



Mill Test Certificate

Bri-Steel Manufacturing
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-3172 Production Date: Jun 22, 2017
 Production Method: Hot Expansion Product Heat Treatment: Normalizing Forming Certificate No.: MTR- 003387
 Product Standards: ASME B36.10M-2015, 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: NPS 30 STD 0.375 INCHWT SMLS 2017/06 NDE 600PSI
 HEAT BSM-3172 (PIPE # LENGTH MASS) 118.82lb/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 600PSI/ 5s | End Condition | | | | | |
|-------------------------|---|------------------------|--------|--------|------------|--------------|-----------------|--------------|---------|-------------------|--------------|--------------|----------------------|---------------|--------|---------|------------|---------|------|
| | | | | | | | | | | | | | | | Pass | Pass | N12.5 Pass | - | Pass |
| BSM-3172 | Heat | NPS 30 STD 0.375in. WT | 15 | DRL | 118.82 | <5 | <10 | Pass | Pass | Pass | N12.5 Pass | - | Pass | 35° 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(IIW)Max | CE(CSA) | |
| | | | | | | | | | | | | | | | | | | | Heat |
| BSM-3172 | Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed | Product | 0.16 | 1.12 | 0.008 | 0.005 | 0.26 | 0.17 | 0.10 | 0.01 | 0.05 | 0.064 | 0.034 | 0.002 | 0.0004 | 0.41 | - | - | 0.40 |

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-3172 | Heat | Ferrite & Pearlite | 79 HRBW | Pass | Longitudinal; 1.5 in. x WT | 50 000 | 71 500 | 0.70 | 38 |

| Heat | Test Standard | Result | Impact Test Sample Details | Temp °C | Impact Energy Min. (J) (3 Tests) AVG | Impact Energy Results (J) (3 Tests) AVG | Shear (%) (3 Tests) AVG | Lateral Expansion (mm) (3 Tests) AVG |
|----------|---------------|--------|----------------------------|---------|--------------------------------------|---|-------------------------|--------------------------------------|
| | | | | | | | | |
| BSM-3172 | - | - | - | - | - | - | - | - |

Additional Details:
 ✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing in accordance with 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:
T. Lam / 27/2017
 Tonya Lam, P. Tech (Eng.)
 Assistant QA Manager