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WRAS TEST & ACCEPTANCE CRITERIA

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Date of issue: February 2006

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TEST CODE SHEET

1. TYPE OF TEST(S)

Contamination test of air bubble unvented hot water storage systems.

2. WATER REGULATIONS REQUIREMENTS FOR FITTINGS

Schedule 2

24. No supply pipe or secondary circuit shall be permanently connected to a closed circuit for filling a heating system unless it incorporates a backflow prevention device in accordance with a specification approved by the regulator for the purposes of this Schedule.

3. BRITISH STANDARDS OR WATER SPECIFICATION, DEEMED TO SATISFY WATER REGULATIONS REQUIREMENTS

3.1 Fittings with 'kitemarks' which are deemed to satisfy the requirements of regulations are listed in the directory.

4. TEST PROCEDURE

4.1 Tests are applicable to the following fittings:

SINGLE FEED, MAINS WATER SUPPLY PRESSURE, UNVENTED HOT WATER STORAGE SYSTEM

(A) SINGLE FEED, MAINS WATER SUPPLY PRESSURE, UNVENTED HOT WATER STORAGE SYSTEM

Purpose

To assess the effects of a mains water supply failure upon the primary to secondary systems leading to the possibility of mixing of these waters.

Apparatus

- A test installation incorporating:

- Three storeys,
- the unvented heating unit to be assessed
- mains water supply,
- isolating valve,
- 10 radiators,
- fluroscene dye,
- beaker,
- stop watch,
- boiler,
- pump.

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TEST METHOD

Initial Setting-up Procedure

- Set-up the unvented hot water system in accordance with the manufacturers instructions.
 - The primary system shall be set-up so as to simulate a three storey premise with four radiators on the ground level and three radiators on each of the first and second levels. (Reference Figure 1).
 - The primary system capacity shall be 100 litres \pm 10 litres.
 - Connect the system to a mains water supply, at a maximum pressure (\pm 5%) as stipulated in the manufacturers instructions.
 - Run the unvented hot water system to ensure there are no operational problems or leaks.
 - Stop the system and drain the primary side.
 - Introduce a fluroscene dye into the primary system.
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Test No. 1

- Refill the primary system and bleed ALL the radiators to remove all the air from the system.
 - Run the unvented hot water system until a temperature of $75 \pm 5^\circ\text{C}$ is achieved on the thermocouple positioned in the thermostat pocket.
 - Shut off the heat source.
 - Isolate the mains water supply to the unvented hot water system.
 - Open a hot water draw-off tap on the secondary system, situated at the lowest point in the system.
 - Allow the pressure in the system to drop and flow to cease from the tap. Place a beaker under the spout outlet and leave in this condition for a time of 120 ± 5 minutes.
 - At the end of this time, observe the contents of the beaker, (See Acceptance Criteria (i))
-
- Close the hot water draw-off tap.
 - Open the mains water supply to the unvented hot water system.
 - Repressurise both primary and secondary water systems.
 - Open the hot water draw-off tap on the secondary system, situated at the lowest point of the system.
 - Observe the water discharge for a time of 2 minutes \pm 10 seconds, (See Acceptance Criteria (ii))

5. ACCEPTANCE CRITERIA (Test No.1)

- (i) The beaker shall not contain any water with the fluroscene dye colourant.
 - (ii) There shall be no fluroscene dye colourant discharged from the tap.
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Test No. 2 (50% Test)

- Refill the primary system and bleed the radiators **on the ground level. Bleed the radiators on the first and second floor levels so they are $50 \pm 10\%$ full.**
 - Run the unvented hot water system until a temperature of $75 \pm 5^\circ\text{C}$ is achieved on the thermocouple positioned in the thermostat pocket.
 - Shut off the heat source.
 - Isolate the mains water supply to the unvented hot water system.
 - Open a hot water draw-off tap on the secondary system, situated at the lowest point in the system.
 - Allow the pressure in the system to drop and flow to cease from the tap. Place a beaker under the spout outlet and leave in this condition for a time of 120 ± 5 minutes.
 - At the end of this time, observe the contents of the beaker, (See Acceptance Criteria (i))
-

- Close the hot water draw-off tap.
- Open the mains water supply to the unvented hot water system.
- Repressurise both primary and secondary water systems.
- Open the hot water draw-off tap on the secondary system, situated at the lowest point of the system.
- Observe the water discharge for a time of 2 minutes \pm 10 seconds, (See Acceptance Criteria (ii))

5. ACCEPTANCE CRITERIA (*Test No.2*)

- (i) The beaker shall not contain any water with the fluroscene dye colourant.
 - (ii) There shall be no fluroscene dye colourant discharged from the tap.
-

If this test is successfully completed, go to **Test No. 3** (75%).

Test No. 3 (75% Test)

- Refill the primary system and bleed the radiators **on the ground level. Bleed the radiators on the first and second floor levels so they are $75 \pm 10\%$ full.**
 - Run the unvented hot water system until a temperature of $75 \pm 5^\circ\text{C}$ is achieved on the thermocouple positioned in the thermostat pocket.
 - Shut off the heat source.
 - Isolate the mains water supply to the unvented hot water system.
 - Open a hot water draw-off tap on the secondary system, situated at the lowest point in the system.
 - Allow the pressure in the system to drop and flow to cease from the tap. Place a beaker under the spout outlet and leave in this condition for a time of 120 ± 5 minutes.
 - At the end of this time, observe the contents of the beaker, (See Acceptance Criteria (i))
-

- Close the hot water draw-off tap.
- Open the mains water supply to the unvented hot water system.
- Repressurise both primary and secondary water systems.
- Open the hot water draw-off tap on the secondary system, situated at the lowest point of the system.
- Observe the water discharge for a time of 2 minutes \pm 10 seconds, (See Acceptance Criteria (ii))

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5. ACCEPTANCE CRITERIA (Test No.3)

- (i) The beaker shall not contain any water with the fluroscene dye colourant.
- (ii) There shall be no fluroscene dye colourant discharged from the tap.

If this test is successfully completed, go to **Test No. 4** (25%).

Test No. 4 (25% Test)

- Refill the primary system and bleed the radiators **on the ground level. Bleed the radiators on the first and second floor levels so they are $25 \pm 10\%$ full.**
- Run the unvented hot water system until a temperature of $75 \pm 5^\circ\text{C}$ is achieved on the thermocouple positioned in the thermostat pocket.
- Shut off the heat source.
- Isolate the mains water supply to the unvented hot water system.
- Open a hot water draw-off tap on the secondary system, situated at the lowest point in the system.
- Allow the pressure in the system to drop and flow to cease from the tap. Place a beaker under the spout outlet and leave in this condition for a time of 120 ± 5 minutes.
- At the end of this time, observe the contents of the beaker, (See Acceptance Criteria (i))

- _____
- Close the hot water draw-off tap.
 - Open the mains water supply to the unvented hot water system.
 - Repressurise both primary and secondary water systems.
 - Open the hot water draw-off tap on the secondary system, situated at the lowest point of the system.
 - Observe the water discharge for a time of 2 minutes \pm 10 seconds, (See Acceptance Criteria (ii))

5. ACCEPTANCE CRITERIA (Test No.4)

- (i) The beaker shall not contain any water with the fluroscene dye colourant.
 - (ii) There shall be no fluroscene dye colourant discharged from the tap.
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FIGURE 1

