



Mill Test Certificate

Bri-Steel Manufacturing
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-3043 Product Size: NPS 20 STD Production Date: Feb 07, 2017
 Production Method: Hot Expansion Product Heat Treatment: Normalizing Forming Certificate No.: MTR- 003148

Product Standards: ASME B36.10M-2015, API 5L-45th Ed. Grade B PSL1, ASTM/ASME A106-2014/SA106-2015 Grade B NDE, A53-2012/SA53-2015 Grade B Type S, NACE MR0175/ISO 15156-2:2009 MR0103/ISO 17495:2015

Product Markings

 <API & L/C No.> API SPEC 5L NPS 20 STD 0.375 INCHWT GRB PSL1 SMLS 2017/02 NDE 800PSI
 HEAT BSM-3043 (PIPE # LENGTH MASS) 78.71lb/ft ASTM/ASME 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 μR/hr | Res. Mag. Gauss | Visual Insp. | OD | UT (WT) ASTM E114 | UT ASTM E213 | ET ASTM E309 | HydroTest 800PSI/ 5 s | End Condition |
| BSM-3043 | Heat | NPS 20 STD 0.375in. WT | 15 | DRL | 78.71 | <5 | <10 | Pass | Pass | N12.5 Pass | - | - | Pass | 35° Bevel |

| Chemical Analysis (wt%) | | | | | | | | | | | | | | | |
|-------------------------|---|------|------|-------|-------|------|------|------|------|------|-------|-------|-------|--------------------|------|
| Heat | Steelmaking Method | C | Mn | P | S | Si | Cr | Cu | Mo | Ni | V | Ti | Nb | CE(IIW)Max CE(CSA) | |
| BSM-3043 | Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed (at TPCO China) | 0.19 | 0.93 | 0.011 | 0.008 | 0.23 | 0.03 | 0.01 | 0.01 | 0.01 | 0.004 | 0.001 | 0.001 | 0.0001 | 0.36 |
| | Product | 0.22 | 0.92 | 0.013 | 0.007 | 0.24 | 0.03 | 0.01 | 0.00 | 0.01 | 0.004 | 0.001 | 0.001 | 0.0002 | 0.38 |
| | | 0.23 | 0.91 | 0.013 | 0.009 | 0.23 | 0.03 | 0.01 | 0.00 | 0.01 | 0.004 | 0.001 | 0.001 | 0.0002 | 0.39 |

| 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-3043 | Heat | Ferrite & Pearlite | 78 HRBW | Pass | Longitudinal; 1.5 in. x WT | 43 300 | 74 500 | 0.58 | 39 |

| Heat | Test Standard | Result | Impact Test Sample Details | Temp °C | Impact Energy Min. (J) (3 Tests) AVG | Impact Energy Results (J) (3 Tests) AVG | Shear (%) (3 Tests) AVG | Lateral Expansion (mm) (3 Tests) AVG |
|----------|---------------|--------|----------------------------|---------|--------------------------------------|---|-------------------------|--------------------------------------|
| BSM-3043 | - | - | - | - | - | - | - | - |

Additional Details:

Mill Test Certificate approved by:

✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing in accordance with API 5L-45th Ed., 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 2014/68/EU.

✓ 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.

T. Lam Feb 13/2017

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