

(Adopted December 1, 1978)(Amended July 8, 1983)

RULE 1111. NO_x EMISSIONS FROM NATURAL-GAS-FIRED, FAN-TYPE CENTRAL FURNACES

(a) Definitions

- (1) Fan Type Central Furnace is a self-contained space heater providing for circulation of heated air at pressures other than atmospheric through ducts more than 10 inches in length that have:
 - (A) an input rate of less than 175,000 BTU/hr; or
 - (B) for combination heating and cooling units, a cooling rate of less than 65,000 BTU/hr.
- (2) Annual Fuel Utilization Efficiency (AFUE) is defined in Section 4.2.35 of Code of Federal Regulations, Title 10, Part 430, Subpart B, Appendix N.
- (3) Useful Heat Delivered to the Heated Space is the AFUE (expressed as a fraction) multiplied by the heat input.

(b) Requirements

- (1) A manufacturer shall not, after January 1, 1984, manufacture or supply for sale or use in the South Coast Air Quality Management District natural-gas-fired, fan-type central furnaces, unless such furnaces meet the requirements of subparagraph (3).
- (2) A person shall not, after April 2, 1984, sell or offer for sale within the South Coast Air Quality Management District natural-gas-fired, fan-type central furnaces unless such furnaces meet the requirements of subparagraph (3).
- (3) Natural-gas-fired, fan-type central furnaces shall:
 - (A) not emit more than 40 nanograms of oxides of nitrogen (calculated as NO₂) per joule of useful heat delivered to the heated space; and
 - (B) be certified in accordance with paragraph (c) of this rule.

(c) Certification

- (1) The manufacturer shall have each appliance model tested in accordance with the following:

- (A) Oxides of nitrogen measurements, test equipment, and other required test procedures shall be in accordance with methods approved by the Executive Officer.
- (B) Operation of the furnace shall be in accordance with the procedures specified in Section 3.1 of Code of Federal Regulations, Title 10, Part 430, Subpart B, Appendix N.
- (2) One of the two formulas shown below shall be used to determine the nanograms of oxides of nitrogen per joule of useful heat delivered to the heated space:

$$N = \frac{4.566 \times 10^4 \times P \times U}{H \times C \times E}$$

$$N = \frac{3.655 \times 10^{10} \times P}{(20.9 - Y) \times Z \times E}$$

Where:

- N = nanograms of emitted oxides of nitrogen per joule of useful heat.
- P = concentration (ppm volume) of oxides of nitrogen in flue gas as tested.
- U = volume percent CO₂ in water-free flue gas for stoichiometric combustion.
- H = gross heating value of fuel, BTU/cu.ft. (60°F, 30-in. Hg).
- C = measured volume percent of CO₂ in water-free flue gas, assuming complete combustion and no CO present.
- E = AFUE, percent (calculated using Table 2).
- Y = volume percent of O₂ in flue gas.
- Z = heating value of gas, joules/cu. meter (0.0°C, 1 ATM).

- (3) The manufacturer shall submit to the Executive Officer the following:
- (A) A statement that the model is in compliance with subsection (b). (The statement shall be signed and dated, and shall attest to the accuracy of all statements.)
- (B) General Information
- (i) Name and address of manufacturer.
 - (ii) Brand name.
 - (iii) Model number, as it appears on the furnace rating plate.

- (C) A description of the furnace and specifications for each model being certified.

- (d) Identification
The manufacturer shall display the model number of the furnace complying with subsection (b) on the shipping carton and rating plate.

- (e) Enforcement
 - (1) The Executive Officer may require the emission test results to be provided when deemed necessary to verify compliance.
 - (2) The Executive Officer may periodically conduct such tests as are deemed necessary to insure compliance with subsection (b).

- (f) Exemptions
 - (1) The provisions of this rule shall not apply to furnaces to be installed in mobile homes.
 - (2) The provisions of this rule shall not apply to natural-gas-fired, fan-type central furnaces utilizing three-phase electrical current until January 1, 1986.