

**American Society of Sanitary Engineering
Seal (Certification) Program**

**Laboratory Evaluation Report for:
Water Temperature Limiting Devices**

Tested under ASSE Standard 1070 • Issued: February, 2004

Laboratory File Number _____

Manufacturer _____

Model No. _____

Address _____

Serial No. _____

Other Identification Markings _____

Size _____

General information and instructions for the testing engineer:

Within the text there may be items which are only advisory to conditions which experience indicates could be troublesome. It is not for evaluation related to acceptance of the product.

There may be other items for which the judgment of the test engineer will be involved. Should there be a question of compliance with that provision of the standard, a conference with the manufacturer should be arranged to enable a satisfactory solution of the question.

Should disagreement persist and compliance remain in question by the test agency, the agency shall, if the product is in compliance with all other requirements of the standard, file a complete report on the questionable items together with the test report, for evaluation by the ASSE Seal Control Board. The Seal Control Board will then review and rule on the question of compliance with the intent of the standard item involved.

Documentation of material compliance must be furnished by the manufacturer. He shall furnish to the testing agency, a bill of material which clearly identifies the material of each part included in the product construction. This identification must include any standards which relate thereto.

- 1.2.3 Working Pressure.
 What is the maximum working pressure indicated by the manufacturer?
 _____ psi (_____ kPa)
 Is the pressure in compliance with the requirements of the standard?
 Yes
 No
- 1.2.4 Temperature Range.
 What is the hot water inlet temperature range indicated by the manufacturer?
 _____ F to _____ °F (_____ °C to _____ °C).
 What is the cold water inlet temperature range indicated by the manufacturer?
 _____ F to _____ °F (_____ °C to _____ °C).
 What is the outlet temperature range indicated by the manufacturer?
 _____ F to _____ °F (_____ °C to _____ °C).
 Are the temperature ranges in compliance with this standard? Yes
 No

Section II

2.0

Test Specimens

2.1 Samples Submitted for Test

State the number of devices of each size and model provided for the laboratory evaluation. _____

2.2 Samples Tested

How many units were utilized during the laboratory evaluation? _____
 If more than one (1) device was used, state why an additional device was utilized. _____

2.3 Drawings

Were assembly drawings, installation drawings and other technical data necessary to determine compliance with this standard submitted to the laboratory? Yes
 No

Were these drawings and other data reviewed in the laboratory? Yes
 No

2.4 Rejection

Failure of one (1) device shall be cause for rejection of the model and size submitted for evaluation.

Section III

3.0

Performance Requirements and Compliance Testing

3.1 High Temperature

- (a) What is the pressure of the cold water supply? _____ psi (_____ kPa)
 What is the pressure of the hot water supply? _____ psi (_____ kPa)
 What is the flow rate? _____ GPM (_____ L/m)

- (b) What is the cold water supply temperature? _____ °F (_____ °C)
 What is the hot water supply temperature _____ °F (_____ °C)
 Is there a difference of at least 80°F (26.7°C) between the hot and cold water temperatures? Yes
 No

Set the outlet temperature at the manufacturer's maximum adjustable setting. _____ °F (_____ °C)

- (c) Flow water for thirty (30) minutes then check the device. Was there any change in the physical characteristics of the material that shall prevent full compliance with any requirements of this standard? Yes
 No
 Questionable

If questionable, explain: _____
 In compliance? Yes
 No

3.2 Working Pressure Test

- What was the pressure utilized with the outlet blocked for this test?
 _____ psi (_____ kPa)
 What was the duration of this test? _____ minutes
 What was the pressure applied at the inlets? _____ psi (_____ kPa)
 Was there any indication of leakage, damage or distortion to the device?
 Yes
 No
 Questionable

If questionable, explain: _____
 In compliance? Yes
 No

3.3 Life Cycle Test

- (a) What was the cold water inlet temperature? _____ °F (_____ °C)
 What was the hot water inlet temperature? _____ °F (_____ °C)
 What was the cold water inlet pressure? _____ psi (_____ kPa)
 What was the hot water inlet pressure? _____ psi (_____ kPa)
 What was the recommended minimum flow rate set point?
 _____ GPM (_____ L/m)
 What was the mixed water temperature? _____ °F (_____ °C)
 What was the duration time for this part of the test? _____ Seconds.
 Decrease the hot water inlet temperature to ambient.
 _____ °F (_____ °C)
 What was the duration for this portion of the test? _____ Seconds.
 Increase the hot water inlet temperature _____ °F (_____ °C)
 What was the duration of this portion of the test? _____ Seconds.

- (b) What was the cycle rate? _____ cycles per minute
 What were the total cycles? _____ cycles
 Failure of the device to comply with the remaining sections of this standard shall result in a rejection of the device.

In compliance? Yes
 No
 Questionable

If questionable, explain: _____

3.4 Flow Rate and Pressure Drop Test

- What was the pressure at the cold water inlet? _____psi (_____kPa)
 What was the pressure of the hot water inlet? _____psi (_____kPa)
 What was the cold water inlet temperature? _____°F (_____°C)
 What was the hot water inlet temperature? _____°F (_____°C)
 What was the mixed water outlet temperature? _____°F (_____°C)
 What was the mixed water outlet pressure? _____psi _____kPa
 Was a pressure drop equal to the midpoint of the manufacturer's published data established? Yes
 No

- What was the outlet flow rate? _____GPM (_____L/m)
 Was this flow rate at least 90% of the manufacturer's published flow rate?
 Yes
 No

In compliance? Yes
 No

3.5 Regulation and Temperature Variation Test

- (a) What was the pressure of the hot water inlet? _____psi (_____kPa)
 What was the pressure of the cold water inlet? _____psi (_____kPa)
 (b) What was the hot water supply temperature? _____°F (_____°C)
 (c) What was the cold water supply temperature? _____°F (_____°C)
 (d) What was the manufacturer's stated minimum flow rate? _____GPM
 (_____L/m)
 (e) Was the limit stop adjusted in accordance with the manufacturer's recommendations? Yes
 No

- (f) What was the mixed water outlet temperature? _____°F (_____°C)
 Flow water for one (1) minute, then continuously monitor the outlet temperatures.

