



Mill Test Certificate

Bri-Steel Manufacturing
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-2630 Product Size: NPS 24 TRUE 40 Production Date: Jan 25, 2016
 Production Method: Hot Expansion Product Heat Treatment: Normalizing Forming Certificate No.: MTR- 002066
 Product Standards: ASME B36.10M-2015, ASTM/ASME A333-2015 Grade 6 LT(M45C) 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: NPS 24 TRUE 40 0.688 INCHWT SMLS 2016/01 NDE 1200PSI
 HEAT BSM-2630 (PIPE # LENGTH MASS) 171.2lb/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 μR/hr | Res. Mag. Gauss | Visual Insp. | OD | UT (WT) ASTM E114 | UT ASTM E213 | ET ASTM E309 | HydroTest 1200PSI/ 5 s | End Condition | |
| BSM-2630 | Heat | NPS 24 TRUE 40 0.688in. WT | 4 | DRL | 171.2 | <5 | <10 | Pass | Pass | Pass | N12.5 Pass | - | Pass | Plain End | |

| Heat | BSM-2630 | 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 | | CE(CSA) | | |
| | | | Heat | Product | 0.16 | 0.16 | 1.20 | 1.20 | 0.017 | 0.015 | 0.001 | 0.003 | 0.27 | 0.28 | 0.03 | 0.03 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | | |
| | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

| 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-2630 | Heat | Ferrite & Pearlite | 76 HRBW | Pass | Longitudinal; 1.5 in. x WT | 45 600 | 69 000 | 0.66 | 42 |
| | | | | Pass | Longitudinal; 1.5 in. x WT | 45 100 | 68 000 | 0.66 | 42 |

| Heat | Test Standard | Result | Impact Test Sample Details | Temp °C | Impact Energy Min. (J) | Impact Energy Results (J) | Shear (%) | Lateral Expansion (mm) |
|----------|---------------|--------|----------------------------|---------|------------------------|-----------------------------|----------------------------|-------------------------------------|
| BSM-2630 | ASTM A333 | Pass | CVN Long 10 x 10 mm | -45 | (14/14/14) 18 | (3 Tests) AVG (18/78/62) 53 | (3 Tests) AVG (5/20/20) 15 | (3 Tests) AVG (0.31/1.24/0.91) 0.82 |

- Additional Details:
- ✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing in accordance with ASTM/ASME A333-2016/SA333-2015, 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.

Mill Test Certificate approved by:

[Signature]
 2016 Sept 13

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