

RULE 67.24. BAKERY OVENS (Adopted & Effective: 6/7/94)

(a) **APPLICABILITY**

Except as provided in Section (b), this rule is applicable to bakery ovens which emit volatile organic compounds (VOC's) during the baking of yeast-leavened products.

Bakery ovens subject to this rule shall not be subject to Rule 66.

(b) **EXEMPTIONS**

(1) The provisions of this rule shall not apply to bakery ovens which are located at a stationary source where the combined rated heat input capacity of all bakery ovens is less than 2 million British Thermal Units (BTU) per hour.

It shall be the responsibility of any person claiming the exemption in Subsection (b)(1) to provide information necessary for the District to determine the combined rated heat input capacity of all bakery ovens. Such information may include oven or burner manufacturer specifications, or may include fuel or energy consumption rates for oven start-up period(s) in cases where manufacturer specifications are unavailable.

(2) The provisions of this rule shall not apply to ovens used exclusively for the baking of products leavened chemically without yeast.

(3) The provisions of Sections (d) and (g) of this rule shall not apply to bakery ovens which are located at a stationary source where the uncontrolled emissions of VOC's from all bakery ovens combined is less than 25 tons per calendar year.

(c) **DEFINITIONS**

For the purposes of this rule, the following definitions shall apply:

(1) **“Bakery Oven”** means an oven which bakes yeast-leavened products, including but not limited to breads, buns, and rolls.

(2) **“Combustion Stack”** means a stack on a bakery oven which emits exclusively combustion exhaust gases which do not pass through the oven's baking chamber.

(3) **“Comfort Hood Vent”** means a vent or hood used to control air flow outside the entrance or exit of a bakery oven.

(4) **“Exempt Compound”** means any of the following compounds or classes of compounds: 1,1,1-trichloroethane, methylene chloride, trichlorofluoromethane (CFC-11), dichlorodifluoromethane (CFC-12), trifluoromethane (HFC-23), trichlorotrifluoroethane (CFC-113), dichlorotetrafluoroethane (CFC-114), chloropentafluoroethane (CFC-115), chlorodifluoromethane (HCFC-22), dichlorotrifluoroethane (HCFC-123), dichlorofluoroethane (HCFC-141b), 1,1,1,2-tetrafluoroethane (HFC-134a), 1,1,2,2-tetrafluoroethane

(HFC-134), chlorodifluoroethane (HCFC-142b), 2-chloro-1,1,1,2-tetrafluoroethane (HCFC-124), pentafluoroethane (HFC-125), 1,1,1-trifluoroethane (HFC-143a), 1,1-difluoroethane (HFC-152a), and the following four classes of perfluorocarbon (PFC) compounds:

- (i) cyclic, branched, or linear, completely fluorinated alkanes;
- (ii) cyclic, branched, or linear, completely fluorinated ethers with no unsaturations;
- (iii) cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations; and
- (iv) sulfur containing perfluorocarbons with no unsaturations and with sulfur bonds only to carbon and fluorine.

(5) **“Fermentation Time”** means the elapsed time between adding yeast to dough or sponge and placing the dough or sponge into a bakery oven, excluding retardation time, expressed in hours.

(6) **“Purge Stack”** means a bakery oven stack used exclusively for evacuation of residual gases from the bakery oven during burner ignition.

(7) **“Retardation Time”** means any portion(s) of the elapsed time between adding yeast to dough or sponge and placing the dough or sponge into a bakery oven, where the dough or sponge is refrigerated at temperatures of less than 10° C (50° F), for the specific purpose of retarding the fermentation process.

(8) **“Stationary Source”** means the same as defined in Rule 20.1.

(9) **“Uncontrolled VOC Emissions”** means VOC emissions from a bakery oven, before application of add-on air pollution control equipment or process modification.

(10) **“Volatile Organic Compound (VOC)”** means any compound of carbon, which may be emitted to the atmosphere during bakery oven operations, except methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, and exempt compounds.

(11) **“Yeast Percentage”** means the pounds of yeast added to a hundred pounds of total flour in the recipe.

(d) **STANDARDS**

(1) No person shall operate a bakery oven subject to this rule, unless uncontrolled VOC emissions are reduced by at least 90 percent by weight.

(2) A person may comply with the requirements of Subsection (d)(1) of this rule by using an air pollution control system which:

(i) has been installed in accordance with an Authority to Construct; and

(ii) includes an emission collection system(s) which ducts the exhaust gases from all stacks, except purge stacks, combustion stacks, and comfort hood vents, on all bakery ovens to VOC emission control device(s). Such ducting shall be maintained so as to be free of visible holes, breaks, openings or separations between adjoining components from which VOC's may be emitted to the atmosphere; and

(iii) has one or more VOC emission control devices, each with reduction efficiency of at least 90 percent by weight.

(3) A person subject to the requirements of Subsection (d)(2) shall submit an Operation and Maintenance Plan for the proposed emission control device and emission collection system to the Air Pollution Control Officer for approval, and receive such approval prior to the operation of the control equipment. Thereafter, the plan can be modified, with Air Pollution Control Officer approval, as necessary to ensure compliance. Such plan shall:

(i) identify all key system operating parameters. Key system operating parameters are those necessary to ensure compliance with Subsection (d)(2)(iii) such as temperature, pressure, and/or flow rate; and

(ii) include proposed inspection schedules and anticipated ongoing maintenance regarding the key system operating parameters.

(4) A person subject to the requirements of Subsection (d)(3) shall implement the plan upon approval of the Air Pollution Control Officer, and shall comply with the provisions of the approved plan thereafter.

