



Mill Test Certificate

Bri-Steel Manufacturing
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-2762 Product Size: NPS 18 STD Production Date: May 11, 2016
 Production Method: Hot Expansion Product Heat Treatment: As Rolled Certificate No.: MTR- 002823
 Product Standards: ASME B36.10M-2015, ASTM/ASME A106-2014/SA106-2013 Grade B NDE, A53-2012/SA53-2013 Grade B Type S, NACE MR0175-2009 MR0103-2012
 Product Markings: NPS 18 STD 0.375 INCHWT SMLS 2016/05 NDE 990PSI
 HEAT BSM-2762 (PIPE # LENGTH MASS) 70.59lb/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 | Geiger | Res. Mag. | Visual | OD | UT | UT | ET | HydroTest | End | | |
| BSM-2762 | Heat | NPS 18 STD 0.375in. WT | 7 | DRL | lb/ft | µR/hr | Gauss | Insp. | Pass | Pass | Pass | Pass | ASTM E213 | ASTM E309 | 990 PSI/ 5 s | Condition |
| | | | | | 70.59 | <5 | <20 | Pass | Pass | Pass | Pass | Pass | NI2.5 Pass | - | Pass | 31° Bevel |

| Heat | BSM-2762 | 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) |
| | | Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed | Heat | 0.19 | 0.88 | 0.017 | 0.007 | 0.22 | 0.03 | 0.04 | 0.01 | 0.01 | 0.006 | 0.026 | 0.001 | 0.0004 | 0.35 | - | 0.36 |
| | | | Product | 0.20 | 0.93 | 0.017 | 0.007 | 0.24 | 0.04 | 0.03 | 0.03 | 0.01 | 0.005 | 0.047 | 0.001 | 0.0004 | 0.37 | - | 0.38 |

| Mechanical Properties | | | | | | | | | |
|-----------------------|-----------|--------------------|----------|-----------------|--|---------------|--------------|------------|----------------|
| Heat | Test Type | Microstructure | Hardness | Flattening Test | Tension Test | Yield (Rt0.5) | Tensile (Rm) | Y/T | Elongation (A) |
| BSM-2762 | Heat | Ferrite & Pearlite | 80 HRBW | Pass | 2 in. GL Longitudinal; 1.5 in. x WT | psi | psi | (Rt0.5/Rm) | % |
| | | | | | | 45 800 | 71 500 | 0.64 | 43 |

| Heat | Test Standard | Impact Test | Temp °C | Impact Energy Min. (J) | Impact Energy (J) | Shear (%) | Lateral Expansion (mm) |
|----------|---------------|----------------|---------|------------------------|-------------------|---------------|------------------------|
| BSM-2762 | - | Sample Details | - | (3 Tests) AVG | (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/SA106-2013, 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 (APIQR-1584), API Q1, and PED 97/23/EC.
 - ✓ This pipe product meets the sour service requirements of NACE MR0175/ISO 15156-2:2009 Annex A2 for Region 3 Sour Service, and NACE MR0103-2012 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 May 17/2016

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