

COMMONWEALTH OF VIRGINIA
STATE AIR POLLUTION CONTROL BOARD
REGULATIONS FOR THE CONTROL AND ABATEMENT OF AIR POLLUTION

9 VAC 5 CHAPTER 40.
EXISTING STATIONARY SOURCES.

PART II.
Emission Standards.

ARTICLE 4.
Emission Standards for General Process Operations (Rule 4-4).

9 VAC 5-40-240.	Applicability and designation of affected facility. [Revised; SIP effective date is June 27, 2005]
9 VAC 5-40-250.	Definitions. [Revised; SIP effective date is February 18, 2011]
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9 VAC 5-40-310.	[Reserved; SIP effective date is February 18, 2011]
9 VAC 5-40-311.	[Reserved; SIP effective date is February 18, 2011]
9 VAC 5-40-320.	Standard for visible emissions.
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9 VAC 5-40-240. Applicability and designation of affected facility.

A. Except as provided in subsections C and D of this section, the affected facility to which the provisions of this article apply is each process operation, each process gas stream and each combustion installation.

B. The provisions of this article apply throughout the Commonwealth of Virginia.

C. Exempted from the provisions of this article are the following:

1. Process operations with a process weight rate capacity less than 100 pounds per hour.
2. Any combustion unit using solid fuel with a maximum heat input of less

than 350,000 Btu per hour.

3. Any combustion unit using liquid fuel with a maximum heat input of less than 1,000,000 Btu per hour.

4. Any combustion unit equipment unit using gaseous fuel with a maximum heat input of less than 10,000,000 Btu per hour.

D. The provisions of this article do not apply to a particular pollutant from an affected facility if the affected facility is subject to other emission standards in this chapter covering the same pollutant

9 VAC 5-40-250. Definitions.

A. For the purpose of these regulations and subsequent amendments or any orders issued by the board, the words or terms shall have the meaning given them in subsection C of this section.

B. As used in this article, all terms not defined here shall have the meaning given them in 9 VAC 5 Chapter 10 (9 VAC 5-10-10 et seq.), unless otherwise required by context.

C. Terms defined.

"Combustion installation" means all combustion units within a stationary source in operation prior to October 5, 1979.

"Combustion unit" means any type of stationary equipment in which solid, liquid or gaseous fuels and refuse are burned, including, but not limited to, furnaces, ovens, and kilns.

"Heat input" means the total gross calorific value of all fuels burned.

"Manufacturing operation" means any process operation or combination of physically connected dissimilar process operations which is operated to effect physical or chemical changes or both in an article.

"Materials handling equipment" means any equipment used as a part of a process operation or combination of process operations which does not effect a physical or chemical change in the material or in an article, such as, but not limited to, conveyors, elevators, feeders or weighers.

"Physically connected" means any combination of process operations connected by materials handling equipment and designed for simultaneous complementary operation.

"Process operation" means any method, form, action, operation or treatment of manufacturing or processing, including any storage or handling of materials or products before, during or after manufacturing or processing.

"Process unit" means any step in a manufacturing or process operation which results in the emission of pollutants to the atmosphere.

"Process weight" means total weight of all materials introduced into any process unit which may cause any emission of pollutants. Process weight includes solid fuels charged, but does not include liquid and gaseous fuels charged or combustion air for all fuels.

"Process weight rate" means a rate established as follows:

a. For continuous or long-run steady-state process operations, the total process weight for the entire period of continuous operation or for a typical portion of it, divided by the number of hours of such period or portion of it.

b. For cyclical or batch process operations, the total weight for a period that covers a complete operation or an integral number of cycles, divided by the hours of actual process operation during such a period.

"Rated capacity" means the capacity as stipulated in the purchase contract for the condition of 100% load, or such other capacities as mutually agreed to by the board and owner using good engineering judgment.

"Total capacity" means with reference to a combustion installation, the sum of the rated capacities (expressed as heat input) of all units of the installation which must be operated simultaneously under conditions or 100% use load.

9 VAC 5-40-260. Standard for particulate matter (AQCR 1-6).

A. No owner or other person shall cause or permit to be discharged into the atmosphere from any process unit any particulate emissions in excess of the limits in Table 4-4A.

