

SPECIFICATIONS FOR STAINLESS STEEL SEAMLESS, BRIGHT ANNEALED INSTRUMENTATION TUBING 1/8" – 1", 3mm – 25mm

1 TUBING

1.1 General Specifications

- 1.1.1 Tubing shall conform to the requirements of ASTM A213 current revision unless otherwise noted.
- 1.1.2 The Quality Assurance program of the manufacturer shall have been audited and approved to ISO 9000:2008

1.2 Material and Method of Construction

- 1.2.1 Tubing shall be dual certified 304/304L or 316/316L.
- 1.2.2 Tubing shall be cold-drawn without any weld repair and so noted on certification (see 1.3.3).

1.3 Marking and Identification

- 1.3.1 Each length of tube shall be legibly marked to requirements of ASTM A 1016 current revision, including the following required information: name of supplier, country of origin of material, ASTM specification and revision, size, method of wall thickness measurement, date of manufacture, heat, lot, operator.
- 1.3.2 It is preferred that tubing pressure ratings be permanently marked on the tubing and computed per ANSI / ASME B 31.3 Process Piping Code, with backup calculations made available to support the claim. In lieu of marking on the tube, the supplier will include maximum allowable working pressure ratings on the certification accompanying the shipment and authorized by the supplier.
- 1.3.3 Tubing shall be accompanied by certification meeting EN 10 204 3.1 (or 3.2 if requested) issued for each heat showing chemical analysis; mechanical test results including tensile test, yield strength, elongation, and hardness; tests results for flaring, flattening, and hydrostatic leak. Eddy current testing is an acceptable method of determining hydrostatic leak.

1.4 Refined Physical Characteristics Impacting Performance & Safety

- 1.4.1 Tubing hardness shown on certification shall not exceed 80 on the Rockwell B scale.

- 1.4.2 Tubing outer diameter tolerance shall be minus 0.000 nominal and plus +0.005"
- 1.4.3 Tubing shall have inner diameter surface finish of 70 Ra or lower, and outer diameter surface finish of 40 Ra or lower.
- 1.4.4 Tubing shall have minimum Mo 2.5% so as to ensure high resistance to corrosion.

1.5 **Cleaning, Packaging and Preservation**

- 1.5.1 Tubing shall be cleaned throughout with degreasing agent sufficient to remove all trace elements of hydrocarbon from the manufacturing process. The degreasing agent shall not use any ozone depleting chemicals, and shall be so noted on the certification.
- 1.5.2 Tubing shall be properly packaged with removable plastic end caps so as to preserve cleanliness and protect the end of the tubes so that they do not need to be trimmed before being used with an approved instrumentation tube fitting.
