



Mill Test Certificate

Bri-Steel Manufacturing Inc.
2125-64 Avenue, Edmonton, AB Canada T6P 1Z4
Tel: 001 (780) 469-6603
Fax: 001 (780) 469-6986
www.bri-steel.com

Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-1748 Product Size: 16S100 Production Date: Apr 07, 2014
Production Method: Hot Expansion Product Heat Treatment: As-rolled Certificate No.: MTR- 001009

Product Standards: ASME B36.10-2004, ASTM/ASME A/SA106-2013 Grade B/C NDE, A/SA53-2012 Grade B Type S, NACE MR0175-2009 MR0103-2010

Product Markings



NPS 16 SCH 100 1.031 INCHWT SMLS 2014/04 NDE
HEAT BSM-1748 (PIPE # LENGTH MASS) 164.8lb/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 | Geiger μ R/hr | Res. Mag. Gauss | Visual Insp. | OD " | UT WT | UT ASTM E213 | ET ASTM E309 | HydroTest | End Condition |
| BSM-1748 | Heat | NPS 16 SCH 100 1.031in. WT | 1 | DRL | 164.8 | <5 | <10 | Pass | Pass | Pass | Pass | Pass | - | Plain End |

| Chemical Analysis (wt%) | | | | | | | | | | | | | | |
|-------------------------|--|-----------|------|------|-------|-------|------|------|------|------|------|-------|-------|-------|
| Heat | Steelmaking Method | Test Type | C | Mn | P | S | Si | Cr | Cu | Mo | Ni | V | Ti | Nb |
| BSM-1748 | Basic Furnace EAF, Ladle Refining Vacuum Degass Fully Killed | Heat | 0.21 | 0.90 | 0.017 | 0.002 | 0.29 | 0.06 | 0.06 | 0.01 | 0.02 | 0.004 | 0.002 | 0.001 |
| | | Product | 0.22 | 0.93 | 0.013 | 0.002 | 0.34 | 0.04 | 0.06 | 0.01 | 0.03 | 0.003 | 0.002 | 0.001 |

| Mechanical Properties | | | | | | | | | |
|-----------------------|-----------|--------------------|----------|-----------------|-----------------------------|-------------------|------------------|----------------|------------------|
| Heat | Test Type | Microstructure | Hardness | Flattening Test | Tension Test 50mm GL | Yield (Rt0.5) psi | Tensile (Rm) psi | Y/T (Rt0.5/Rm) | Elongation (A) % |
| BSM-1748 | Heat | Ferrite & Pearlite | 78 HRBW | Pass | Longitudinal: 19.05 mm x WT | 49,400 | 73,500 | 0.67 | 47 |

| Heat | Test Standard | Impact Test Sample Details | Temp °C | Impact Energy J | | | % Shear | | | Lateral Expansion mm | | | AVG |
|----------|---------------|----------------------------|---------|-----------------|---|---|---------|---|---|----------------------|----|----|-----|
| BSM-1748 | - | - | - | J | J | J | AVG | % | % | AVG | mm | mm | mm |

Additional Details:

✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing Inc. in accordance with ASTM/ASME A/SA106-2013 Grade B/C A/SA53-2012, and the purchase order requirements, and that the results meet the corresponding requirements.

✓ This pipe product meets the sour service requirements of NACE MR0175/ISO 15156-2:2009 Annex A2 for Region 3 Sour Service-2009 NACE MR0103-2010 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.

*OD Tolerances as per API

Mill Test Certificate approved by:

Paul Sowden
2014 APR 08

Paul Sowden, T.T.
Assistant QA Manager