



Mill Test Certificate

Bri-Steel Manufacturing Inc.
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-2089 Product Size: 24STD Production Date: Oct 07, 2014
Production Method: Hot Expansion Product Heat Treatment: As-rolled Certificate No.: MTR- 001411
Product Standards: ASME B36.10-2004, API 5L-45th Ed. Grade B/X42/X46/X52 PSL1, ASTM/ASME A/SA106-2014 Grade B/C NDE, A/SA53-2012 Grade B Type S, NACE MR0175-2009 MR0103-2010

Product Markings



<API & L/C No.> API SPEC 5L NPS 24 STD 0.375 INCHWT GR B/X42/X46/X52 PSL1 SMLS 2014/10 NDE 1470PSI
HEAT BSM-2089 (PIPE # LENGTH MASS) 94.62lb/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 µR/hr | Res. Mag. Gauss | Visual Insp. | OD | UT WT | UT ASTM E213 | ET ASTM | HydroTest 1470PSI/ 5 s | End Condition |
| BSM-2089 | Heat | NPS 24 STD 0.375in. WT | 30 | DRL | 94.62 | <5 | <10 | Pass | Pass | Pass | Pass | Pass | Pass | 32.5° Bevel |

| Chemical Analysis (wt%) | | | | | | | | | | | | | | |
|-------------------------|---|-----------|------|------|-------|-------|------|------|------|------|------|-------|-------|-------|
| Heat | Steelmaking Method | Test Type | C | Mn | P | S | Si | Cr | Cu | Mo | Ni | V | Ti | Nb |
| BSM-2089 | Blast Furnace; EAF; Ladle Refining; Vacuum Degass, Fully Killed | Heat | 0.17 | 1.11 | 0.017 | 0.003 | 0.35 | 0.12 | 0.03 | 0.01 | 0.06 | 0.060 | | |
| | | Product | 0.21 | 1.12 | 0.017 | 0.004 | 0.36 | 0.05 | 0.03 | 0.01 | 0.03 | 0.071 | 0.005 | 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-2089 | Heat | Ferrite & Pearlite | 86 HRBW | Pass | Longitudinal; 38.1 mm x WT | 55,500 | 78,500 | 0.71 | 41 |

| Heat | Test Standard | Impact Test Sample Details | Temp °C | Impact Energy | | | % Shear | | | Lateral Expansion | | | | | |
|----------|---------------|----------------------------|---------|---------------|-------|------|---------|----|----|-------------------|----|------|------|------|------|
| | | | | J | J | J | AVG | % | % | AVG | mm | mm | mm | AVG | |
| BSM-2089 | ASTM A333 | CVN Long 10 x 7.5 mm | -48 | 87.5 | 102.0 | 79.0 | 89.5 | 90 | 85 | 80 | 85 | 1.96 | 2.06 | 2.03 | 2.02 |

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/C 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

Tonya Lam Oct 110/2014

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