

Mill Test Certificate

Bri-Steel Manufacturing Inc. 2125-64 Avenue, Edmonton, AB Canada T6P 1Z4

Tel: 001 (780) 469-6603

Fax: 001 (780) 469-6986 www.bri-steel.com

Product Size: 18STD Production Date: May 04, 2015

Product Heat Treatment: As-rolled Certificate No.: MTR- 001760

ASME B36.10-2004, ASTM/ASME A106-2014/SA106-2013 Grade B/C NDE, A53-2012/SA53-2013 Grade B Type S, NACE MR0175-2009 MR0103-2012

Product Markings

Production Method: Product Standards: Product:

Seamless Carbon Steel Pipe

Product Heat Number:

BSM-2377

Hot Expansion

briteel

NPS 18 STD 0.375 INCHWT 70,59LB/FT SMLS 2015/05 NDE 1000PSI

HEAT BSM-2377 (PIPE # LENGTH MASS) 70.59Ib/ft ASTM/ASME A/SA106 GR B/C A/SA53 GR B NACE MR0175/MR0103 MADE IN CANADA

| | | Product: Details | ails | | | | | | | | 7 | Non-Destructive Testing | ictive Tes | ting | | | | |
|----------|-------------------|--|--|--------|---------|-----------------|-------------------------|-----------|----------------------------|-----------------|------|-------------------------|--------------|-------------|----------------|----------|----------|---|
| Heat | Test Type | Product Size | Pie | Pieces | Length | Mass lb/ft | Geiger µR/hr | | Res. Mag. Gauss | Visual Insp. | OD | TW | OT ASTM E | T E213 A | ET STM E309 | | /IS40001 | OT ET HydroTest End ASTM E213 ASTM E309 1000 PSI/ 5 s Condition |
| BSM-2377 | Heat | NPS 18 STD 0.375in. WT | | 14 | DRL | 70.59 | <5 | _ | <20 | Pass | Pass | Pass | Pass | 55 | Pass | | Pass | Pass 32.5° Bevel |
| | | | And the state of t | | | 0 | Chemical Analysis (wt%) | nalysis (| wt%) | | | | | | | | | |
| Heat | Stee | Steelmaking Method | Test Type | С | Mn | Р | S | Si | Cr | Cu | Mo | N: | ٧ | II | dN | | В | B CE(IIW) |
| BSM-2377 | Blast Furnace; E | Blast Furnace; EAF; Ladle Refining; Vacuum | Heat | 0.17 | 1.23 | 0.013 | 0.001 | 0.29 | 0.03 | 0.02 | 0.01 | 0.01 | 0.053 | 1 | 1 | | 1 | ± |
| | onges, runy since | a c | Product | 0.18 | 1.19 | 0.012 | 0.004 | 0.28 | 0.03 | 0.02 | 0.01 | 0.01 | 0.050 | 0.002 | 0.001 | 0.0 | 0.0004 | 0.40 |
| | | | | 0.17 | 1.20 | 0.010 | 0.003 | 0.27 | 0.03 | 0.02 | 0.01 | 0.01 | 0.052 | 0.002 | 0.001 | 0.0 | 0.0004 | 0.39 |
| | | | | | | _ | Mechanical Properties | Proper | ties | | | | | | | | | |
| Heat | Test Type | Microstructure | Hardness | ness | Flatter | Flattening Test | | Ten | Tension Test | | Yiel | Yield (Rt0.5) | Tensile (Rm) | e (Rm) | /Y | 7 | | Elongation (A) |
| | | | | | | | | 2 | 2 in. GL | | | psi | ס | psi | (Rt0.5/Rm) | /Rm) | | % |
| BSM-2377 | Heat | Ferrite & Pearlite | 80 HRBW | RBW | P | Pass | Lor | eitudin | Longitudinal: 1.5 in. x WT | x WT | .7 | 50.500 | 74 | 74.000 | 89.0 | x | - | 41 |

| Temp Impact Energy S J AVG | | Impact Energy J J AVG % % | Impact Energy J J AVG % | Impact Energy J J AVG % % | Impact Energy J J AVG % % | Impact Energy % Shear % AVG 1 | Impact Energy |
|----------------------------|-----------------|----------------------------|-------------------------|----------------------------|----------------------------|-------------------------------|--|
| Impact Energy J J AVG | Energy J AVG | Energy AVG % % | Energy AVG % % | Energy AVG % % | Energy | Energy | Shear La La La La La La La |
| Impact Energy J AVG | Energy J AVG | Energy AVG % % | Energy AVG % % | Energy AVG % % | Energy | Energy | thergy %Shear La |
| t Energy J AVG | Energy J AVG | Energy AVG % % | Energy AVG % % | Energy AVG % % | Energy | Energy | thergy %Shear La |
| AVG | AVG % | , % | , % | , % | % Shear | % % AVG mm La | %Shear La |
| | . % | , % | , % | , % | % Shear | % % AVG mm La | %Shear La |

Additional Details:

- ✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing in accordance with corresponding requirements. Bri-Steel Manufacturing is registered and certified to ISO-9001:2008 and API QL ASTM/ASME A106-2014/SA106-2013 Grade B/C AS3-2012/SAS3-2013, and the purchase order requirements, and that the results meet the
- √ This pipe product meets the sour service requirements of NACE MR0175/ISO 15156-2:2009 Annex A2 for Region 3 Sour Service-2009 NACE MR0103-2012 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.
- \checkmark This certificate represents a quality control system that is compliant with EN 10204:2004 Type 3.1.

