

greater than 2,500 kBtu/h) commercial packaged boiler capable of supplying either steam or hot water either by testing the boiler for both efficiencies in steam mode, or by testing the boiler in both steam and hot water modes measuring the thermal efficiency of the boiler in steam mode and the combustion efficiency of the boiler in hot water mode. Measure only the thermal efficiency of a small (fuel input of greater than or equal to 300 kBtu/h and less than or equal to 2,500 kBtu/h) commercial packaged boiler capable of supplying either steam or hot water either by testing the boiler for thermal efficiency only in steam mode or by testing the boiler for thermal efficiency in both steam and hot water modes.

(B) *Rating.* If testing a large boiler only in the steam mode, use the efficiencies determined from such testing to rate the thermal efficiency for the steam mode and the combustion efficiency for the hot water mode. If testing a large boiler in both modes, rate the boiler's efficiency for each mode based on the testing in that mode. If testing a small boiler only in the steam mode, use the efficiencies determined from such testing to rate the thermal efficiency for the steam mode and the hot water mode. If testing a small boiler in both modes, rate the boiler's efficiency for each mode based on the testing in that mode.

(3) *Calculation of Efficiency*—(i) *Combustion Efficiency.* Use the calculation procedure for the combustion effi-

ciency test specified in Section 11.2 (including the specified subsections of 11.1) of the HI BTS-2000, Rev 06.07 (incorporated by reference, *see* § 431.85).

(ii) *Thermal Efficiency.* Use the calculation procedure for the thermal efficiency test specified in Section 11.1 of the HI BTS-2000, Rev 06.07 (incorporated by reference, *see* § 431.85).

[74 FR 36354, July 22, 2009]

ENERGY EFFICIENCY STANDARDS

§ 431.87 Energy conservation standards and their effective dates.

(a) Each commercial packaged boiler manufactured on or after January 1, 1994, and before March 2, 2012, must meet the following energy efficiency standard levels:

(1) For a gas-fired packaged boiler with a capacity (rated maximum input) of 300,000 Btu/h or more, the combustion efficiency at the maximum rated capacity must be not less than 80 percent.

(2) For an oil-fired packaged boiler with a capacity (rated maximum input) of 300,000 Btu/h or more, the combustion efficiency at the maximum rated capacity must be not less than 83 percent.

(b) Each commercial packaged boiler listed in Table 1 to § 431.87 and manufactured on or after the effective date listed in Table 1 of this section, must meet the applicable energy conservation standard in Table 1.

TABLE 1 TO § 431.87—COMMERCIAL PACKAGED BOILER ENERGY CONSERVATION STANDARDS

Equipment type	Subcategory	Size category (input)	Efficiency level—Effective date: March 2, 2012*
Hot Water Commercial Packaged Boilers ...	Gas-fired .....	≥300,000 Btu/h and ≤2,500,000 Btu/h.	80.0% E <sub>T</sub>
Hot Water Commercial Packaged Boilers ...	Gas-fired .....	>2,500,000 Btu/h .....	82.0% E <sub>C</sub>
Hot Water Commercial Packaged Boilers ...	Oil-fired .....	≥300,000 Btu/h and ≤2,500,000 Btu/h.	82.0% E <sub>T</sub>
Hot Water Commercial Packaged Boilers ...	Oil-fired .....	>2,500,000 Btu/h .....	84.0% E <sub>C</sub>
Steam Commercial Packaged Boilers .....	Gas-fired—all, except natural draft .....	≥300,000 Btu/h and ≤2,500,000 Btu/h.	79.0% E <sub>T</sub>
Steam Commercial Packaged Boilers .....	Gas-fired—all, except natural draft .....	>2,500,000 Btu/h .....	79.0% E <sub>T</sub>
Steam Commercial Packaged Boilers .....	Gas-fired—natural draft .....	≥300,000 Btu/h and ≤2,500,000 Btu/h.	77.0% E <sub>T</sub>
Steam Commercial Packaged Boilers .....	Gas-fired—natural draft .....	>2,500,000 Btu/h .....	77.0% E <sub>T</sub>
Steam Commercial Packaged Boilers .....	Oil-fired .....	≥300,000 Btu/h and ≤2,500,000 Btu/h.	81.0% E <sub>T</sub>
Steam Commercial Packaged Boilers .....	Oil-fired .....	>2,500,000 Btu/h .....	81.0% E <sub>T</sub>

\* Where E<sub>C</sub> is combustion efficiency and E<sub>T</sub> is thermal efficiency as defined in § 431.82.

