

**INTERNATIONAL ASSOCIATION OF PLUMBING
AND MECHANICAL OFFICIALS**

IAPMO GUIDE CRITERIA

FOR

PASSIVE SOLAR WATER HEATERS

IAPMO IGC 86-2002

1. PURPOSE

- 1.1** The purpose of this standard is to establish an acceptable minimum standard for passive solar water heaters. Its purpose is to serve as a guide for producers, distributors, architects, engineers, contractors, installers, inspectors and users; to promote an understanding regarding materials, manufacture and installation; and to provide for identifying passive solar water heaters that conform to this standard.
- 1.2** The provisions of this standard are not intended to prevent the use of any alternate material or method of construction, provided any such alternate meets the intent of this standard.

2. SCOPE

- 2.1** This standard covers the test methods and performance requirements, together with the method of marking and identification.

3. DEFINITIONS

- 3.1 Solar Water Heaters.** Any device using radiant solar energy to heat water. The device may be used in conjunction with, but is not required to be, conventional water heater.
- 3.2 Direct Solar Water Heaters.** Any device using radiant solar energy to directly heat water. (For the purpose of this IGC, sunlight striking a storage tank or a series of pipe, etc. is considered direct solar water heating. The use of photovoltaic, heat exchangers or other forms of energy manipulation is indirect heating.) The device may be used in conjunction with, but is not required to be, conventional water heater.
- 3.3 Passive Solar Water Heaters.** Any direct solar water heater using incoming water pres-

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sure without the use of circulating pumps. (Well pumps are not considered circulating pumps.) The device may be used in conjunction with, but is not required to be, conventional water heaters.

4. GENERAL REQUIREMENTS

- 4.1 Hydrostatic Strength.** The passive solar water heater shall withstand three hundred (300) psi (2068 kPa) at $160^{\circ} \pm 5^{\circ}\text{F}$ ($71.1^{\circ} \pm 2.8^{\circ}\text{C}$) per Section 5.1 without leakage or permanent deformation.
- 4.2 Toxicity.** The passive solar water heater shall meet the requirements of NSF 61.
- 4.3 Condensation.** There shall be no visible condensation on the inside of the passive solar water heater when test per Section 5.2.

5. TESTING REQUIREMENTS

- 5.1 Hydrostatic Strength.** Water maintained at $160^{\circ} \pm 5^{\circ}\text{F}$ ($71.1^{\circ} \pm 2.8^{\circ}\text{C}$) shall be circulated through the passive solar water heater for a period of one (1) hour. At the end of one (1) hour, the outlet of the passive solar water heater shall be closed and the passive solar water heater shall be pressurized to three hundred (300) psi (2068 kPa) for thirty (30) minutes. Observe and record any leakage or permanent deformation.
- 5.2 Condensation.** Water maintained at $160^{\circ} \pm 5^{\circ}\text{F}$ ($71.1^{\circ} \pm 2.8^{\circ}\text{C}$) shall be circulated through the passive solar water heater for a period of seven (7) days. The unit shall be examined periodically (at least once per day) for evidence of condensation or seepage.

6. MARKINGS AND IDENTIFICATION

- 6.1** The passive solar water heater shall be permanently marked with the following:
- (a) Manufacturer's name or trademark;
 - (b) Date of manufacture;
 - (c) Model number; and
 - (d) Passive solar water heaters listed by IAPMO that are covered by this IGC shall be marked with the UPC certification mark with registration ® to show compliance with this IGC.

Adopted: 2/94

Revised: 4/2002