7011.0070 LISTED CONTROL EQUIPMENT AND CONTROL EQUIPMENT EFFICIENCIES.

Subpart 1. **Listed control equipment efficiencies.**

A. Unless a part 70, state, or general permit specifies a different control efficiency, the owner or operator of a stationary source must at all times attain at least the control efficiency listed in Table A for each piece of listed control equipment at the stationary source. The applicable control efficiency for a type of listed control equipment and a given pollutant is determined by whether air emissions are discharged to the control equipment through a hood that is certified as described in part 7011.0072, through a noncertified hood, or through a total enclosure. The control equipment efficiencies in Table A do not apply to any hazardous air pollutant.

B. The use of the control efficiencies listed in Table A under subpart 1a that are associated with a hood that is not certified is limited to the owner or operator of a stationary source that qualifies for a registration permit under parts 7007.1110 to 7007.1130.

Subp. 1a. **Exceptions where control efficiency disallowed.** The owner or operator may not use a control efficiency listed in Table A if:

A. the commissioner determines that the listed efficiency is inapplicable or is not representative of the source due to complexity of the process or source of emissions, lack of reliable data, presence of a pollutant or constituent such as organic or inorganic condensable particulate matter or an organic compound significantly more difficult to control than the overall VOC gas stream that makes the categorical efficiency nonrepresentative, or other site-specific conditions; or

B. the commissioner determines that alternate site-specific requirements are necessary to ensure compliance with applicable requirements or to protect human health or the environment.

CONTROL EQUIPMENT EFFICIENCY - TABLE A

ID#	CONTROL EQUIPMENT DESCRIPTION	POLLUTANT	CONTROL EFFICIENCY		
			TOTAL ENCLOSURE	HOOD: CERTIFIED	HOOD: NOT CERTIFIED

Table A - Section 1 - Equipment Designed Primarily for Particulate Matter Control

	PM CONTROL CATEGORY-CYCLONES means a device where airflow is forced to spin in a vortex through a tube				
007	Centrifugal Collector (cyclone)-high efficiency means: a cyclonic device with parameters stated in drawing 1 and table 1	PM PM-10	90% 78%	72% 62%	54% 46%
008	Centrifugal Collector (cyclone)-medium efficiency means: a cyclonic device with parameters stated in drawing 1 and table 1	PM PM-10	80% 60%	64% 48%	48% 36%
009	Centrifugal Collector (cyclone)-low efficiency means: a cyclonic device with parameters stated in drawing 1 and table 1	PM PM-10	25% 25%	20% 20%	15% 15%
076	Multiple Cyclone without Fly Ash Reinjection means: a cyclonic device with more than one tube where fly ash is not reinjected	PM PM-10	90% 72%	72% 58%	54% 43%
057, 085	Wet Cyclone Separator or Cyclonic Scrubbers means: a cyclonic device that sprays water into a cyclone	PM, PM-10	84%	68%	51%
010, 011, 012, 146	PM CONTROL CATEGORY-ELECTROSTATIC PRECIPITATORS means: a control device in which the incoming particulate matter receives an electrical charge and is then collected on a				

	surface with the opposite electrical charge				
	-assumed efficiency for boiler fly ash control	PM-10	40%	NA	NA
	-assumed efficiency for other applications	PM PM-10	98% 94%	78% 75%	59% 56%
	PM CONTROL CATEGORY - OTHER CONTROLS				
016, 017, 018	Fabric Filter means: a control device in which the incoming gas stream passes through a porous fabric filter forming a dust cake	PM PM-10	99% 93%	79% 74%	59% 56%
052	Spray Tower means: a control device in which the incoming gas stream passes through a chamber in which it contacts a liquid spray	PM PM-10	85% 84%	68% 68%	51% 51%
053	Venturi Scrubber means: a control device in which the incoming gas stream passes through a venturi into which a low pressure liquid is introduced	PM PM-10	94% 84%	76% 68%	57% 51%
055	Impingement Plate Scrubber means: a control device in which the incoming gas stream passes a liquid spray and is then directed at high velocity into a plate	PM PM-10	77% 77%	62% 62%	46% 46%
056, 113	Mechanically Aided Separator means: a device that relies on inertia for separating particles from a gas stream	PM PM-10	64% 5%	52% 4%	39% 3%

