



## Product Test Report

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

**PTR-2066**  
Ver 03  
July 2022  
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### **TITLE:**

Hose Insulation Test of Swagelok® PTFE Crimped W series (SBI) Hose

### **PRODUCT TESTED:**

A ten-foot, 1/2 in. Swagelok W series hose assembly with Swagelok tube adapter end connections was tested. Ordering number: SS-WC8TA8TA8-120-WH

### **PURPOSE:**

This hose assembly was tested to observe the surface temperature under ambient laboratory conditions when fluid temperature was maintained at various values from -25 to 120°C (-13 to 248°F).

### **TEST CONDITIONS:**

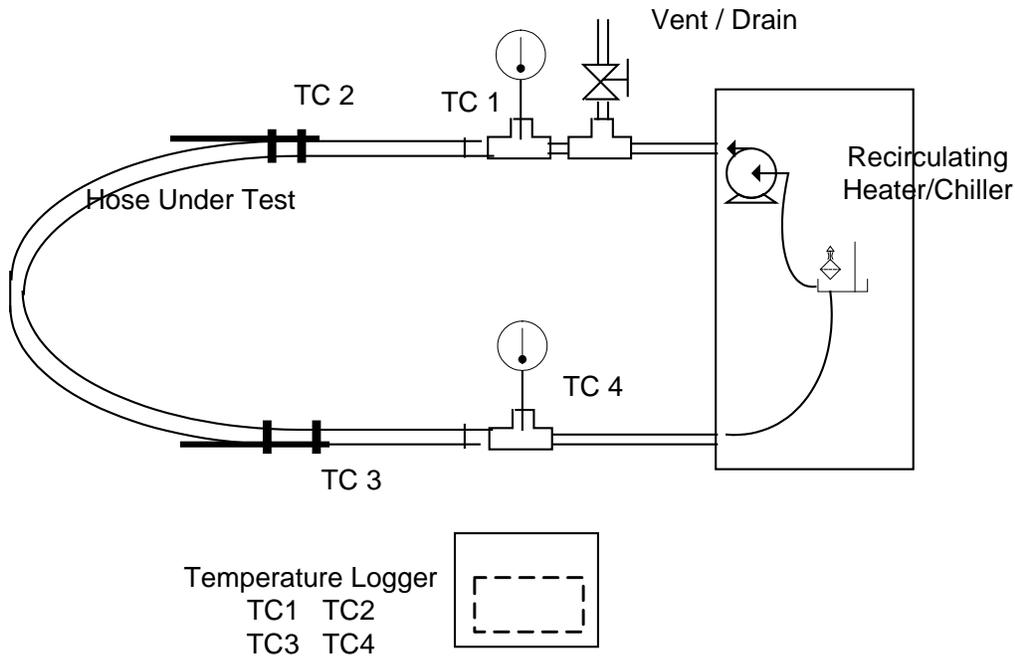
Original test date: June 2009

Ambient temperature was approximately 20°C (70°F)

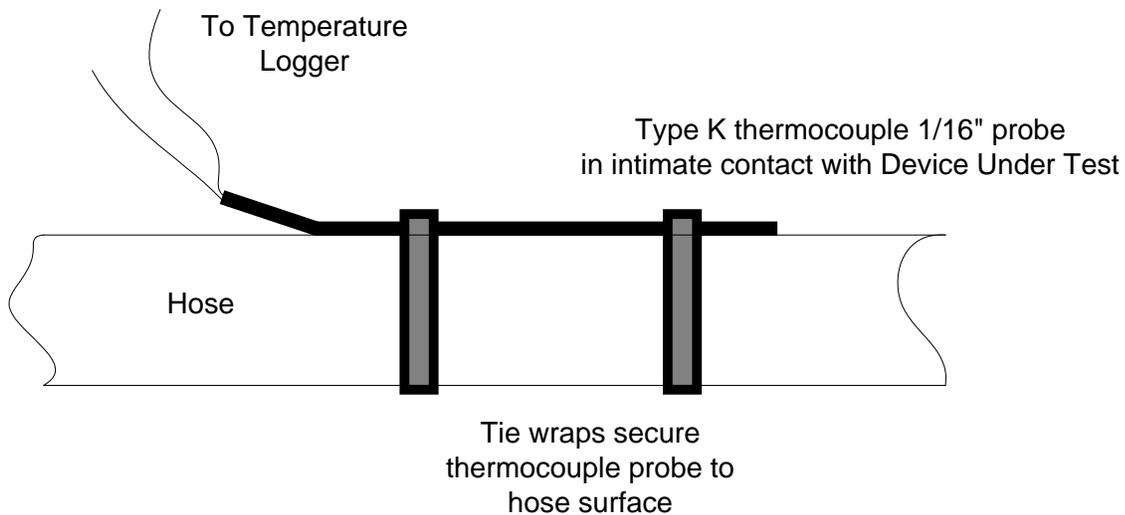
### **TEST METHOD:**

- A flow loop was established to circulate a Fluorinert™, SIL-80, through the hose assembly. The fluid was heated and chilled while circulating.
- Type K thermocouple probes (1/8 in. diameter) were embedded in the flow stream upstream and downstream of the hose assembly to monitor fluid temperature.
- Type K thermocouple probes (1/16 in. diameter) were placed in intimate contact with the outside of the hose assembly, approximately 1/3 the length of hose from either end, to monitor sensible temperature at the surface of the hose.
- The Type K thermocouples have a measurement accuracy of  $\pm 1.5^{\circ}\text{C}$  ( $\pm 2.7^{\circ}\text{F}$ ).
- Flow was established at approximately 10 L/min. Temperature was monitored at 5 second intervals with a temperature logger.
- Fluid temperature exiting the hose assembly was within 1°C (1.8°F) of the fluid temperature entering the hose assembly, indicating sufficient flow to maintain temperature.
- The recirculating heater/chiller was programmed to attain and hold a series of temperature set points (approximately 15 minutes per set point), allowing the surface to reach an equilibrium temperature. The last five minutes of data at each fluid temperature level were averaged and reported as the equilibrium temperatures.
- Diagrams of the test setup and thermocouple attachment are shown in Figures 1 and 2.

**Figure 1: Test Flow Diagram**



**Figure 2: Detail of Thermocouple Attachment to Hose Surface**





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### TEST RESULTS

**Table 1: Summary for Cooled Fluid Temperature Tests**

<b>Fluid Temperature, °C (°F)</b>	-2 (28)	-11 (12)	-16 (3)	-21 (-5)	-26 (-14)
<b>Surface Temperature, °C (°F)</b>	8 (46)	4 (39)	1 (33)	-1 (30)	-2 (28)

**Table 2: Summary of Heated Fluid Temperature Tests**

<b>Fluid Temperature, °C (°F)</b>	13 (55)	58 (136)	78 (172)	118 (244)
<b>Surface Temperature, °C (°F)</b>	15 (59)	41 (105)	52 (125)	73 (163)

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.

Swagelok—TM Swagelok Company  
Fluorinert —TM 3M