American National Standard

ASSE 1082-2021

Performance Requirements for

Water Heaters with Integral Temperature Control Devices for Hot Water Distribution Systems

ASSE Board Approved: November 2021
ANSI Approved: November 2021
ICS Code: 91.140.65

General Information

No product may be said to be ASSE listed unless the manufacturer has applied to ASSE International, has had the product tested by an official ASSE recognized independent laboratory, according to the applicable ASSE standard, passed the test, and has been reviewed and approved by the consensus ASSE International Seal Control Board. Having completed the aforementioned, the manufacturer may then display the ASSE Seal on the product.

Instructions for receiving the authorization to display the Seal are available from the ASSE International Office. Organizations wishing to adopt or list any ASSE standard should print the ASSE standard number on the cover page first and in equal or larger type to that of the adopting or listing organization.

ASSE International
Mokena, Illinois

Foreword

This foreword shall not be considered a part of the standard; however, it is offered to provide background information.

ASSE standards are developed in the interest of consumer safety.

ASSE International considers product performance standards to be of great value in the development of improved plumbing systems.

There are heater products in the market as of this standard's initial revision that are able to control their output temperatures to an accuracy equivalent to ASSE 1017. Current model codes still regard these products as heaters and therefore incapable of such control, thereby requiring a redundant mixing valve downstream. Having two such controllers in series can result in inconsistent temperatures further on at point-of-use. This standard was written in order to streamline plumbing system design and to ensure that the output temperatures from water heaters are as consistent as currently required by model codes.

These devices are not intended for end use applications without point-of-use control valves as specified by ASSE 1016 / ASME A112.1016 / CSA B125.16, ASSE 1069, ASSE 1070 / ASME A112.1070 / CSA B125.70, or other appropriate standards.

This standard uses a +70°F (+39°C) temperature rise because the US Department of Energy defines their temperature rise from 70°F to 140°F (21.1°C to 60°C) for commercial products, and from 58 ± 2°F to 125 ± 5°F (14.4°C ± 1.1°C to 51.7 ± 2.8°C) for residential products.

As an example, if a 1082 device's maximum design output is 200 kBTU/hr (58.6 kW), for a +70°F (+39°C) temperature rise, its maximum design flow rate is 5.6 GPM (21.2 L/min), and the temperature output tolerance that it needs to meet is ± 5°F (2.8°C) per Table 2 below.

Recognition is made of the time volunteered by members of this working group and of the support of manufacturers who also participated in meetings for this standard.

The working group that developed this standard was set up within the framework of the Product Standards Committee of ASSE International.

This standard does not imply ASSE International's endorsement of a product which conforms to these requirements.

Compliance with this standard does not imply acceptance by any code body.

It is recommended that these devices be installed in accordance with the installation instructions of the manufacturers and consistent with local codes. Where there is a conflict with codes and installation instructions, the more stringent requirements should be followed. These devices should be installed by properly licensed, qualified and properly trained professionals.

The 2021 revision was to update the reference standards. Some of the reference standards had significant changes to reflect new legislation in California. It was determined that these changes warranted an update to the reference within this standard. A WG was not created to make these changes. The 2018 Working group is still referenced to capture those who contributed to the current technical content.

This standard was promulgated in accordance with procedures developed by the American National Standards Institute (ANSI).

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Performance Requirements for **Water Heaters with Integral Temperature Control Devices for Hot Water Distribution Systems**

Section I

1.0 General

1.1 Application

This standard is for water heaters with defined setpoint controls under various steady state flow conditions.

1.2 Scope

This standard is for water heaters that control the outlet temperature to specific limits and are installed within a hot water distribution system but not at point-of-use.

1.2.1 Description

A water heater (herein referred to as the “device”) shall consist of a heat exchanger, a cold water inlet connection, a hot water outlet connection, and a means for precisely governing the outlet temperature. The device controller shall be listed to the appropriate electrical safety standard in accordance with the device category.

1.2.2 Maximum Working Pressure

The maximum working pressure of the device shall be at least 160 psi (1103 kPa) for devices in compliance with the ASME Boiler and Pressure Vessel Code, or at least 150 psi (1034 kPa) for devices in compliance with standards such as UL 174, UL 499, UL 1453, ANSI Z21.10.1 / CSA 4.1, or ANSI Z21.10.3 / CSA 4.3.

1.2.3 Inlet Water Temperature Range

The cold water inlet temperature range shall be 45°F to 105°F (7.2°C to 40.6°C).

1.2.4 Outlet Water Temperature Range

The device shall be capable of supplying the domestic hot water distribution system with a minimum adjustable hot water setpoint range of 105°F to 125°F (40.6°C to 51.7°C) when the incoming temperature is between 45°F and 105°F (7.2 °C and 40.6°C).

1.2.5 Maximum Flow Rates

The maximum flow rates of the device at given temperature rises shall be obtained from the device technical datasheet. The maximum flow rate at a +70°F (+39°C) temperature rise shall be included in the datasheet.