



Product Test Report

Swagelok Company
29500 Solon Road
Solon, Ohio 44139 U.S.A.

PTR-867
Ver 05
December 2022
Page 1 of 2

TITLE

Tensile Pull Test of Alloy 825 Swagelok® Tube Fittings with Alloy 825 Tubing

PRODUCT TESTED

The following alloy 825 bar stock Swagelok tube fittings were tested with alloy 825 tubing.

Ordering Number	Part Form	Tubing Size	Tubing Hardness HRB
Fractional, in.			
825-400-1-4	Bar stock	1/4 × 0.065	88
825-600-1-4	Bar stock	3/8 × 0.065	87
825-810-1-4	Bar stock	1/2 × 0.065	89
Metric, mm			
825-6M0-1-4	Bar stock	6 × 1.2	90
825-10M0-1-4	Bar stock	10 × 1.5	88
825-12M0-1-4	Bar stock	12 × 1.8	88

PURPOSE

These assemblies were tested to evaluate the tensile pull performance of the alloy 825 Swagelok tube fitting with alloy 825 tubing under laboratory conditions.

TEST CONDITIONS

Original test date: December 2004

Each non-pressurized sample tested consisted of one tube length and two test fittings. The fitting was assembled according to the Swagelok tube fitting installation instructions.

TEST METHOD

1. Each sample was attached in turn to a tensile test machine
2. Samples were tensile pulled at a rate of 0.125 inch (3.2 mm) per minute until either the tube pulled out of the fitting or the tube fractured.
3. The judgment criterion is taken from ASTM F1387, Annex A7.

Calculated tensile load = $A_p \times S_y$

where:

A_p = cross-section area of the tube based on wall thickness

S_y = minimum specified yield strength of the tube.

4. The test result should exceed the calculated tensile load.



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Page 2 of 2

TEST RESULTS

Tubing Size	Samples Tested	ASTM F1387 Calculated Tensile Load lb (kg)	Samples Attaining ASTM F1387 Calculated Tensile Load
1/4 × 0.065	12	1435 (650)	12/12
3/8 × 0.065	12	2418 (1096)	12/12
1/2 × 0.065	12	3400 (1542)	12/12
6 × 1.2	6	980 (444)	6/6
10 × 1.5	12	2173 (985)	12/12
12 × 1.8	12	3131 (1420)	12/12

The alloy 825 Swagelok tube fitting achieved a tensile load in excess of the calculated load under laboratory conditions.

The tests were conducted beyond the product's recommended operating parameters and do not modify the published product ratings.

These tests were performed to consider a specific set of conditions and should not be considered valid outside those conditions. Swagelok Company makes no representation or warranties regarding these selected conditions or the results attained. Laboratory tests cannot duplicate the variety of actual operating conditions. Test results are not offered as statistically significant. See the product catalog for technical data.

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.

Referenced Documents

ASTM F1387-99, *Standard Specification for Performance of Piping and Tubing Mechanically Attached Fittings*, American Society of Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428