Mill Test Certificate approved by:

Tham May 106/2015

Tonya Lam, C.E.T.

Assistant QA Manager



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2125-64 Avenue, Edmonton, AB Canada T6P 1Z4 Bri-Steel Manufacturing Inc.

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Production Date: May 04, 2015

Product Heat Number: Product Heat Treatment: BSM-2377 As-rolled Product Size: 18STD Certificate No.: MTR- 001760

ASME B36.10-2004, API 5L-45th Ed. Grade B PSL1, ASTM/ASME A106-2014/SA106-2013 Grade B/C NDE, A53-2012/SA53-2013 Grade B Type S, NACE MR0175-2009 MR0103-2012

Product Markings

Product Standards: Production Method: Product:

Seamless Carbon Steel Pipe

Hot Expansion

<API & L/C No.> API SPEC 5L NPS 18 STD 0.375 INCHWT 70.59LB/FT GR B PSL1 SMLS 2015/05 NDE 1000PSI HEAT BSM-2377 (PIPE # LENGTH MASS) 70.59lb/ft ASTM/ASME A/SA106 GR B/C A/SA53 GR B NACE MR0175/MR0103 MADE IN CANADA

| B | | | 1 | | Г | œ | Г | 1 | 8 | | | _ |
|----------------------------|------------|-----------------|-----------------------|--------|---------------------|--|--------------------|-------------------------|------------------------|---|--------------|-------------------------|
| BSM-2377 | | Heat | | | | BSM-2377 | Heat | | BSM-2377 | | Heat | |
| Heat | | Test Type | | | Orgas, i mily kined | Blast Furnace; I | Stee | | Heat | | Test Type | |
| Ferrite & Pearlite | | Microstructure | | | G C | Blast Furnace; EAF; Ladle Refining; Vacuum | Steelmaking Method | | NPS 18 STD 0.375in. WT | | Product Size | Product: Details |
| 80 | | Har | | | Product | Heat | Test Type | | | | P: | tails |
| 80 HRBW | | Hardness | | 0.17 | 0.18 | 0.17 | C | | 14 | | Pieces | |
| | | Flatte | | 1.20 | 1.19 | 1.23 | Z S | | DRL | | Length | |
| Pass | | Flattening Test | 2 | 0.010 | 0.012 | 0.013 | P | | 70.59 | lb/ft | Mass | |
| لو | | | Mechanical Properties | 0.003 | 0.004 | 0.001 | S | Chemical Analysis (wt%) | <5 | μR/hr | Geiger | |
| ngítudin | 2 | Tens | l Proper | 0.27 | 0.28 | 0.29 | Si | nalysis (| _ | | | |
| Longitudinal; 1.5 in. x WT | 2 in. GL | Tension Test | ties | 0.03 | 0.03 | 0.03 | Cr | wt%) | <20 | Gauss | Res. Mag. | |
| . x WT | | | | 0.02 | 0.02 | 0.02 | Cu | | Pass | Insp. | Visual | |
| 5 | | Yiel | | 0.01 | 0.01 | 0,01 | Mo | | Pass | | 90 | 7 |
| 50,500 | psi | Yield (Rt0.5) | | 0.01 | 0.01 | 0.01 | N: | | Pass | WT | TU | Ion-Destru |
| 74,000 | psi | Tensile (Rm) | | 0.052 | 0.050 | 0.053 | ٧ | | Pass | ASTM E | TU | Non-Destructive Testing |
| 00 | | (Rm) | | 0.002 | 0.002 | t | Ŧ | | | 213 AST | | ng |
| 0.68 | (Rt0.5/Rm) | Τ/Υ | | 0.001 | 0.001 | t | Nb | | Pass | M E309 | ET | |
| ω, | 'Rm) | | | 0.0004 | 0.0004 | | В | | Pass | ASTM E213 ASTM E309 1000 PSI/ 5 5 Condition | HydroTest | |
| 41 | % | Elongation (A) | | 0.39 | 0.40 | | CE(IIW) | | | 55 (| est | |
| ,, | 6 | ion (A) | | 0.39 | 0.40 | τ | CE(CSA) | | 32.5° Bevel | Condition | End | |

| Heat | Test | Impact Test | Temp | | Impact | Energy | | | % SI | Shear | | | Lateral E | xpansion | |
|---|----------|----------------|------|---|--------|--------|-----|---|------|-------|-----|----|-----------|----------|--|
| | Standard | Sample Details | °C | J | ſ | ſ | AVG | % | % | % | AVG | mm | mm | mm | |
| BSM-2377 | £ | £ | t | , | - | ſ | 1 | 1 | 1 | 1 | 1 | ı | | ì | |
| *************************************** | | | | | | | | | | | | | | | |

Additional Details:

🗸 We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing in accordance with API results meet the corresponding requirements. Bri-Steel Manufacturing is registered and certified to ISO-9001;2008 and API Q1. 5L-45th Ed., ASTM/ASME A106-2014/SA106-2013 Grade B/C A53-2012/SA53-2013, and the purchase order requirements, and that the

√ This pipe product meets the sour service requirements of NACE MR0175/ISO 15156-2:2009 Annex A2 for Region 3 Sour Service 2009 NACE MR0103-2012 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.

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