

**REGULATION 9  
INORGANIC GASEOUS POLLUTANTS  
RULE 4  
NITROGEN OXIDES FROM FAN TYPE RESIDENTIAL CENTRAL  
FURNACES**

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**9-4-100 GENERAL**

**9-4-101 Description:** This Rule limits emissions of nitrogen oxides from natural gas-fired fan type residential central furnaces. (Amended December 7, 1983)

**9-4-200 DEFINITIONS**

**9-4-201 Fan Type Central Furnace:** A self contained space heater providing for circulation of heated air at pressures other than atmospheric through ducts more than 25 cm (10 in) in length with an input rate of less than 175,000 BTU/hr, excluding heating/cooling units utilizing three phase electric current. (Amended December 7, 1983)

**9-4-202 Annual Fuel Utilization Efficiency:** The efficiency as defined by Section 4.2.35 of the Code of Federal Regulations, Title 10, Part 430, Subpart B, Appendix N. (Amended December 7, 1983)

**9-4-203 Useful Heat Delivered to the Heated Space:** The Annual Fuel utilization efficiency (expressed as a fraction) multiplied by the heat input. (Amended December 7, 1983)

**9-4-300 STANDARDS**

**9-4-301 Residential Central Furnaces:** A person shall not sell, install or offer for sale within the District any stationary residential natural gas-fired fan type central furnace manufactured after January 1, 1984 that emits more than 40 nanograms of oxides of nitrogen expressed as NO<sub>2</sub> per joule of useful heat delivered to the heated space. (Amended December 7, 1983)

**9-4-302 Certified Furnaces:** A person shall not sell, install or offer for sale within the District furnaces subject to the requirements of Section 9-4-301 unless such furnaces are certified in accordance with Section 9-4-401, 402, 403, and 404. (Amended and Renumbered December 7, 1983)

**9-4-400 ADMINISTRATIVE REQUIREMENTS**

**9-4-401 Certification:** The manufacturer shall have each appliance model tested in accordance with the following:

- 401.1 Oxides of nitrogen measurements, test equipment, and other required test procedures shall be in accordance with methods and standards or equivalent procedures approved by the APCO.
- 401.2 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.
- 401.3 The following calculation shall be used to determine the nanograms of NO<sub>x</sub> per joule of useful heat delivered to heated space:

$$N = \frac{3.655 \times 10^{10} \times P}{(20.9 - Y)ZE} \quad \text{or} \quad N = \frac{4.566 \times 10^4 \times PU}{H \times C \times E}$$

Where:

- N = Nanograms of NO<sub>x</sub> emitted per joule of useful heat delivered to the heated space.
- P = Parts per million of NO<sub>x</sub>
- Y = Percentage of O<sub>2</sub> in flue gas.
- Z = Heating value of gas in joules per (meter)<sup>3</sup>

E = AFUE (percentage).

U = Volume percent CO<sub>2</sub> in water-free flue gas for stoichiometric combustion.

H = Gross heating value of the 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.

(Amended December 7, 1983)

**9-4-402 Compliance Statement:** The manufacturer shall submit to the APCO a statement that the model is in compliance with this Rule. The statement shall be signed and dated, and shall attest to the accuracy of all information. The statement shall include the brand name, model number as is appears on the furnace rating plate, and be on forms provided by the APCO. (Amended December 7, 1983)

**9-4-403 Identification:** The manufacturer shall display the model number of the furnace complying with this rule on the shipping carton and rating plate.

**9-4-404 Enforcement:** The APCO may require the emission test results to be provided when deemed necessary to verify compliance and may periodically conduct such tests as are deemed necessary to insure compliance.