

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 condensible 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 ENCLO- SURE	HOOD: CERTI- FIED	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	PM	90%	72%	54%
	(cyclone)-high efficiency	PM-10	78%	62%	46%
	means: a cyclonic device with parameters stated in drawing 1 and table 1				
008	Centrifugal Collector	PM	80%	64%	48%
	(cyclone)-medium efficiency	PM-10	60%	48%	36%
	means: a cyclonic device with parameters stated in drawing 1 and table 1				
009	Centrifugal Collector	PM	25%	20%	15%
	(cyclone)-low efficiency	PM-10	25%	20%	15%
	means: a cyclonic device with parameters stated in drawing 1 and table 1				
076	Multiple Cyclone without Fly Ash Reinjection	PM	90%	72%	54%
	means: a cyclonic device with more than one tube where fly ash is not reinjected	PM-10	72%	58%	43%
057,	Wet Cyclone Separator or	PM,	84%	68%	51%
085	Cyclonic Scrubbers means: a cyclonic device that sprays water into a cyclone	PM-10			
010,	PM CONTROL CATEGORY-				
011,	ELECTROSTATIC				
012,	PRECIPITATORS means:				
128,	a control device in which the				
146	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
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-assumed efficiency for other applications	PM	98%	78%	59%
	PM-10	94%	75%	56%

PM CONTROL CATEGORY

- OTHER CONTROLS

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

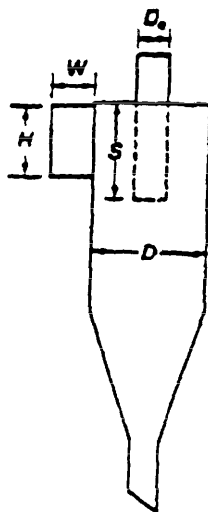
058	Wall or Panel Filter means: a control device in which the exiting gas stream passes through a panel of coarse fibers. Other Wall Filters means removable panels for cleaning and replacement, or liquid curtains for particulate removal that provide little resistance to air flow	PM PM-10	85% 85%	68% 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,	Catalytic Afterburners	VOC	94%	76%	57%
020,	(catalytic oxidation) means: a	PM	62%	50%	37%
109,	device used to reduce VOCs	PM-10	62%	50%	38%
116,	to the products of combustion	CO	94%	76%	57%
509	through catalytic (use of a catalyst) oxidation in a combustion chamber				
021,	Thermal Afterburners (thermal	VOC	97%	78%	58%
022,	oxidation) means: a device	PM	62%	50%	37%
131,	used to reduce VOCs to the	PM-10	62%	50%	37%
133,	products of combustion	CO	97%	78%	58%
510	through thermal (high temperature) oxidation in a combustion chamber				
023	Flaring or Direct Combustor	VOC	98%	79%	59%
	means: a device in which air,	PM	61%	50%	37%
	combustible organic waste	PM-10	61%	50%	37%
	gases, and supplementary fuel	CO	98%	79%	59%
	(if needed) react in the flame zone (e.g., at the flare tip) to destroy the VOCs				

Drawing 1



SOURCE: Lapple, 1951.

Table 1

Ratio Dimensions	Cyclone Type		
	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 116.07*

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

Published Electronically: *October 1, 2014*