

Standard Test Method for Performance of Water-Bath Rethermalizers¹

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1. Scope

1.1 This test method covers the energy consumption and rethermalizing performance of floor-model and countertop water-bath rethermalizers. The food service operator can use this evaluation to select a water-bath rethermalizer and understand its energy consumption and production capacity.

1.2 This test method is applicable to floor and countertop model gas and electric units.

1.3 The water-bath rethermalizer can be evaluated with respect to the following (where applicable):

- 1.3.1 Energy input rate (10.2),
- 1.3.2 Preheat energy consumption, time, and rate (10.4),
- 1.3.3 Idle energy rate (10.5),
- 1.3.4 Pilot energy rate (10.6),
- 1.3.5 Retherm energy rate (10.8),
- 1.3.6 Production capacity (10.8), and
- 1.3.7 Retherm-energy efficiency (10.8).

1.4 This test method is not intended to answer all performance criteria in the evaluation and selection of a water-bath rethermalizer.

1.5 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are for information only.

1.6 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:²

D3588 Practice for Calculating Heat Value, Compressibility

Factor, and Relative Density of Gaseous Fuels

2.2 ANSI Standard:³

ANSI Z83.11 Gas Food Service Equipment

2.3 ASHRAE Documents:⁴

ASHRAE Handbook of Fundamentals Chapter 6, Table 2—Thermodynamic; Chapter 6, Table 2—Thermodynamic Properties of Water at Saturation
ASHRAE Guideline 2-1986 (RA90) Engineering Analysis of Experimental Data

2.4 NSF Standards:⁵

NSF Listing-Food Equipment and Related, Components and Material
NSF/ANSI 4 Commercial Cooking, Rethermalization and Powered Hot Food Holding and Transport Equipment

3. Terminology

3.1 Definitions:

3.1.1 *auto-fill, n*—water height sensor device that activates a fresh water fill solenoid when the water level in the rethermalizer drops below a predetermined height.

3.1.2 *energy input rate, n*—peak rate at which a water-bath rethermalizer consumes energy (Btu/h (kJ/h) or kW).

3.1.3 *idle energy rate, n*—average rate of energy consumed (Btu/h or kW) by the rethermalizer while holding or maintaining the water vat at the thermostat(s) set point.

3.1.4 *over-flow drain, n*—drain for eliminating the excess foam and starch created during the rethermalizing process.

3.1.5 *pilot energy rate, n*—average rate of energy consumption (Btu/h (kJ/h)) by a water-bath rethermalizer's continuous pilot (if applicable).

3.1.6 *preheat energy, n*—amount of energy consumed (Btu or kWh) by the rethermalizer while heating the water vat from ambient room temperature to the calibrated thermostat(s) set point.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036.

⁴ Available from American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc. (ASHRAE), 1791 Tullie Circle, NE, Atlanta, GA 30329.

⁵ Available from NSF International, P.O. Box 130140, 789 N. Dixboro Rd., Ann Arbor, MI 48113-0140.