Product Test Report

PTR-1235

Swagelok Company
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TITLE

Evaluation of Swagelok® Medium-Pressure Tube Fittings with SAF 2507™ Super Duplex Stainless Steel Tubing

PRODUCT TESTED

Ordering Number	Qty. Tested	SAF 2507 Tubing Size in.	Tubing Hardness
SS-4FK0-1-4	3	1/4 × 0.049	Rc 26
SS-4FK0-C	3		
SS-6FK0-1-4	3	3/8 × 0.049	Rc 27
SS-6FK0-C	3		
SS-6FK0-1-4	3	3/8 × 0.083	Rc 26
SS-6FK0-C	3		
SS-8FK0-1-4	3	1/2 × 0.065	Rc 27
SS-8FK0-C	3		
SS-8FK0-1-4	3	1/2 × 0.095	Rc 27
SS-8FK0-C	3		

PURPOSE

Observe the gas pressure sealing and hydraulic burst pressure capability of SAF 2507 super duplex stainless steel tubing with Swagelok medium-pressure tube fittings under laboratory conditions.

TEST CONDITIONS

Each sample tested consisted of one tube length and two test fittings. The fittings were assembled according to the Swagelok medium-pressure tube fitting installation instructions.

TEST METHOD

Gas Bubble Leak Test

1. The test samples were attached to a gas test stand, submerged in water, pressurized to 18 750 psig (1291 bar) with helium for 10 minutes and monitored for leakage. The judgment criterion was no visually detectable leakage.
2. Pressure was dropped, and the fittings were disassembled. The fittings were re-assembled according to Swagelok re-assembly instructions.
3. The fittings were leak tested using helium at 18 750 psig (1291 bar) following the instructions and judgment criteria from step 1.

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Hydraulic Pressure Test

1. Each sample was attached to a hydraulic test stand.
2. The tubing was restricted from burst by clamping blocks, thereby forcing a failure at the fitting-to-tubing engagement.
3. The pressure was recorded when tube slip, material rupture, or leakage that prevented applying higher pressure occurred, whichever came first.
4. Results were compared to the tubing working pressure.

TEST RESULTS

Helium Gas Bubble Leak Test and Hydraulic Burst Pressure Test

Tubing Size in.	Samples Tested	Tubing Working Pressure psig (bar)	Leak Test Pressure psig (bar)	Leak Test Results	4 × Tubing Working Pressure psig (bar)	Samples Attaining 4 × Working Pressure
1/4 × 0.049	3	15 000 (1 034)	18 750 (1291)	Pass	60 000 (4 134)	3 / 3
3/8 × 0.049	3	10 100 (695)		Pass	40 400 (2 783)	3 / 3
3/8 × 0.083	3	16 800 (1 157)		Pass	67 200 (4 630)	3 / 3
1/2 × 0.065	3	10 100 (695)		Pass	40 400 (2 783)	3 / 3
1/2 × 0.095	3	15 300 (1 054)		Pass	61 200 (4 216)	3 / 3

These tests do not simulate any specific application and are not a guarantee of performance in actual service. Swagelok Company makes no representation or warranties regarding these selected conditions or the results attained there from. Laboratory tests cannot duplicate the variety of actual operating conditions. Data presented is not offered as statistically significant test results. 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.