



Mill Test Certificate

Bri-Steel Manufacturing Inc.
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-2081 Product Size: 24S60 Production Date: Oct 02, 2014
Production Method: Hot Expansion Product Heat Treatment: As-rolled Certificate No.: MTR- 001404
Product Standards: ASME B36.10-2004, API 5L-45th Ed. Grade B PSL1, ASTM/ASME A/SA106-2014 Grade B NDE, A/SA53-2012 Grade B Type S, NACE MR0175-2009 MR0103-2010

Product Markings



<API & L/C No.> API SPEC 5L NPS 24 SCH 60 0.969 INCHWT GR B PSL1 SMIS 2014/10 NDE 1900PSI
HEAT BSM-2081 (PIPE # LENGTH MASS) 238.1lb/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 $\mu R/hr$ | Res. Mag. Gauss | Visual Insp. | OD | UT WT | UT ASTM E213 | ET ASTM | HydroTest 1900 PSI/ 5 s | End Condition |
| BSM-2081 | Heat | NPS 24 SCH 60 0.969in. WT | 3 | DRL | 238.1 | <5 | <10 | Pass | 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-2081 | Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed | Heat | 0.19 | 0.85 | 0.008 | 0.008 | 0.22 | 0.04 | 0.07 | 0.01 | 0.03 | | | 0.0003 |
| | | Product | 0.19 | 0.84 | 0.008 | 0.010 | 0.23 | 0.04 | 0.07 | 0.01 | 0.03 | 0.002 | 0.001 | 0.0002 |

| 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-2081 | Heat | Ferrite & Pearlite | 72 HRBW | Pass | Longitudinal; 19.05 mm x WT | 39,500 | 68,500 | 0.58 | 43 |

| Heat | Test Standard | Impact Test Sample Details | Temp °C | Impact Energy J | | | % Shear | | | Lateral Expansion mm | | |
|----------|---------------|----------------------------|---------|-----------------|---|---|---------|---|---|----------------------|---|---|
| BSM-2081 | - | - | - | - | - | - | - | - | - | - | - | - |

Additional Details:

✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing Inc. in accordance with API 5L-45th Ed., ASTM/ASME A/SA106-2014 Grade B A/SA53-2012, and the purchase order requirements, and that the results meet the corresponding requirements. Bri-Steel Manufacturing is registered and certified to ISO-9001:2008 and API Q1.

✓ 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.

Mill Test Certificate approved by:

Tonya Lam, C.E.T.
Assistant QA Manager

T. Lam Oct 108/2014