

Standard Test Method for Performance of Chinese (Wok) Ranges¹

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1. Scope

1.1 This test method evaluates the energy consumption and performance of Chinese ranges. The food service operator can use this evaluation to select a Chinese range and understand its energy performance.

1.2 This test method is applicable to nonthermostatically-controlled, gas and electric Chinese ranges, including both discreet burners, elements, and induction units.

1.3 The Chinese range can be evaluated with respect to the following (where applicable):

1.3.1 Energy input rate (10.2),

1.3.2 Pilot energy rate, if applicable (10.3), and

1.3.3 Heatup energy efficiency and production capacity (10.5).

1.4 The values stated in inch-pound units are to be regarded as standard.

1.5 *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:

D 3588 Method for Calculating Calorific Value and Specific Gravity (Relative Density) of Gaseous Fuels²

2.2 ANSI Standard:

ANSI Z83.11 American National Standard for Gas Food Service Equipment³

2.3 ASHRAE Standard:

ASHRAE Guideline 2-1986 (RA90) Engineering Analysis of Experimental Data⁴

¹ This test method is under the jurisdiction of ASTM Committee F-26 on Food Service Equipment and is the direct responsibility of Subcommittee F26.06 on Productivity and Energy Protocol.

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² *Annual Book of ASTM Standards*, Vol 05.05.

³ Available from American National Standards Institute, 11 W. 42nd St., 13th Floor, New York, NY 10036.

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

3. Terminology

3.1 Definitions:

3.1.1 *Chinese range, n*—an appliance that cooks food by a direct or indirect heat transfer, which is powered by a single heat source comprised of either a gas burner or an electrical element or induction technology that is independently controlled. Used in conjunction with woks.

3.1.2 *energy input rate, n*—peak rate at which Chinese range consumes energy (Btu/h or kW).

3.1.3 *heatup energy, n*—energy consumed by the Chinese ranges as it is used to raise the temperature of water in a wok from $70 \pm 2^\circ\text{F}$ to $200 \pm 2^\circ\text{F}$ under full input rate.

3.1.4 *heatup energy efficiency, n*—quantity of energy imparted to the water, expressed as a percentage of energy consumed by the Chinese range during the heatup event.

3.1.5 *heatup energy rate, n*—average rate of energy consumption (Btu/h or kW) during the heatup energy efficiency tests.

3.1.6 *heatup time, n*—time required to raise the temperature of the water from $70 \pm 2^\circ\text{F}$ to $200 \pm 2^\circ\text{F}$ during a heatup energy efficiency test.

3.1.7 *pilot energy rate, n*—average rate of energy consumption (Btu/h) by a Chinese range's continuous pilot, if applicable.

3.1.8 *production capacity, n*—maximum rate (lb/h) at which the Chinese range heats water in accordance with the heatup energy-efficiency test.

3.1.9 *testing capacity, n*—the capacity (gal) at which the wok is operated during the heatup test, which is at the water level mark.

3.1.10 *uncertainty, n*—measure of systematic and precision errors in specified instrumentation or measure of repeatability of a reported test result.

3.1.11 *water level mark, n*—a level of water, which is even (horizontal) with the top portion of the well or chamber, that cradles the wok. This will be used to determine the *testing capacity*.

3.1.12 *well/chamber, n*—the ring which supports the wok over the heat source.

3.1.13 *wok, n*—a bowl shaped vessel used to contain the water that is being heated by the Chinese range.