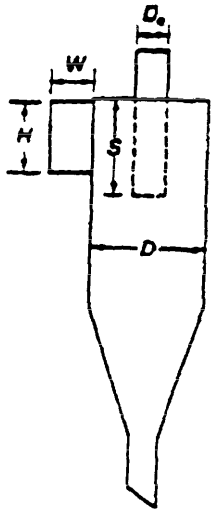
058, 086	Wall or Panel Filter means: a control device in which the exiting gas stream passes through a panel of coarse fibers. Other Wall Filters means removable panels for cleaning and replacement, or liquid curtains for particulate removal that provide little resistance to air flow	PM PM-10	85% 85%	68% 68%	51% 51%
101	HEPA Filter or ULPA Filter means: a high efficiency wall or panel filter designed for collection of submicron particles	PM PM-10	99.98% 99.98%	80% 80%	60% 60%
503	Charged Scrubber means: a control device in which electric power is used to precharge particulate matter in the gas stream as a means of increasing the scrubber's collection efficiency for fine particles	PM PM-10	94% 84%	76% 68%	57% 51%
517	Condensation Scrubber means: a control device in which steam is injected into a wet scrubber to create supersaturated conditions and promote condensation of water on fine particulate matter in the gas stream	PM PM-10	94% 84%	76% 68%	57% 51%

Table A - Section 2 - Equipment Designed for VOC Control (includes efficiencies for pollutants where there is a co-benefit of control)

VOC CONTROL
CATEGORY

019, 020, 109	Catalytic Afterburners (catalytic oxidation) means: a device used to reduce VOCs to the products of combustion through catalytic (use of a catalyst) oxidation in a combustion chamber	VOC	94%	76%	57%
		PM	62%	50%	37%
		PM-10	62%	50%	38%
		CO	94%	76%	57%
021, 022, 131, 133	Thermal Afterburners (thermal oxidation) means: a device used to reduce VOCs to the products of combustion through thermal (high temperature) oxidation in a combustion chamber	VOC	97%	78%	58%
		PM	62%	50%	37%
		PM-10	62%	50%	37%
		CO	97%	78%	58%
023	Flaring or Direct Combustor means: a device in which air, combustible organic waste gases, and supplementary fuel (if needed) react in the flame zone (e.g., at the flare tip) to destroy the VOCs	VOC	98%	79%	59%
		PM	61%	50%	37%
		PM-10	61%	50%	37%
		CO	98%	79%	59%

Drawing 1



SOURCE: Lapple, 1951.

Table 1

	Cyclone Type		
Ratio Dimensions	High Efficiency	Medium Efficiency	Low Efficiency
Height of inlet, H/D	≤0.44	>0.44 and <0.8	≥0.8
Width of inlet, W/D	≤0.2	>0.2 and <0.375	≥0.375
Diameter of gas exit, D_e/D	≤0.4	>0.4 and <0.75	≥0.75
Length of vortex finder, S/D	≤0.5	>0.5 and <0.875	≥0.875

If one or more of the "ratio dimensions," as listed in table 1, are in a different efficiency category (high, medium, low), then the lowest efficiency category shall be applied.

Subp. 1b. **Transition period.** Any owner or operator of a stationary source that used the control efficiencies in part 7011.0070 to qualify for its permit and is ineligible for its permit on or after January 1, 2007, shall apply for another type of permit on or before December 31, 2008.

Subp. 2. **Alternative control equipment and capture efficiencies; control efficiencies for hazardous air pollutants.** The owner or operator of a stationary source may use an alternative control equipment efficiency or capture efficiency or both for the control equipment listed in subpart 1, if the actual control efficiency or capture efficiency has been verified by a performance test approved by the commissioner under parts 7017.2001 to 7017.2060. The owner or operator of a stationary source may use a control equipment efficiency for listed control equipment for a hazardous air pollutant, if the control efficiency has been verified by a performance test approved by the commissioner under parts 7017.2001 to 7017.2060. The request for the alternative control efficiency or capture efficiency or both may be made through a permit application for a part 70, state, registration, capped, or general permit, or in a required notice or application submitted under parts 7007.1150 to 7007.1500. The owner or operator of a stationary source must attain at all times the alternative control efficiency or capture efficiency or both for a piece of listed control equipment at the stationary source established under this subpart.

Subp. 3. [Repealed, 32 SR 904]

Subp. 4. [Repealed, 32 SR 904]

Statutory Authority: *MS s 115.03; 116.07*

History: *19 SR 1345; 20 SR 2316; 22 SR 1237; 23 SR 2224; 29 SR 626; 32 SR 904; 41 SR 763*

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