



Mill Test Certificate

Bri-Steel Manufacturing Inc.
2125-64 Avenue, Edmonton, AB Canada T6P 1Z4
Tel: 001 (780) 469-6603
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-1570 Product Size: 20 X
Production Method: Hot Expansion Product Heat Treatment: As-rolled Certificate No.: MTR- 000804
Production Date: Jan 27, 2014
Product Standards: ASME B36.10-2004, API 5L-45th Ed. Grade B PSL1, ASTM/ASME A/SA106-2011 Grade B/C NDE, A/SA53-2012 Grade B Type S, NACE MR0175-2009 MR0103-2010
Product Markings: <API> 5L-0898 API SPEC 5L NPS 20 X 0.450 INCH WT GR B PSL1 SMLS 2014/01 NDE 1200PSI
HEAT BSM-1570 (PIPE # LENGTH MASS) 93.69lb/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 | Geliger μR/hr | Res. Mag. Gauss | Visual Insp. | OD | UT WT | UT ASTM E213 | ET ASTM | HydroTest 1200PSI/ 5 s | End Condition |
| BSM-1570 | Heat | NPS 20 X 0.450in. WT | 9 | DRL | 93.69 | <5 | <10 | Pass | Pass | Pass | Pass | Pass | Pass | 34° Bevel |

| Chemical Analysis (wt%) | | | | | | | | | | | | | | | |
|-------------------------|---|-----------|------|------|-------|-------|-------|------|------|------|------|-------|-------|-------|--------|
| Heat | Steelmaking Method | Test Type | C | Mn | P | S | Si | Cr | Cu | Mo | Ni | V | Ti | Nb | B |
| | | | Heat | 0.19 | 0.83 | 0.015 | 0.010 | 0.22 | 0.05 | 0.01 | 0.04 | 0.002 | 0.003 | 0.001 | 0.0003 |
| BSM-1570 | Blast Furnace, EAF, Ladle Refining, Vacuum Degass, Fully Killed | Product | 0.22 | 0.89 | 0.019 | 0.014 | 0.26 | 0.07 | 0.06 | 0.00 | 0.04 | 0.002 | 0.003 | 0.001 | 0.0003 |

| Mechanical Properties | | | | | | | | | | | | | | | |
|-----------------------|------------------|-------------------------------|------------|-----------------|----------------------------|---|-----|----------------------|---------------------|-------------------|---------------------|-------------------|----|----|-----|
| Heat | Test Type | Microstructure | Hardness | Flattening Test | Tension Test 50mm GL | | | Yield (Rt0.5) psi | Tensile (Rm) psi | V/T (Rt0.5/Rm) | Elongation (A) % | | | | |
| BSM-1570 | Heat | Ferrite & Pearlite | 76 HRBW | Pass | Longitudinal: 38.1 mm x WT | | | 44,000 | 73,000 | 0.60 | 45 | | | | |
| Heat | Test Standard | Impact Test Sample Details | Temp °C | Impact Energy | | | | % Shear | | | | Lateral Expansion | | | |
| | | | | J | J | J | AVG | % | % | % | AVG | mm | mm | mm | AVG |
| BSM-1570 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

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/SA106-2011 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.

Mill Test Certificate approved by:

Paul Sowden
2014 JAN 30
Paul Sowden, T.T.
Assistant QA Manager



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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-1570 Product Size: 20 XS Production Date: Jan 27, 2014
Production Method: Hot Expansion Product Heat Treatment: As-rolled Certificate No.: MTR- 000796
Product Standards: ASME B36.10-2004, API 5L-45th Ed. Grade B PSL1, ASTM/ASME A/SA106-2011 Grade B/C NDE, A/SA53-2012 Grade B Type S, NACE MR0175-2009 MR0103-2010
Product Markings: <API> 5L-0898 API SPEC 5L NPS 20 XS 0.500 INCHWT GR B PSL1 SMLS 2014/01 NDE 1200PSI
HEAT BSM-1570 (PIPE # LENGTH MASS) 104.1lb/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 | Geliger $\mu R/hr$ | Res. Mag. Gauss | Visual Insp. | OD | UT WT | UT ASTM E213 | ET ASTM | HydroTest 1200 PSI/ 5 s | End Condition 34° Bevel |
| BSM-1570 | Heat | NPS 20 XS 0.500in. WT | 9 | DRL | 104.1 | <5 | <10 | Pass | Pass | Pass | Pass | Pass | Pass | |

| Chemical Analysis (wt%) | | | | | | | | | | | | | | |
|-------------------------|---|-----------|------|------|-------|-------|-------|------|------|------|------|-------|-------|-------|
| Heat | Steelmaking Method | Test Type | C | Mn | P | S | Si | Cr | Cu | Mo | Ni | V | Ti | Nb |
| | | | Heat | 0.19 | 0.83 | 0.015 | 0.010 | 0.22 | 0.05 | 0.01 | 0.04 | | | |
| BSM-1570 | Blast Furnace: EAF, Ladle Refining: Vacuum Degass: Fully Killed | Product | 0.22 | 0.89 | 0.019 | 0.014 | 0.26 | 0.07 | 0.06 | 0.00 | 0.04 | 0.002 | 0.003 | 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-1570 | Heat | Ferrite & Pearlite | 76 HRBW | Pass | Longitudinal; 38.1 mm x WT | 44,000 | 73,000 | 0.60 | 45 |

| Heat | Test Standard | Impact Test Sample Details | Temp °C | Impact Energy | | | | % Shear | | | | Lateral Expansion | | | |
|----------|---------------|----------------------------|---------|---------------|---|---|-----|---------|---|---|-----|-------------------|----|----|-----|
| | | | | J | J | J | AVG | % | % | % | AVG | mm | mm | mm | AVG |
| BSM-1570 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

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/SA106-2011 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.

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