



Mill Test Certificate

Bri-Steel Manufacturing
 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-2775 Product Size: NPS 20 STD Production Date: May 24, 2016
 Production Method: Hot Expansion Product Heat Treatment: As Rolled Certificate No.: MTR- 002836

Product Standards: ASME B36.10M-2015, ASTM/ASME A106-2014/SA106-2015 Grade B/C NDE, A53-2012/SA53-2015 Grade B Type S, NACE MR0175/ISO 15156-2:2009 MR0103/ISO 17495-2015

Product Markings: NPS 20 STD 0.375 INCHWT SMLS 2016/05 NDE 900PSI
 HEAT BSM-2775 (PIPE # LENGTH MASS) 78.6lb/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 | Res. Mag. Gauss | Visual Insp. | OD | UT WT | UT ASTM E213 | ET ASTM E309 | HydroTest 900 PSI/ 5 s | End Condition |
| BSM-2775 | Heat | NPS 20 STD 0.375in. WT | 7 | DRL | 78.6 | <5 | <20 | Pass | Pass | Pass | N12.5 Pass | - | Pass | 30° Bevel |

| Heat | Steelmaking Method | Test Type | Chemical Analysis (wt%) | | | | | | | | | | | | | | | | |
|----------|---|-----------|-------------------------|------|-------|-------|-------|------|------|------|------|------|-------|-------|-------|---------|------------|---------|------|
| | | | C | Mn | P | S | Si | Cr | Cu | Mo | Ni | V | Ti | Nb | B | CE(IIW) | CE(IIW)Max | CE(CSA) | |
| | | | 0.16 | 1.12 | 0.010 | 0.002 | 0.23 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.050 | 0.002 | 0.001 | 0.0001 | 0.36 | - |
| BSM-2775 | Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed | Heat | Product | 0.16 | 1.10 | 0.010 | 0.004 | 0.26 | 0.04 | 0.01 | 0.01 | 0.02 | 0.061 | 0.002 | 0.001 | 0.0003 | 0.37 | - | 0.36 |

| Mechanical Properties | | | | | | | | | |
|-----------------------|-----------|--------------------|----------|-----------------|----------------------------|-------------------|------------------|----------------|------------------|
| Heat | Test Type | Microstructure | Hardness | Flattening Test | Tension Test 2 in. GL | Yield (Rt0.5) psi | Tensile (Rm) psi | V/T (Rt0.5/Rm) | Elongation (A) % |
| BSM-2775 | Heat | Ferrite & Pearlite | 82 HRBW | Pass | Longitudinal; 1.5 in. x WT | 52 000 | 77 500 | 0.67 | 43 |

| Heat | Test Standard | Impact Test Sample Details | Temp °C | Impact Energy Min. (J) | Impact Energy (J) | Shear (%) | Lateral Expansion (mm) |
|----------|---------------|----------------------------|---------|------------------------|-------------------|---------------|------------------------|
| BSM-2775 | - | - | - | - | (3 Tests) AVG | (3 Tests) AVG | (3 Tests) AVG |

Additional Details:

✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing in accordance with ASTM/ASME A106-2014/SA106-2015, A53-2012/SA53-2015, and the purchase order requirements, and that the results meet the corresponding requirements. Bri-Steel Manufacturing is registered and certified to ISO-9001:2008 (APIQR-1584), API Q1, and PED 97/23/EC.

✓ This pipe product meets the sour service requirements of NACE MR0175/ISO 15156-2:2009 Annex A2 for Region 3 Sour Service, and NACE MR0103/ISO 17495:2015 Section 13.1

✓ 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:

Leif
 2016 May 25

Kenton Dechant, P.Eng.
 Manager of Quality and R&D