3.5.1 Supply Pressure and Temperature changes at 105.0°F (40.6°C) Setting Part A

Step 1: Increase the hot water supply pressure by 20%

After five (5) seconds, note the outlet temperature for a maximum of 20 seconds or until stabilized. Record the outlet temperature.

_____°F (_____°C)

Return hot water supply pressure to 45.0 psi (310.3 kPa).

Step 2: Decrease the hot water supply pressure by 20%.

After five (5) seconds, note the outlet temperature for a maximum of 20 seconds or until stabilized. Record the outlet temperature.

_____°F (_____°C)

Return hot water supply pressure to 45.0 psi (310.3 kPa).

Step 3: Increase the cold water supply pressure by 20%.

After five (5) seconds, note the outlet temperature for a maximum of 20 seconds or until stabilized. Record the outlet temperature.

_____°F (_____°C)

Return the cold water supply pressure to 45.0 psi (310.3 kPa).

Step 4: Decrease the cold water supply pressure by 20%

After five (5) seconds, note the outlet temperature for a maximum of 20

seconds or until stabilized. Record the outlet temperature.

_____°F (_____°C)

Return the cold water supply pressure to 45.0 psi (310.3 kPa).

Part B: Increase the hot water temperature to 165.0°F ± 5°F (73.9°C ± 2.8°C). Without adjusting the limit stop, adjust the device outlet temperature setting to its maximum.

After five (5) seconds, note the outlet temperature for 20 seconds maximum or until stabilized. Record the outlet temperature. _____°F (_____°C)

- 3.5.3 Did the outlet temperature ever go over 120°F (48.9°C)? Yes
 No

Did the device maintain the outlet water temperature within ± 7°F (± 3.9°C) for all the steps noted above?

- Yes
 No

In compliance?

- Yes
 No
 Questionable

If questionable, explain: _____

3.6 Cold Water Supply Failure Test

Was the device installed per Figure 1 and set with the initial conditions as shown in Section 3.5.2?

- Yes
 No

When the test was performed, was the cold water supply closed within one (1) second or less? Yes No

Did the outlet mixed water temperature exceed 120°F (48.9°C) before the flow was reduced below 20% of the manufacturer's recommended minimum flow or 0.2 GPM (0.76 L/m) when the cold water supply fails? Yes No

In compliance? Yes No Questionable

If questionable, explain: _____

3.7 Cross Flow Test

What pressure was used for the cold water inlet? psi (kPa)

What was the duration for this test? minutes

What pressure was used for the hot water inlet? psi (kPa)

What was the duration for this test? minutes

List the quantity of leakage at the ports, if any? GPM (cc/ min)

In compliance? Yes No Questionable

If questionable, explain: _____

3.8 Hydrostatic Pressure Test

Pressure applied: _____psi (_____kPa)

How long was pressure applied? _____ minutes.

Any indication of leaks? Yes No

Any indication of damage? Yes No

In compliance? Yes No Questionable

If questionable, explain: _____

Section IV

4.0 Detailed Requirements

4.1 Materials in Contact with Water

Did this device comply with the material requirements for metals, solders and fluxes that come in contact with potable water? Yes No Questionable

Yes No Questionable

If questionable, explain: _____

If no, submit all applicable documentation regarding material toxicity.

4.2 Markings

4.2.1 List the following information found on the device:

Manufacturer or Trademark: _____

Model No.: _____

4.2.2 Temperature Control Setting Identification

Did the markings show the hot and cold inlet ports and indicate the direction or means to change the outlet temperature setting?

Yes

No

Are the markings clear, permanent and visible in the installed positions?

Yes

No

4.3 Installation and Maintenance Instructions

Were the manufacturer's instructions for installation, adjustment, setting the limit stop and maintenance of the device packaged with the device? Yes

No

Did the manufacturer's literature include flow rate versus pressure drop data?

Yes

No

Did the manufacturer state the minimum flow rate of the device? Yes

No

Did the manufacturer state the minimum flow rate of the device? Yes

No

4.4 Accessibility

Were the internal parts of the device accessible for repair without removal of the device from the plumbing system? Yes

No

TESTING AGENCY _____

ADDRESS _____

PHONE: _____ FAX: _____

TEST ENGINEER(S) _____

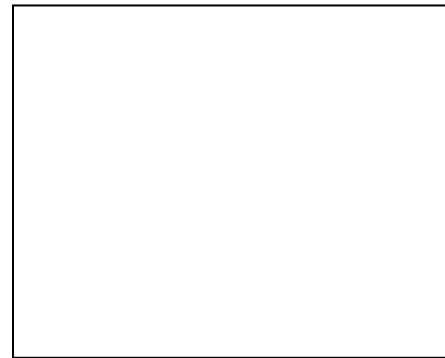
We certify that the evaluations are based on our best judgments and that the test data recorded is an accurate record of the performance of the device on test.

Signature of the official of the agency: _____

Title of the official: _____ Date: _____

Signature and seal of the Registered Professional Engineer
supervising the laboratory evaluation:

Signature



Seal