

ANTELOPE VALLEY AIR QUALITY MANAGEMENT DISTRICT

**RULE 1111 -- NO<sub>x</sub> EMISSIONS FROM NATURAL-GAS-FIRED,  
FAN-TYPE CENTRAL FURNACES**

*(Adopted: 12/01/78; Amended: 07/08/83)*

(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 NO<sub>2</sub>) 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 CO<sub>2</sub> 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 CO<sub>2</sub> in water-free flue gas, assuming complete combustion and no CO present.

E = AFUE, percent (calculated using Table 2).

Y = volume percent of O<sub>2</sub> 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.

[SIP: Approved 5/3/84, 49 FR 18830, 40 CFR 52.220(c)(148)(vi)(A); Approved 9/28/81, 46 FR 47451, 40 CFR 52.220(c)(67)(i)(B)]

This Page Intentionally Left Blank.