



# Mill Test Certificate

Bri-Steel Manufacturing  
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Product: Seamless Carbon Steel Pipe      Product Heat Number: BSM-3162      Product Size: NPS 24 STD      Production Date: Jun 08, 2017  
 Production Method: Hot Expansion      Product Heat Treatment: Normalizing Forming      Certificate No.: MTR- 003376  
 Product Standards: ASME B36.10M-2015, API 5L-45th Ed. Grade 8N/X46N PSL2, ASTM/ASME A106-2014/SA106-2015 Grade B/C NDE, A53-2012/SA53-2015 Grade B Type S, NACE MR0175/ISO 15156-2:2015 MR0103/ISO 17495-2015  
 Product Markings: <API & L/C No.> API SPEC 5L NPS 24 STD 0.375 INCHWT GR 8N/X46N PSL2 SMLS 2017/06 NDE 1300PSI  
 HEAT BSM-3162 (PIPE # LENGTH MASS) 94.76lb/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              | Gelger µR/hr | Res. Mag. Gauss | Visual Insp. | OD Pass | UT (WT) ASTM E114 | UT ASTM E213 | ET ASTM E309 | HydroTest 1300PSI/ 5s | End Condition |
| BSM-3162         | Heat      | NPS 24 STD 0.375in. WT | 11     | DRL    | 94.76                   | <5           | <10             | Pass         | Pass    | Pass              | N12.5 Pass   | -            | Pass                  | 35° Bevel     |

| Heat     | Steelmaking Method | Test Type | C    | Mn   | P     | S     | Si   | Cr   | Cu   | Mo   | Ni   | V     | Ti    | Nb    | B      | CE(IIW) | CE(IIW)Max | CE(CSA) |  |  |
|----------|--------------------|-----------|------|------|-------|-------|------|------|------|------|------|-------|-------|-------|--------|---------|------------|---------|--|--|
|          |                    |           |      |      |       |       |      |      |      |      |      |       |       |       |        |         |            |         | Blast Furnace: EAF: Ladle Refining: Vacuum |  |
|          |                    |           |      |      |       |       |      |      |      |      |      |       |       |       |        |         |            |         | Degas: Fully Killed (at Huaijin China)     |  |
| BSM-3162 |                    |           | 0.15 | 1.09 | 0.013 | 0.005 | 0.25 | 0.19 | 0.10 | 0.02 | 0.05 | 0.060 | 0.001 | 0.001 | 0.0001 | 0.40    | -          | 0.38    |  |  |
|          |                    |           | 0.16 | 1.11 | 0.012 | 0.004 | 0.26 | 0.20 | 0.10 | 0.02 | 0.05 | 0.062 | 0.036 | 0.001 | 0.0004 | 0.41    | 0.43       | 0.40    |  |  |
|          |                    |           | 0.16 | 1.06 | 0.007 | 0.002 | 0.25 | 0.18 | 0.12 | 0.02 | 0.05 | 0.062 | 0.030 | 0.001 | 0.0004 | 0.40    | 0.43       | 0.39    |  |  |

| Mechanical Properties |           |                    |          |                 |                            |                   |                  |                |                  |
|-----------------------|-----------|--------------------|----------|-----------------|----------------------------|-------------------|------------------|----------------|------------------|
| Heat                  | Test Type | Microstructure     | Hardness | Flattening Test | Tension Test 2 in. GL      | Yield (Rt0.5) psi | Tensile (Rm) psi | Y/T (Rt0.5/Rm) | Elongation (A) % |
| BSM-3162              | Heat      | Ferrite & Pearlite | 79 HRBW  | Pass            | Longitudinal; 1.5 in. x WT | 46 600            | 71 000           | 0.66           | 42               |

| Heat     | Test Standard | Result | Impact Test Sample Details | Temp °C | Impact Energy Min. (J) |               | Impact Energy Results (J) |                   | Shear (%) | Lateral Expansion (mm) |
|----------|---------------|--------|----------------------------|---------|------------------------|---------------|---------------------------|-------------------|-----------|------------------------|
|          |               |        |                            |         | (3 Tests) AVG          | (15/15/15) 20 | (3 Tests) AVG             | (177/132/180) 163 |           |                        |
| BSM-3162 | API 5L PSL2   | Pass   | CVN Trans 8STR 10x7.5mm    | 0       |                        |               |                           |                   |           |                        |

**Additional Details:**

- ✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing in accordance with API 5L-45th Ed., N ASTM/ASME 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 9001:2015 (APIQR-1584), API Q1, and PED 2014/68/EU.
- ✓ This pipe product meets the **SOUR SERVICE** requirements of ANSI/NACE MR0175/ISO 15156-2A:2015 (Annex A2 for Region 3 Sour Service), and ANSI/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: *Tonya Lam* / 14/2017

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