



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-2742 Production Date: Apr 27, 2016
 Production Method: Hot Expansion Product Heat Treatment: As Rolled Certificate No.: MTR- 002801
 Product Standards: ASME B36.10M-2015, ASTM/ASME A333-2013/SA333-2013 Grade 6 LT(M45C) A106-2014/SA106-2013 Grade B NDE, AS3-2012/SA53-2013 Grade B Type S, NACE MR0175-2009
 MR0103-2012
 Product Markings: NPS 20 TRUE 40 0.594 INCHWT SMLS 2016/04 NDE 1250PSI
 HEAT BSM-2742 (PIPE # LENGTH MASS) 122.9lb/ft ASTM/ASME A/SA333 GR 6 LT(M45C) 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 μ R/hr | Res. Mag. Gauss | Visual Insp. | OD | UT WT | UT ASTM E213 | ET ASTM E309 | HydroTest 1250PSI/ 5 s | End Condition |
| BSM-2742 | Heat | NPS 20 TRUE 40 0.594in. WT | 6 | DRL | 122.9 | <5 | <20 | Pass | Pass | Pass | N12.5 Pass | - | Pass | Plain End |

| Heat | BSM-2742 | Steelmaking Method Blast Furnace: EAF; Ladle Refining: Vacuum Degass; Fully Killed | Chemical Analysis (wt%) | | | | | | | | | | | | | | | |
|---------|----------|---|-------------------------|------|-------|-------|------|------|------|------|------|-------|-------|-------|--------|------|---------|------------|
| | | | Test Type | C | Mn | P | S | Si | Cr | Cu | Mo | Ni | V | Ti | Nb | B | CE(IIW) | CE(IIW)Max |
| Heat | Heat | | 0.20 | 0.97 | 0.010 | 0.002 | 0.25 | 0.09 | 0.10 | 0.02 | 0.09 | 0.001 | 0.001 | 0.001 | 0.0002 | 0.40 | - | 0.40 |
| Product | Product | | 0.18 | 0.95 | 0.009 | 0.002 | 0.26 | 0.11 | 0.10 | 0.02 | 0.09 | 0.003 | 0.002 | 0.001 | 0.0003 | 0.38 | - | 0.38 |

| Mechanical Properties | | | | | | | | | |
|-----------------------|-----------|--------------------|----------|-----------------|----------------------------|-------------------|------------------|----------------|------------------|
| Heat | Test Type | Microstructure | Hardness | Flattening Test | Tension Test 2 in. GL | Yield (Rt0.5) psi | Tensile (Rm) psi | y/T (Rt0.5/Rm) | Elongation (A) % |
| BSM-2742 | Heat | Ferrite & Pearlite | 79 HRBW | Pass | Longitudinal; 1.5 in. x WT | 48 700 | 73 500 | 0.66 | 43 |
| | | | | Pass | Longitudinal; 1.5 in. x WT | 47 500 | 72 500 | 0.66 | 43 |

| Heat | Test Standard | Impact Test Sample Details | Temp °C | Impact Energy Min. (J) | Impact Energy (J) (3 Tests) AVG | Shear (%) (3 Tests) AVG | Lateral Expansion (mm) (3 Tests) AVG |
|----------|---------------|----------------------------|---------|------------------------|---------------------------------|-------------------------|--------------------------------------|
| BSM-2742 | ASTM A333 | CVN Long 10 x 10 mm | -45 | (14/14/14) 18 | (136/120/119) 125 | (60/50/50) 53 | (2.12/1.66/1.78) 1.85 |

Additional Details:

- ✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing in accordance with ASTM/ASME A333-2015/SA333-2013, A106-2014/SA106-2013, AS3-2012/SA53-2013, 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 MR0103-2012 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:

Tilam May 10 2016

Tonya Lam, P. Tech (Eng.)
 Assistant QA Manager