Product Test Report

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

TITLE

Nitrogen Gas Seal Test with Repeated Reassembly of Alloy 625 Swagelok® Tube Fittings with Alloy 625 Tubing at 1.25 Times the Tubing Working Pressure

PRODUCT TESTED

The following alloy 625 Swagelok tube fittings were tested.

Fractional

Ordering Number	Form	Tubing Size in.	Tubing Hardness HRB
625-400-1-4	Bar stock	1/4 × 0.035	93
625-400-C	Bar stock		
625-400-1-4	Bar stock	1/4 × 0.065	97
625-400-C	Bar stock		
625-600-1-4	Bar stock	3/8 × 0.035	92
625-600-C	Bar stock		
625-600-1-4	Bar stock	3/8 × 0.065	90
625-600-C	Bar stock		
625-810-1-4	Bar stock	1/2 × 0.035	92
625-810-9	Forging		
625-810-1-4	Bar stock	1/2 × 0.065	88
625-810-9	Forging		

Metric

Ordering Number	Form	Tubing Size mm	Tubing Hardness HRB
625-6M0-1-4	Bar stock	6 × 0.8	96
625-6M0-C	Bar stock		
625-6M0-1-4	Bar stock	6 × 1.2	96
625-6M0-C	Bar stock		
625-10M0-1-4	Bar stock	10 × 1.0	90
625-10M0-C	Bar stock		
625-10M0-1-4	Bar stock	10 × 1.5	94
625-10M0-C	Bar stock		
625-12M0-1-4	Bar stock	12 × 1.0	90
625-12M0-9	Forging		
625-12M0-1-4	Bar stock	12 ×1.8	89
625-12M0-9	Forging		

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

PURPOSE

The assemblies were tested to observe the leak-tight integrity of alloy 625 Swagelok tube fittings with alloy 625 tubing during a gas seal test with reassembly under laboratory conditions.

TEST CONDITIONS

Original test date: July 2007

Each 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. The test samples were attached to a gas test stand, submerged in water, pressurized to 1.25 times the tube working pressure with nitrogen for 10 minutes, and monitored for leakage. The judgment criterion was less than 1 bubble per minute at the applied pressure. If necessary, the fittings were tightened slightly (up to 1/8 turn) and re-tested.
2. Pressure was reduced to zero and the fittings were disassembled.
3. The fittings were reassembled according to Swagelok reassembly instructions.
4. The fittings were leak tested at every fifth reassembly.
5. A total of 25 reassemblies were conducted on each test sample end.

TEST RESULTS

Fractional

Tubing Size in.	**Samples Tested**	**Working Pressure**① psig (bar)	**Test Pressure** psig (bar)	**Samples Attaining Repeated Gas Seal Through 25 Reassemblies**
1/4 × 0.035	24	7300 (502)	9125 (628)	24 / 24
1/4 × 0.065	24	14 600 (1005)	18 250 (1257)	24 / 24
3/8 × 0.035	24	4700 (323)	5875 (404)	24 / 24
3/8 × 0.065	24	9400 (647)	11 750 (809)	24 / 24
1/2 × 0.035	16	3500 (241)	4375 (301)	16 / 16
1/2 × 0.065	8	6800 (468)	8500 (585)	8 / 8

① Working pressure was based on the Swagelok Alloy 625 Tubing Data sheet.

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

Metric

Tubing Size mm	Samples Tested	Working Pressure① bar (psig)	Test Pressure bar (psig)	Samples Attaining Repeated Gas Seal Through 25 Reassemblies
6 × 0.8	24	470 (6821)	588 (8534)	24 / 24
6 × 1.2	24	750 (10 885)	938 (13 613)	24 / 24
10 × 1.0	24	350 (5079)	438 (6357)	24 / 24
10 × 1.5	24	550 (7982)	688 (9985)	24 / 24
12 × 1.0	16	290 (4208)	363 (5268)	16 / 16
12 × 1.8	8	550 (7982)	688 (9985)	8 / 8

① Working pressure was based on the Swagelok Alloy 625 Tubing Data sheet.

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.