

**W1.96**

**Vent Volumes and Dust Loadings**

data collected from publications mentioned below

Sr No	Machine/ Location	type	A- Industrial Ventilation		B - Duda		C - Otto Labahn		temp °c
			vent volume m <sup>3</sup> /hr	dust loading gms/nm <sup>3</sup>	vent volume m <sup>3</sup> /hr	dust loading gms/nm <sup>3</sup>	vent volume m <sup>3</sup> /hr	dust loading gms/nm <sup>3</sup>	
1	Crushers	Jaw		25-45		15-25			
		Hammer feed end	2700/m <sup>2</sup> feed hood opening		3600	15-20 product 2-5,	80-100 m <sup>3</sup> /hr/ ton of product	5-15,	
		discharge end	1.5* air flow surge			20-40 powder			
		Impact Gyratory/ roll ring roll				150-200 /ton product 60-80 /ton product	10-20,  0.5-2		
2	Grinding mills	airswept			120-150nm <sup>3</sup> per kg ground matl.	300-500	0.8-1.5/kg	30-800g	70-150
		elevator raw grinding	8.5 /h.p.motor		240* mill vol.	20-80			

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		coal		30-50	90-120 nm <sup>3</sup> /kg product matl.	100-120	0.8-1.5/kg product	30-800g	
		cement open cement closd roller	13//h.p. motor	150-250 200-400	240*mill vol  90-150nm <sup>3</sup> per kg ground matl.	20-80	0.2- 0.8/kg	30-400g	60-120
		ring ball	0.5-0.6/m/sec c.s.area mill take larger value						
		auxiliaries		20-30					
3	Dryers	rotary			0.8-2 nm <sup>3</sup> /kg dry matr	40-90 rotary 50-250 rapid	0.8-2 0.5-1.5 rapid	20-60g 20-150g	70-150 70-150
		fluid bed flash							
4	Air Separators	conventional dia meters		150-280	0.85-1nm <sup>3</sup> per kg	80-120			
		4.33	31300						
		4.87	44000						
		5.49	59500						
		6.1	74000						

Sr No	Machine/ Location	6.7	83300	A - Industrial Ventilation		B - Duda		C - Otto Labahn		temp °c
		7.3 type	92700	vent volume m <sup>3</sup> /hr	dust loading gms/nm <sup>3</sup>	vent volume m <sup>3</sup> /hr	dust loading gms/nm <sup>3</sup>	vent volume m <sup>3</sup> /hr	dust loading gms/nm <sup>3</sup>	
5	Conveyors	belt	3600 m <sup>3</sup> /hr/m <sup>2</sup> opening ?		2400 m <sup>3</sup> /hr/m <sup>2</sup> 15-20 dry matl. plus transfer pt			1500-2400	5-20g	
		speed <1 m/s	1950 m <sup>3</sup> /hr/m belt width		1800 m <sup>3</sup> /hr/m belt width			belt 600-800 mm wide		
		> 1 m/s	2800m <sup>3</sup> /hr/m belt width		3600 m <sup>3</sup> /hr/m belt width			2100-3000		
		for fall > 1 m additional	1200 belt<1m 1700 belt>1m wide					belt1000-1200 mm wide		
	bucket elevator	1800m <sup>3</sup> /hr/m <sup>2</sup> casing sect for height>10 m,exhaust at top & boot		1800 m <sup>3</sup> /hr/m <sup>2</sup> 20-30 raw mix <10 clinker			2000 m <sup>3</sup> /hr/m <sup>2</sup> speed, 1m/s	5-30g		
				2 vents			2800 m <sup>3</sup> /hr/m <sup>2</sup> speed>1m/s	5-30g		
		screw	1950 m <sup>3</sup> /hr/m dia of screw correct for fall vent feed pt.							

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		>150	1.5* f.a.vol. 1.5* f.a.vol. 1.75* f.a.vol.						
		dense phase					2-4*f.a.vol	150-200	
		air lift					2*f.a.d	150-200	
		airslide	1*f.a.vol.		1.2*f.a.vol.	30-50	120 m <sup>2</sup> + 35% for hot matl	30-50	
		drag chain							
6	Screens	vibrating	3600 m <sup>3</sup> /hr/m <sup>2</sup> thru hood opening min. 900 m <sup>3</sup> /hr/m <sup>2</sup> screen area			15-20	500-1200/m <sup>2</sup>	20-May	
		rotary	1800 m <sup>3</sup> /hr/m <sup>2</sup> circular area min 7200/m <sup>2</sup> enclosure		900 1800 m <sup>3</sup> /hr/m <sup>2</sup> dis. Opng				

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				35-60					
7	Kilns	wet			2.8-3.5nm <sup>3</sup> per kg	upto 15	3.2-4.2nm <sup>3</sup> per kg	2-15g	130-180
		semi dry dry		45-70 direct 90-150 indirect thru raw mill	1.4-2.3nm <sup>3</sup> per kg	long upto 30 preheater 50-75	1.8-2.2 1.5-1.8nm <sup>3</sup> per kg	1-4g 15-40g	90-150 250-360
	Coolers	rotary planetary							
		grate		15-25	2.5nm <sup>3</sup> /kg	10- 15,	0.7-1.8	0.7-10g	200-400
9	Silos	aeration blending cement feed	1*f.a.vol 1*f.a.vol	35-60 35-60	1.2*f.a.vol 1.2*f.a.vol	30-50 30-50	1*f.a.vol	5-15g	
10	Bins	closed top	k* vol. Mat entng bin min. 3600 m <sup>3</sup> /hr/m <sup>2</sup>		4500 m <sup>3</sup> /hr/m <sup>2</sup> bin c. section	15-May	3.5*f.a.vol		

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11	Packing Machine	60tph 100tph 200tph	8100	20-30	2100m <sup>3</sup> /hr/ spout add 180 m <sup>3</sup> /hr per spoutfor surge bin	20-30	2000 m <sup>3</sup> /hr/ spout	5-30g	
12	Bulk handling				180*container vol.	40-60			
13	Dumping	dumper open storage dumper rail car				upto 5			
					90000 from pits 30-50 ton loads	10-20g	3500	10-60g	
		road vehilce ship					3500 10000	10-60g 10-60g	
		floor or bench dumping	2700-3600 m <sup>3</sup> /hr/m <sup>2</sup> grate area		3600 m <sup>3</sup> /hr/m <sup>2</sup>		1800-2000 m <sup>3</sup> /hr per m <sup>2</sup>	5-20g	
		enclosed sides and top	2700 m <sup>3</sup> /hr/m <sup>2</sup> net face area						

f.a. = free air  
f.a.d. = free air delivered

**For General Guidance only**