



Mill Test Certificate

Bri-Steel Manufacturing Inc.
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-1263 Product Size: 20 XS Production Date: Sep 19, 2013
 Production Method: Hot Expansion Product Heat Treatment: As-rolled Certificate No.: MTR- 000484
 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 INCH WT GR B PSL1 SM15 2013/09 NDE 1200PSI
 HEAT BSM-1263 (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 | Geiger µR/hr | Res. Mag. Gauss | Visual Insp. | OD | UT WT | UT ASTM E213 | ET ASTM | HydroTest 1200 PSI/ 5 S | End Condition |
| BSM-1263 | Heat | NPS 20 XS 0.500in. WT | 1 | DRL | 104.1 | OK | <5 | Pass | Pass | Pass | Pass | Pass | Pass | 32.5° Bevel |

| Heat | Steelmaking Method | Test Type | C | Mn | P | S | Si | Cr | Cu | Mo | Ni | V | Ti | Nb | B | Chemical Analysis (wt%) | | |
|----------|---|-----------|------|------|-------|-------|------|------|------|------|------|------|-------|-------|-------|-------------------------|---------|------|
| | | | | | | | | | | | | | | | | CE(IIW) | CE(CSA) | |
| BSM-1263 | Blast Furnace: EAF; Ladle Refining; Vacuum Degass; Fully Killed | Heat | 0.19 | 0.82 | 0.015 | 0.013 | 0.26 | 0.06 | 0.01 | | 0.04 | | | | | | - | - |
| | | Product | 0.22 | 0.88 | 0.017 | 0.017 | 0.28 | 0.07 | 0.01 | 0.01 | 0.01 | 0.04 | 0.002 | 0.003 | 0.001 | 0.0002 | 0.39 | 0.39 |

| Mechanical Properties | | | | | | | | | |
|-----------------------|-----------|--------------------|----------|-----------------|----------------------------|-------------------|------------------|----------------|------------------|
| Heat | Test Type | Microstructure | Hardness | Flattening Test | Tension Test 50mm GI | Yield (Rt0.5) psi | Tensile (Rm) psi | V/T (Rt0.5/Rm) | Elongation (A) % |
| BSM-1263 | Heat | Ferrite & Pearlite | 77 HRBW | Pass | Longitudinal; 38.1 mm x WT | 42,400 | 70,500 | 0.60 | 45 |

| Heat | Test Standard | Impact Test Sample Details | Temp °C | Impact Energy | | | % Shear | | | Lateral Expansion | | | | |
|----------|---------------|----------------------------|---------|---------------|---|---|---------|---|---|-------------------|----|----|-----|---|
| | | | | J | J | J | % | % | % | mm | mm | mm | AVG | |
| BSM-1263 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

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:

 2013 OCT 01

Paul Sowden, T.T.
 Assistant QA Manager