



SOUTHWEST GAS CORPORATION

® **ENGINEERING STAFF**

MATERIAL SPECIFICATION

Section No:	MS A-5
Page No.:	1 of 5
Issue Date:	02/05/19
Superseded Date:	04/16/18

Prepared By: Engineering Staff *LM*

Approved By: Kevin Lang *KL*

PIPE AND TUBING

Tubing, Stainless Steel

1. SCOPE

This specification covers seamless and welded austenitic stainless-steel tubing in outside diameters of 1/4-inch, 3/8-inch and 1/2-inch. This tubing is used for control, instrument and odorant injection piping. Stainless steel tubing is not to be buried.

2. APPLICABLE DOCUMENTS

- 2.1 ASTM International (ASTM) A-269, "Standard Specification for Seamless and Welded Austenitic Stainless-Steel Tubing for General Service."
- 2.2 ASTM International (ASTM) A-370, "Mechanical Testing of Steel Products, Annex II, Steel Tubular Products."
- 2.3 ASTM International (ASTM) A-450, "Standard Specification for General Requirements for Carbon, Ferritic Alloy, and Austenitic Alloy Steel Tubes."
- 2.4 ASTM International (ASTM) A-480, "Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip."
- 2.5 ASTM International (ASTM) A-632, "Specification for Seamless and Welded Austenitic Stainless-Steel Tubing (Small Diameter) for General Service."
- 2.6 ASTM International (ASTM) A-700, "Standard Practices for Packaging, Marking and Loading Methods for Steel Products for Shipment."
- 2.7 ASTM International (ASTM) A-751, "Standard Methods, Practices and Terminology for Chemical Analysis of Steel Products."
- 2.8 Title 49, Code of Federal Regulations, Part 192, "Transportation of Natural and Other Gas by Pipeline; Minimum Safety Standards" (49 CFR 192).

NOTE: Unless otherwise specified, the editions of the document incorporated in whole or part by 49 CFR 192 are applicable. The above documents, and parts of documents (including annexes), not incorporated by 49 CFR 192 are incorporated by this Material Specification and will be the most recent edition. If a conflict exists between the applicable documents and/or this Material Specification, the requirements of 49 CFR 192 shall govern, and in the event of all other conflicts, the more stringent requirement shall govern.



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3. TERMINOLOGY

3.1 General

- 3.1.1 "Southwest Gas," "Southwest" or "SWG" wherever used in this specification and other related documents will refer exclusively to Southwest Gas Corporation.
- 3.1.2 The terms "approve," "as approved," "satisfactory," "as directed," "or equal," or other similar terms wherever used in this specification and other related documents, will mean "as determined by Southwest Gas," unless specifically stated otherwise.
- 3.1.3 "Product Information Package" or "PIP" wherever used in this specification and other related documents will mean the required information that a manufacturer must submit to SWG to determine if the product is suitable for use by SWG, unless specifically stated otherwise.

4. MATERIALS AND MANUFACTURE

- 4.1 Tubing purchased to this specification will be manufactured, as a minimum, in accordance with ASTM A-269, ASTM A-632 and additional requirements as defined in this specification.
- 4.2 The tubing material will be Grade TP304 austenitic stainless steel.
- 4.3 Tubing may be either seamless or electric resistance welded (ERW). Electric Resistance Welded tubing will have the internal flash mechanically removed according to Paragraph 10.2 in ASTM A-450.
- 4.4 All tubing will be heat treated according to ASTM A-269.
- 4.5 Finished tubes will be reasonably straight and have smooth ends free of burrs. The tubing surface will be free of scale, dents and other injurious defects and imperfections.



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5. PERFORMANCE REQUIREMENTS

- 5.1 The composition of tubing furnished to this specification, as determined by heat analysis according to ASTM A-751, will conform to ASTM A-269, Table 1, for Grade TP304 (S30400).
- 5.2 The material will conform to the tensile requirements of ASTM A-632, Table 2. Testing procedures will conform to the requirements of ASTM A-370. All pipe tests must include yield strength, ultimate tensile strength and elongation determinations at room temperature.
- 5.3 All tubing will be subjected to a hydrostatic pressure test. The test pressure will be in accordance with Section 15, Pressure Test, of ASTM A-632. The test pressure need not exceed 1000 psig.
- 5.4 Tests required by ASTM A-269 and A-632 not contained in this specification will be performed per ASTM requirements. Southwest Gas may, at their discretion, request the results of such tests if specified on the purchase order.

6. DIMENSIONS AND TOLERANCES

- 6.1 The outside diameter of tubing purchased under this specification will be 0.250, 0.375 or 0.500 inches with a tolerance of ± 0.005 inch for each tubing size.
- 6.2 The nominal wall thickness for all tubing will be 0.035 inches. The wall thickness will not vary more than $\pm 15\%$ of the nominal wall thickness for 0.250 and 0.375 tubing sizes. The wall thickness will not vary more than ± 10 percent of the nominal wall thickness for 0.500 tubing size.
- 6.3 Unless a length is specified on the materials requisition and purchase order, the tubing will be supplied in 20-foot lengths.



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7. INSPECTION

- 7.1 Successful review of the Product Information Package (PIP), as well as any future reference by SWG to the Seller's part number or internal code number in any future contract or purchase, will mean only that no conflict with the specification was found and will not relieve the Seller from meeting all the requirements of this specification.
- 7.2 SWG retains the option to inspect the manufacture and testing of all materials, products or systems supplied to SWG under this specification.
- 7.3 SWG will make appropriate inspections and tests of all materials, products or systems supplied to this specification. SWG will have the right, at their option, to reject any material which fails to conform to this specification. Any such rejection may take place at the manufacturer's facility; the supplier's warehouse or any subsequent delivery location, before or after SWG assumes possession. Notice of rejection will be made promptly thereafter by SWG. The defective product will be replaced or returned for credit at the manufacturer's expense.
- 7.4 Any changes in the manufacturing of previously approved materials and products or systems described in this material specification for sale to SWG, must be approved by SWG's Engineering Staff. **Failure to obtain SWG's approval may be cause for rejection and disqualification as an approved supplier.**

8. CERTIFICATION

The manufacturer's or supplier's certification will be furnished to Southwest. This certification will state that samples representing each lot have been manufactured, tested and inspected in accordance with this specification and that all requirements have been met. When requested or specified in the purchase order or contract, a report of test results will be provided.

Upon the request of Southwest, the certification of an independent third party indicating conformance to this specification may be considered at Southwest's expense.



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9. SAFETY DATA SHEETS

In accordance with law, the Seller will supply Safety Data Sheets for all applicable items supplied under this specification to the following:

- 1) The Receiving Location
- 2) Engineering Staff
- 3) Southwest Gas Corporation
Corporate Safety
Mail Station LVA-120
P.O. Box 98510
Las Vegas, NV 89193-8510

10. PRODUCT MARKING

The tubing manufactured to this specification will be marked in accordance with ASTM A-269 and A-632. This will include, but not limited to, ASTM designation and grade, manufacturers name or trademark, size, weight and heat number.

11. PACKAGING AND PACKAGE MARKING

Packaging and package marking will conform to ASTM A-700 unless otherwise specified by Southwest Gas. All products covered in this specification will be packaged in a manner to prevent damage during transportation and storage.

12. STOCK CLASSIFICATION DESCRIPTION

TUBING, STAINLESS STEEL, GRADE 304; ASTM A-269; _____ INCH OD X _____
WALL THICKNESS; _____ (WELDED W/FLASH REDUCED OR SEAMLESS).