(c) Each commercial packaged boiler listed in Table 2 to § 431.87 and manufactured on or after the effective date listed in Table 2 of this section, must meet the applicable energy conservation standard in Table 2.

TABLE 2 TO § 431.87—COMMERCIAL PACKAGED BOILER ENERGY CONSERVATION STANDARDS

Equipment type	Subcategory	Size category (input)	Efficiency level— Effective date— March 2, 2022*
Steam Commercial Packaged Boilers ...	Gas-fired—natural draft	≥300,000 Btu/h and ≤2,500,000 Btu/h	79.0% E <sub>T</sub>
Steam Commercial Packaged Boilers ...	Gas-fired—natural draft	>2,500,000 Btu/h .....	79.0% E <sub>T</sub>

\*Where E<sub>C</sub> is combustion efficiency and E<sub>T</sub> is thermal efficiency as defined in § 431.82.

[74 FR 36355, July 22, 2009]

**Subpart F—Commercial Air Conditioners and Heat Pumps**

SOURCE: 69 FR 61969, Oct. 21, 2004, unless otherwise noted.

**§ 431.91 Purpose and scope.**

This subpart specifies test procedures and energy conservation standards for certain commercial air conditioners and heat pumps, pursuant to Part C of Title III of the Energy Policy and Conservation Act, as amended, 42 U.S.C. 6311–6317.

[69 FR 61969, Oct. 21, 2004, as amended at 70 FR 60415, Oct. 18, 2005]

**§ 431.92 Definitions concerning commercial air conditioners and heat pumps.**

The following definitions apply for purposes of this subpart F, and of subparts J through M of this part. Any words or terms not defined in this section or elsewhere in this part shall be defined as provided in 42 U.S.C. 6311.

*Coefficient of Performance, or COP* means the ratio of the produced cooling effect of an air conditioner or heat pump (or its produced heating effect, depending on the mode of operation) to its net work input, when both the cooling (or heating) effect and the net work input are expressed in identical units of measurement.

*Commercial package air-conditioning and heating equipment* means air-cooled, water-cooled, evaporatively-cooled, or water source (not including ground water source) electrically operated, unitary central air conditioners and central air-conditioning heat pumps for commercial application.

*Energy Efficiency Ratio, or EER* means the ratio of the produced cooling effect of an air conditioner or heat pump to its net work input, expressed in Btu/watt-hour.

*Heating seasonal performance factor, or HSPF* means the total heating output of a central air-conditioning heat pump during its normal annual usage period for heating, expressed in Btu’s and divided by the total electric power input, expressed in watt-hours, during the same period.

*Large commercial package air-conditioning and heating equipment* means commercial package air-conditioning and heating equipment that is rated—

- (1) At or above 135,000 Btu per hour; and
- (2) Below 240,000 Btu per hour (cooling capacity).

*Non-standard size* means a packaged terminal air conditioner or packaged terminal heat pump with existing wall sleeve dimensions having an external wall opening of less than 16 inches high or less than 42 inches wide, and a cross-sectional area less than 670 square inches.

*Packaged terminal air conditioner* means a wall sleeve and a separate unencased combination of heating and cooling assemblies specified by the builder and intended for mounting through the wall, and that is industrial equipment. It includes a prime source of refrigeration, separable outdoor louvers, forced ventilation, and heating availability by builder’s choice of hot water, steam, or electricity.

*Packaged terminal heat pump* means a packaged terminal air conditioner that utilizes reverse cycle refrigeration as its prime heat source, that has a supplementary heat source available, with