

# Alloy 625 Tube, Medium-Pressure, Pipe, and Weld Fittings

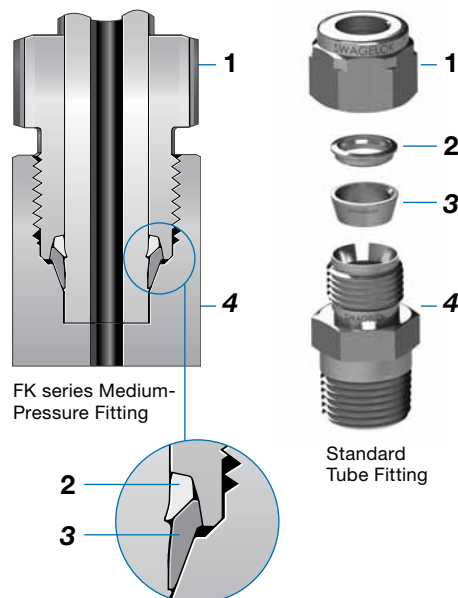
## NACE MR0175 Table A.13 Compliant

### Introduction

For solid-solution nickel-based alloys, the NACE MR0175 / ISO 15156 sour gas standard contains two tables that describe material requirements and limits for operating conditions for use in any equipment. These tables are labeled A.13 and A.14. Table A.13 of this standard specifies the use of annealed or solution-annealed material but does not provide limits for maximum use temperature and hydrogen sulfide partial pressure. Table A.14 allows for the use of cold-worked material and states maximum use temperatures and hydrogen sulfide partial pressures. Standard Swagelok® alloy 625 tube, medium-pressure, pipe and weld fittings meet the requirements as listed in Table A.14.

When gaugeable alloy 625 tube and medium-pressure fittings, pipe fittings, and weld fittings are specified by adding the designator **-SG2** to the ordering number, the fittings will meet the requirements as listed in Table A.13. In accordance with the requirements of Table A.13, the bodies of tube, medium-pressure, weld, and pipe fittings are produced from annealed material. See next page for more information.

### Materials of Construction, Alloy 625 Tube Fittings for Sour Gas Applications Requiring Compliance with Table A.13

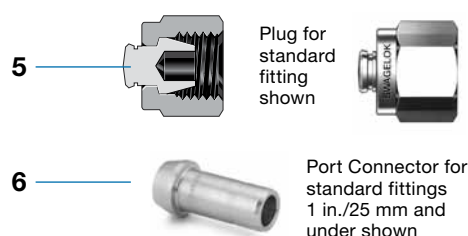


Component	Material	ASTM Specification	Marking
1 Nut	Alloy 625 cold-drawn, hardness 40 HRC max	B446 <sup>①</sup>	"625" on face
2 Back ferrule	Alloy 625 cold-drawn, hardness 40 HRC max	B446 <sup>①</sup>	"625" on outer rim
3 Front ferrule	Alloy 625 cold-drawn, hardness 40 HRC max	B446 <sup>①</sup>	"625" on outer rim
4 Body	Alloy 625, annealed (Grade 1)	Straight body: B446 Shaped body: B564	Tube & pipe fitting: "625" on neck, "SG" on body Weld fitting: "625" and "SG" on body

Wetted components listed in *italics*

① B446 (except elongation)

### Materials of Construction, Alloy 625 Plugs and Port Connectors for Sour Gas Applications Requiring Compliance with Table A.13



Component	Material	ASTM Specification	Marking
5 Plug	Alloy 625, annealed (Grade 1)	B446	"625" on outer rim
6 Port Connector	Alloy 625, annealed (Grade 1)	B446	"625" on tube diameter

Wetted components listed in *italics*

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## Requirements for Alloy 625 Standard and Medium-Pressure Tube Fittings

For a Swagelok alloy 625 tube fitting and medium-pressure fitting to function correctly, the nut and ferrules must be made from cold-drawn bar. This material has the strength necessary to grip to alloy 625 tubing, and to hold to the high working pressures listed in the following documents:

- *Swagelok Tubing Data (MS-01-107)*
- *Swagelok Medium- and High-Pressure Fittings and Adapters—Special Alloy Materials (MS-02-474)*

Swagelok alloy 625 tube fittings and medium-pressure fittings with the **-SG2** designator meet the NACE MR0175/ ISO 15156 requirements for use in any equipment according to Table A.13 of the standard if the fittings are wetted internally, but not externally, by sour gas. In compliance with the NACE MR0175/ ISO 15156 standard:

- Straight fitting bodies are produced from annealed bar stock.
- Shaped fitting bodies are produced from annealed forgings or annealed bar.
- The external threads of a fitting body which are not wetted by the system fluid may be produced by thread-rolling. Wetted threads are cut.
- Nuts are produced from solution-annealed and cold-drawn bar, but are not wetted by the system fluid.
- Back ferrules are produced from solution-annealed and cold-drawn bar, but are not wetted by the system fluid.
- Front ferrules are produced from solution-annealed and cold-drawn bar. The nose of the front ferrule comprises a wetted surface. The nose of the front ferrule is under compression and therefore, is not subject to stress corrosion cracking or sour gas cracking, since the NACE MR0175/ISO 15156 standard states that a tensile stress component is required to enable these cracking modes.
- Plugs, port connectors, and tube adapters are produced from annealed bar.

## NACE Certification

To purchase alloy 625 fittings compliant with Table A.13 of the NACE sour gas standard, add **-SG2** as a designator to the ordering number. Upon request, Swagelok can provide certification for alloy 625 fittings with the **-SG2** designator, which includes the following NACE statement:

*The above fitting(s) meet(s) Table A.13 of NACE MR0175/ ISO 15156 (NACE), according to the following parameters:*

1. Fitting bodies marked **SG** are produced from alloy 625 annealed material, UNS N06625, and meet the requirements for “any equipment” (Table A.13).
2. Some tube fitting components are produced from cold-drawn bar stock and, if wetted by sour gas, will not meet the requirements of NACE if the operating conditions exceed the limits for use of cold-drawn material for “any equipment” (Table A.14).

## Product Availability

Product	Strain hardened per NACE Table A.14	Annealed per NACE Table A.13	Order annealed components with <b>-SG2</b> designator
FK series alloy 625 medium-pressure fittings <sup>①</sup>	●	●	●
Standard alloy 625 tube fittings with 1/2 in. and 12 mm end connection	●	●	●
Standard alloy 625 plugs, port connectors, and tube adapters	●	●	●
Standard alloy 625 tube fittings with 1/4 in. and 3/8 in. (and metric equivalent) end connection <sup>②</sup>	●	Not available	Not available

① For available FK series fitting sizes, see *Swagelok Medium- and High-Pressure Fittings and Adapters—Special Alloy Materials (MS-02-474)*

② Cannot be produced from annealed bar stock in this size

### Safe Product Selection

**When selecting a product, the total system design must be considered to ensure safe, trouble-free performance. Function, material compatibility, adequate ratings, proper installation, operation, and maintenance are the responsibilities of the system designer and user.**

**Caution: Do not mix or interchange parts with those of other manufacturers.**

## Warranty Information

Swagelok products are backed by The Swagelok Limited Lifetime Warranty. For a copy, visit [swagelok.com](http://swagelok.com) or contact your authorized Swagelok representative.