(e) **RECORDKEEPING**

After December 7, 1994, a person operating a bakery oven(s) subject to this rule shall maintain records in accordance with the following:

(1) Maintain current records necessary to determine VOC emissions for all bakery ovens including, but not limited to, type of each yeast-leavened baked product, yeast percentage for each product, and fermentation time for each product; and

(2) Maintain annual records based on calendar year production rates, by weight, of finished baked product for each yeast-leavened product.

(3) For control equipment, maintain daily records of key system operating parameters specified in Subsection (d)(3)(i), which will demonstrate continuous operation

and compliance of the emission control device during periods of emission producing activities.

Records maintained in accordance with Subsection (e)(2) are subject to District verification after 60 days following the end of a calendar year. These records shall be maintained on site for at least three years and shall be made available to the District upon request.

(f) **TEST METHODS**

(1) For the purposes of determining the total annual uncontrolled VOC emissions from a stationary source, VOC emission factors for each yeast-leavened bakery product shall be determined in accordance with both Table 67.24 and the following formula:

$$EF = 0.95 Y_i + 0.19 t_i - 0.51S - 0.86 t_s + 1.90$$

where Y_i = initial yeast percentage
 t_i = total fermentation time
 S = second (spiking) yeast percentage, if applicable
 t_s = fermentation time for second yeast percentage, if applicable, and
 EF = emission factor, pounds of VOC emissions per ton of baked product

Annual uncontrolled emission rates shall be calculated by multiplying emission factors and the annual production rate for each yeast-leavened finished bakery product. The highest of the two calculated emission rates for a stationary source shall be used for the purposes of this rule. In cases where annual emissions for a stationary source, as determined using the highest emission rate, exceed 80 percent of the annual emissions specified in Subsection (b)(3), or other cases as deemed appropriate by the Air Pollution Control Officer, emission factors shall instead be determined in accordance with Subsection (f)(2).

Instead of using calculated emission factors, an owner or operator may elect to use VOC emission factors determined according to Subsection (f)(2).

(2) VOC emission factors for yeast-leavened bakery products may be determined by EPA Methods 18, 25, and/or 25A (40 CFR 60) as they exist on June 7, 1994, together with exhaust flow rates and oven throughputs. Test procedures shall be performed in accordance with a protocol approved by the Air Pollution Control Officer. An alternative test method may be used provided such method has been approved, in advance, by the Air Pollution Control Officer, ARB and EPA.

(3) Measurement of emission control device reduction efficiency subject to Subsection (d)(2)(iii) of this rule shall be conducted in accordance with EPA Methods 18, 25, and/or 25A (40 CFR 60) as they exist on June 7, 1994. Test procedures shall be performed in accordance with a protocol approved by the Air Pollution Control Officer.

(g) COMPLIANCE SCHEDULE

A person operating a bakery oven(s) subject to Subsection (d)(2) of this rule shall meet the following increments of progress:

(1) For an oven which commenced operation prior to June 7, 1994, or for a replacement of such an oven:

(i) By December 7, 1994, submit to the Air Pollution Control Officer any necessary application for Authority to Construct and Permit to Operate an air pollution control system meeting the requirements of Subsection (d)(2);

(ii) By June 7, 1995, install an air pollution control system pursuant to Subsection (d)(2).

(2) For an oven which commences operation on or after June 7, 1994, be in compliance with Subsection (d)(1) by the date of commencement of oven operation.

(3) For an existing stationary source having a calculated annual emission rate pursuant to Subsection (f)(1) exceeding 80 percent of the emission rate specified in Subsection (b)(3), by August 7, 1994, submit to the Air Pollution Control Officer for approval a plan for emissions testing pursuant to Subsection (f)(2). Such plan shall provide for emissions testing to be completed, and test report(s) submitted, by December 7, 1994.

Stationary sources electing to comply with Subsections (d)(2) and (g)(1) shall not be subject to Subsection (g)(3).

TABLE 67.24

Yt*	Emission Factor**	Yt*	Emission Factor**	Yt*	Emission Factor**
1.0	0.8488	11.0	5.2947	21.0	9.7405
1.5	1.0711	11.5	5.5170	21.5	9.9628
2.0	1.2934	12.0	5.7393	22.0	10.1851
2.5	1.5157	12.5	5.9616	22.5	10.4074
3.0	1.7380	13.0	6.1839	23.0	10.6297
3.5	1.9603	13.5	6.4061	23.5	10.8520
4.0	2.1826	14.0	6.6284	24.0	11.0743
4.5	2.4049	14.5	6.8507	24.5	11.2966
5.0	2.6272	15.0	7.0730	25.0	11.5189
5.5	2.8495	15.5	7.2953	25.5	11.7412
6.0	3.0718	16.0	7.5176	26.0	11.9635
6.5	3.2941	16.5	7.7399	26.5	12.1857
7.0	3.5163	17.0	7.9622	27.0	12.4080
7.5	3.7386	17.5	8.1845	27.5	12.6303
8.0	3.9609	18.0	8.4068	28.0	12.8526
8.5	4.1832	18.5	8.6291	28.5	13.0749
9.0	4.4055	19.0	8.8514	29.0	13.2972
9.5	4.6278	19.5	9.0737	29.5	13.5195
10.0	4.8501	20.0	9.2959	30.0	13.7418
10.5	5.0724	20.5	9.5182		

*Yt = (Yeast Percentage) x (Fermentation Time)

If yeast is added in two steps,

Yt = (percentage of initial yeast addition) x (time from initial yeast addition to placement in oven)

+ (percentage of second yeast addition) x (time from second yeast addition to placement in oven)

** Emission Factor = pounds of VOC per ton of finished baked product