



Bri-Steel Manufacturing
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Mill Test Certificate

Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-2664 Product Size: NPS 24 STD Production Date: Mar 02, 2016
 Production Method: Hot Expansion Product Heat Treatment: As Rolled Certificate No.: MTR- 002109
 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 24 STD 0.375 INCHWT SMLS 2016/03 NDE 660PSI
 HEAT BSM-2664 (PIPE # LENGTH MASS) 94.62lb/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 | Geiger μ R/hr | Res. Mag. Gauss | Visual Insp. | OD | UT WT | UT Pass | ET | Hydro Test | End Condition | |
| BSM-2664 | Heat | NPS 24 STD 0.375in. WT | 7 | DRL | 94.62 | <5 | <20 | Pass | Pass | N12.5 | Pass | ASTM E213 | ASTM E309 | 660 PSI/ 5 s | 30° Bevel |

| Chemical Analysis (wt%) | | | | | | | | | | | | | | | | | | |
|-------------------------|---|-----------|------|------|-------|-------|------|------|------|------|------|-------|-------|-------|---------|------------|---------|------|
| Heat | Steelmaking Method | Test Type | C | Mn | P | S | Si | Cr | Cu | Mo | Ni | V | Ti | Nb | CE(IIW) | CE(IIW)Max | CE(CSA) | |
| BSM-2664 | Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed | Heat | 0.16 | 1.17 | 0.014 | 0.001 | 0.27 | 0.05 | 0.01 | 0.01 | 0.02 | 0.050 | 0.001 | 0.001 | 0.0001 | 0.38 | - | 0.37 |
| | | Product | 0.17 | 1.15 | 0.015 | 0.001 | 0.28 | 0.05 | 0.01 | 0.01 | 0.03 | 0.056 | 0.001 | 0.001 | 0.0003 | 0.39 | - | 0.39 |
| | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

| Mechanical Properties | | | | | | | | | |
|-----------------------|-----------|--------------------|----------|-----------------|----------------------------|-------------------|------------------|----------------|------------------|
| Heat | Test Type | Microstructure | Hardness | Flattening Test | Tension Test | Yield (Rt0.5) psi | Tensile (Rm) psi | Y/T (Rt0.5/Rm) | Elongation (A) % |
| BSM-2664 | Heat | Ferrite & Pearlite | 83 HRBW | Pass | Longitudinal; 1.5 in. x WT | 50 500 | 78 500 | 0.64 | 47 |

| Heat | Test Standard | Impact Test Sample Details | Temp °C | Impact Energy Min. (J) (3 Tests) AVG | Impact Energy (J) (3 Tests) AVG | Shear (%) (3 Tests) AVG | Lateral Expansion (mm) (3 Tests) AVG |
|----------|---------------|----------------------------|---------|--------------------------------------|---------------------------------|-------------------------|--------------------------------------|
| BSM-2664 | - | - | - | - | - | - | - |

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, 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:

 Tonya Lam
 Assistant QA Manager