TABLE 4-4A

Process Weight Rate		Maximum Allowable Emission Rate
Lb/Hr	Tons/Hr	Lb/Hr
100	0.05	0.551
200	0.10	0.877
400	0.20	1.40
600	0.30	1.83
800	0.40	2.22
1000	0.50	2.58
1500	0.75	3.38
2000	1.00	4.10
2500	1.25	4.76
3000	1.50	5.38

3500	1.75	5.96
4000	2.00	6.52
5000	2.50	7.58
6000	3.00	8.56
7000	3.50	9.49
8000	4.00	10.4
9000	4.50	11.2
10000	5.00	12.0
12000	6.00	13.6
16000	8.00	16.5
18000	9.00	17.9
20000	10.00	19.2
30000	15.00	25.2
40000	20.00	30.5
50000	25.00	35.4
60000	30.00	40.0
70000	35.00	41.3
80000	40.00	42.5
90000	45.00	43.6
100000	50.00	44.6
120000	60.00	46.3
140000	70.00	47.8
160000	80.00	49.1
200000	100.00	51.3
1000000	500.00	69.0
2000000	1000.00	77.6
6000000	3000.00	92.7

B. Except as provided in subsections C and D of this section, interpretation of the emission standard in subsection A of this section shall be in accordance with 9 VAC 5-40-22.

C. Interpolation of the data in Table 4-4A for process weight rates up to 60,000 lb/hr shall be accomplished by use of the following equation:

$$E = 4.10 P^{0.67}$$

where:

E = emission rate in lb/hr.

P = process weight rate in tons/hr.

D. Interpolation and extrapolation of the data for process weight rates in excess of 60,000 lb/hr shall be accomplished by use of the following equation:

$$E = 55.0 P^{0.11} - 40$$

where:

E = emission rate in lb/hr.

P = process weight rate in tons/hr.

9 VAC 5-40-270. Standard for particulate matter (AQCR 7).

A. No owner or other person shall cause or permit to be discharged into the atmosphere from any process unit any particulate emissions in excess of the limits in Table 4-4B.

TABLE 4-4B

Process Weight Rate		Maximum Allowable Emission Rate	
Lb/Hr	Tons/Hr	Lb/Hr	
100	0.050	0.46	
150	0.075	0.66	
200	0.100	0.85	
250	0.125	1.03	
300	0.150	1.20	
350	0.175	1.35	
400	0.200	1.50	
450	0.225	1.63	
500	0.250	1.77	
550	0.275	1.85	
600	0.300	2.01	
650	0.325	2.12	
700	0.350	2.24	
750	0.375	2.34	
800	0.400	2.43	
850	0.425	2.53	
900	0.450	2.62	
950	0.475	2.72	
1000	0.500	2.80	
1100	0.55	2.97	
1200	0.60	3.12	
1300	0.65	3.26	
1400	0.70	3.40	
1500	0.75	3.54	
1600	0.80	3.66	
1700	0.85	3.79	
1800	0.90	3.91	
1900	0.95	4.03	
2000	1.00	4.14	
2100	1.05	4.24	
2200	1.10	4.34	

2300	1.15	4.44
2400	1.20	4.55
2500	1.25	4.64
2600	1.30	4.74
2700	1.35	4.84
2800	1.40	4.92
2900	1.45	5.02
3000	1.50	5.10
3100	1.55	5.18
3200	1.60	5.27
3300	1.65	5.36
3400	1.70	5.44
3500	1.75	5.52
3600	1.80	5.61
3700	1.85	5.69
3800	1.90	5.77
3900	1.95	5.85
4000	2.00	5.93
4100	2.05	6.01
4200	2.10	6.08
4300	2.15	6.15
4400	2.20	6.22
4500	2.25	6.30
4600	2.30	6.37
4700	2.35	6.45
4800	2.40	6.52
4900	2.45	6.60
5000	2.50	6.67
5500	2.75	7.03
6000	3.00	7.37
6500	3.25	7.71
7000	3.50	8.05
7500	3.75	8.39
8000	4.00	8.71
8500	4.25	9.03
9000	4.50	9.36
9500	4.75	9.67
10000	5.00	10.00
11000	5.50	10.63
12000	6.00	11.28
13000	6.50	11.89
14000	7.00	12.50
15000	7.50	13.13
16000	8.00	13.74
17000	8.50	14.36
18000	9.00	14.97

19000	9.50	15.58
20000	10.00	16.19
30000	15.00	22.22
40000	20.00	28.30
50000	25.00	34.30
60000 or more		30.00 or more
		40.00

B. Interpretation of the emission standard in subsection A of this section shall be in accordance with 9 VAC 5-40-22.

9 VAC 5-40-280. Standard for sulfur dioxide.

A. Noncombustion process operations. No owner or other person shall cause or permit to be discharged into the atmosphere from any process operation any sulfur dioxide emissions in excess of an in-stack concentration of 2000 ppm by volume.

