



Mill Test Certificate

Bri-Steel Manufacturing
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-3053 Production Date: Feb 15, 2017
 Production Method: Hot Expansion Product Heat Treatment: Normalizing Forming Certificate No.: MTR- 003167
 Product Standards: ASME B36.10M-2015, ASTM/ASME A106-2014/SA106-2015 Grade B NDE, A53-2012/SA53-2015 Grade B Type S, NACE MR0175/ISO 15156-2:2009 MR0103/ISO 17495-2015
 Product Markings: NPS 18 TRUE 40 0.562 INCHWT SMLS 2017/02 NDE 1500PSI
 HEAT BSM-3053 (PIPE # LENGTH MASS) 104.73lb/ft ASTM/ASME A/SA106 GR B 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 | Galiger | Res. Mag. Gauss | Visual Insp. | OD | UT (WT) | UT | ET | HydroTest | End Condition | |
| BSM-3053 | Heat | NPS 18 TRUE 40 0.562in. WT | 1 | DRL | 104.73 | <5 | <10 | Pass | Pass | Pass | ASTM E114 | ASTM E213 | ASTM E309 | 1500PSI/ 5 s | Plain End |

| Heat | BSM-3053 | 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) |
| | | | | 0.20 | 0.56 | 0.013 | 0.008 | 0.24 | 0.02 | 0.01 | 0.01 | 0.01 | 0.01 | 0.004 | 0.002 | 0.001 | 0.001 | 0.0003 | 0.30 |
| | | Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed | Product | 0.21 | 0.55 | 0.013 | 0.005 | 0.25 | 0.03 | 0.01 | 0.00 | 0.01 | 0.002 | 0.001 | 0.001 | 0.0003 | 0.31 | - | 0.32 |

| Mechanical Properties | | | | | | | | | |
|-----------------------|-----------|-------------------|----------|-----------------|----------------------------|---------------|--------------|------------|----------------|
| Heat | Test Type | Microstructure | Hardness | Flattening Test | Tension Test | Yield (Rt0.5) | Tensile (Rm) | V/Y | Elongation (A) |
| BSM-3053 | Heat | Ferrie & Pearlite | 73 HRBW | Pass | Longitudinal; 2 in. GL | psi | psi | (Rt0.5/Rm) | % |
| | | | | | Longitudinal; 1.5 in. x WT | 38 900 | 67 500 | 0.58 | 49 |

| Heat | Test | Result | Impact Test | Temp °C | Impact Energy Min. (J) | Impact Energy Results (J) | Shear (%) | Lateral Expansion (mm) |
|----------|----------|--------|----------------|---------|------------------------|---------------------------|-----------|------------------------|
| BSM-3053 | Standard | - | Sample Details | - | (3 Tests) AVG | (3 Tests) AVG | - | (3 Tests) AVG |

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 9001:2008 (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 Feb 23 / 2017

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