Product Test Report

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

TITLE
Tensile Pull Test of Alloy 625 Swagelok® Tube Fittings with Alloy 625 Tubing

PRODUCT TESTED
The following alloy 625 Swagelok tube fittings were tested.

Ordering Number	Form	Tubing Size	Tubing Hardness Rb
Fractional, in.			
625-400-1-4	Bar stock	1/4 × 0.065	97
625-600-1-4	Bar stock	3/8 × 0.065	90
625-810-1-4	Bar stock	1/2 × 0.065	88
Metric, mm			
625-6M0-1-4	Bar stock	6 × 1.2	96
625-10M0-1-4	Bar stock	10 × 1.5	94
625-12M0-1-4	Bar stock	12 × 1.8	89

PURPOSE
The assemblies were tested to observe the tensile pull performance of the alloy 625 Swagelok tube fitting with alloy 625 tubing under laboratory conditions.

TEST CONDITIONS
Original test date: July 2007

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

TEST METHOD
1. Each sample was attached in turn to a tensile test stand.
2. A constant tensile load was applied to the sample at a rate of 3/8 in. (9.5 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 = Ap × Sy

   where:

   Ap = cross-section area of the tube based on wall thickness
   Sy = minimum specified yield strength of tube.

4. The samples pass this test when the calculated tensile load is achieved without the tube pulling out of the fitting or the tube fracturing.

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TEST RESULTS

Tubing Size	Samples Tested	ASTM F1387 Calculated Tensile Load lb (kg)	Samples Attaining ASTM F1387 Calculated Tensile Load
Fractional, in.			
1/4 × 0.065	6	2267 (1028)	6 / 6
3/8 × 0.065	6	3798 (1722)	6 / 6
1/2 × 0.065	12	5830 (2644)	12 / 12
Metric, mm			
6 × 1.2	6	1683 (763)	6 / 6
10 × 1.5	6	3725 (1689)	6 / 6
12 × 1.8	12	8399 (3809)	12 / 12

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