Long 10 x 10 mm        | -45     | (14/14/14) 18          | (73/14/38) 42 | (10/0/5) 5 | (0.94/0.21/0.61) 0.59  |

**Additional Details:**

✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing in accordance with GRX42 ASTM/ASME A333-2016/SA333-2015, A106-2014/SA106-2015, A53-2012/SA53-2015, and the purchase order requirements, and that the results meet the corresponding requirements. Bri-Steel Manufacturing is registered and certified to ISO-9001:2008 (APIQR-1584), API Q1, and PED 2014/68/EU.

✓ 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/ISO 17495:2015 Section 13.1

✓ 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*      *APR 19 / 2017*

Tonya Lam, P. Tech (Eng.)  
 Assistant QA Manager