B. Combustion installations.

1. No owner or other person shall cause or permit to be discharged into the atmosphere from any combustion installation any sulfur dioxide emissions in excess of the following limits:

- a. $S = 2.64K$ (AQCR 1 through 6)
- b. $S = 1.06K$ (for liquid or gaseous fuels – AQCR 7)
- c. $S = 1.52K$ (for solid fuels – AQCR 7)

where:

S = allowable emission of sulfur dioxide expressed in lbs/hr.
K = actual heat input at total capacity expressed in Btu x 10⁶ per hour.

2. Where there is more than one unit in a combustion installation and where the installation can be shown, to the satisfaction of the board, to be in compliance when the installation is operating at total capacity, the installation will be deemed to still be in compliance when the installation is operated at reduced load or one or more units are shut down for maintenance or repair, provided that the same type of fuel with the same sulfur content, or an equivalent, is continued in use.

3. For installations in AQCR 7 at which different fossil fuels are burned simultaneously, whether in the same or different units, the allowable emissions shall be determined by proration using the following formula:

$$PS = K \left[\frac{X(1.06) + Y(1.52)}{X + Y} \right]$$

where:

- PS = prorated allowable emissions of sulfur dioxide expressed in lb/hr.
- X = percentage of actual heat input at total capacity derived from liquid or gaseous fuel.
- Y = percentage of actual heat input at total capacity derived from solid fuels.
- K = actual heat input at total capacity expressed in Btu x 10⁶ per hour.

9 VAC 5-40-290. [Not in SIP]

9 VAC 5-40-300. [Reserved]

9 VAC 5-40-310. [Reserved]

9 VAC 5-40-311. [Reserved]

9 VAC 5-40-320. Standard for visible emissions.

The provisions of Article 1 (9 VAC 5-40-60 et seq.) of 9 VAC 5 Chapter 40 (Emission Standards for Visible Emissions and Fugitive Dust/Emissions, Rule 4-1) apply.

9 VAC 5-40-330. Standard for fugitive dust/emissions.

The provisions of Article 1 (9 VAC 5-40-60 et seq.) of 9 VAC 5 Chapter 40 (Emission Standards for Visible Emissions and Fugitive Dust/Emissions, Rule 4-1) apply.

9 VAC 5-40-340. [Not in SIP]

9 VAC 5-40-350. [Not in SIP]

The provisions of Article 3 (9 VAC 5-40-160 et seq.) of 9 VAC 5 Chapter 40 (Emission Standards for Toxic Pollutants, Rule 4-3) apply.

9 VAC 5-40-360. Compliance.

The provisions of 9 VAC 5-40-20 (Compliance) apply.

9 VAC 5-40-370. Test methods and procedures.

The provisions of 9 VAC 5-40-30 (Emission Testing) apply.

9 VAC 5-40-380. Monitoring.

The provisions of 9 VAC 5-40-40 (Monitoring) apply.

9 VAC 5-40-390. Notification, records and reporting.

The provisions of 9 VAC 5-40-50 (Notification, Records and Reporting) apply.

9 VAC 5-40-400. Registration.

The provisions of 9 VAC 5-20-160 (Registration) apply.

9 VAC 5-40-410. Facility and control equipment maintenance or malfunction.

The provisions of 9 VAC 5-20-180 (Facility and Control Equipment Maintenance or Malfunction) apply.

9 VAC 5-40-420. Permits.

A permit may be required prior to beginning any of the activities specified below and the provisions of 9 VAC 5 Chapter 50 (9 VAC 5-50-10 et seq.) and 9 VAC 5 Chapter 80 (9 VAC 5-80-10 et seq.) may apply. Owners contemplating such action should contact the appropriate regional office for guidance.

- A. Construction of a facility.
- B. Reconstruction (replacement of more than half) of a facility.
- C. Modification (any physical change to equipment) of a facility.
- D. Relocation of a facility.
- E. Reactivation (restart-up) of a facility.
- F. Operation of a facility.