

Table 3.... A Guide to Ventilation Rates for Typical Industrial Equipment

State or Local Regulations Should be Consulted and Followed Where Higher Ventilation Rates are Specified

Operation	Ventilation		Usual Transport Velocity fpm	Remarks and References
	Type of Hood	Air Flow		
Abrasive blast rooms (sand, grit, or shot)	Tight enclosure with air inlets (usually in roof)	60-100 fpm downdraft (long rooms of tunnel proportions 100 fpm crossdraft)	3500	Ref. 8. Many codes specify minimum downdraft of 80 fpm
Abrasive-blast cabinets	Tight enclosure with access openings	20 air changes per minute but not less than 500 fpm through all openings	3500	Ref. 14
Asbestos: Carding Spool winding	Enclosure Local Hoods	800 cfm per machine 50 cfm per spool	3000 3000	Ref. 2, 16, 17. See references for details and other operations
Bagging: Open Bag Top	Booth or enclosure (provide spillage hopper)	Paper bags—100 cfm per sq ft open area	3500	Ref. 18
		Cloth bags—200 cfm per sq ft open area	3500	
Barrels—Drums (filling or removing material by scoop)	Local Hood	100 cfm sq ft of container cross-section	3500	Ref. 15, 19. Hood with 1-in. slot extending 120 to 180 deg container. Does not confine spillage. Confine spillage—also recommended for container up-setting.
	Booth	100 fpm at face	3500	
Belt conveyors	Hood at transfer point	Belt speeds less than 200 fpm—350 cfm per foot of belt width, but not less than 150 fpm through open area. Belt speeds over 200 fpm—500 cfm per foot of belt width but not less than 200 fpm through open area	3500	Ref. 18, 20
Bins (closed top)	Connect to bin top away from feed point	150-200 fpm through open area at feed points	3500	Ref. 19, 20
Bucket elevators	Tight casing required	10 cfm per sq ft of elevator casing cross-section	3500	Ref. 19
Brick cutting and sizing (abrasive cut-off wheel used dry)	Local Hood	500 cfm	3500	Ref. 7, 19. For portable operations. Control not as effective as booth
	Booth with saw at face of booth	150 fpm at face	3500	
Ceramics Dry pan Dry press	Enclosure	200 fpm through all openings	3500	Ref. 19, 21, 22 Automatic feed Manual feed Manual feed
	Local at die	500 cfm	3500	
	Local at die	500 cfm	3500	
	At supply bin	500 cfm	3500	
Aerographing Fettling, brushing, sagger filling, and unload	Booth	100 fpm (face)	3500	3500
	Downdraft or side hood	100-150 cfm per sq ft of plan area of dust producing operation	3500	
Cooling Tunnels (foundry molds)	Enclosure	75-100 cfm per running foot of enclosure	3500	Ref. 20
Crushers and grinders	Enclosure	200 fpm through openings	3500	Ref. 18, 23
Furnaces Stationary melting pots for nonferrous Tilting or rocking melting for non-ferrous Electric Arc for Steel	Enclosure	100-200 fpm at hood opening	1500-2000	Ref. 11, 15, 22, 24, 25 Use higher ventilation rate for toxic fumes Ventilation rate can be materially reduced with more complete enclosures General ventilation of melting room may be substituted but involves greatly increased ventilation rate
	Canopy	3000-6000 cfm	1500-2000	
	Hood attached to roof ring	2500 cfm per ton charged	2500-3500	

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Furnaces Forge (hand)	Canopy	200 fpm at face	1500	Ref. 24
Garage (tail pipe at servicing location)	Local hood slipped over tail pipe	100 cfm thru 3-in. flexible duct for autos up to 200 hp 200 cfm thru 4-in. flexible duct for trucks and autos above 200 hp 400 cfm thru 4½-in. flexible duct for Diesel engines	2000	Ref. 15
Granite cutting and finishing Pneumatic hand tools Surfacing machine	Local hood	500 cfm	5500-6000	Ref. 26, 27 Typical hood 3 x 8 in. opening with 3-in. flange Hood surrounds tool
	Local hood	500 cfm for tools up to 2½-in. diameter 1000 cfm for 2½- to 2½-in. diameter	5500-6000	
Grinders Polishers, buffers, etc. Portable	Standard wheel hood Downdraft bench	See Table 5 Bench type, 2-400 cfm per sq ft of exhaust grille but not less than 150 cfm per sq ft of plan working area.	3500	Ref. 22, 28 Ref. 15, 19, 22, 29
	Booth Booth	100 fpm at face 100-200 fpm indraft through opening in booth face	3500 3000	
Kitchen range	Canopy	100 fpm at hood face	1500-1800	Provide drip gutter on all interior vertical walls to catch condensed grease. Ref. 30
Laboratory hood (provide with door)	Booth type	50-100 fpm		Ref. 24, 31. Air supply location very critical
Metalizing	Local hood	200 fpm at hood face	3500	Ref. 15. Not recommended for toxic materials Use higher ventilation rates for toxic materials
	Booth	125-200 fpm at booth face	3000	
Mixers	Enclosure	100-200 fpm through feed and inspection openings	3000-3500	Ref. 19, 22
Motion picture projector (carbon arc)	Enclosure	12-100 cfm (for fume and gas removal) directly exhausted from projector housing		Ref. 31. 1000-1500 cfm or 20-30 air changes per hour for heat removal
Pharmaceuticals Blenders	Fully enclosed	100 to 200 fpm through opening	2500-3500	Exhaust required only when filling or emptying Flexible exhaust hood connection extended into pans. Feed opening covered to greatest possible extent. Centrifuge to be provided with cover for 50-75 percent of opening
Coating pans	Hood	120 cfm exh 24-in. dia pan 60 cfm supply direct to pan Differential 60 cfm	3000	
Centrifuges	Enclosure	250-300 fpm through opening	1500-2000	
Hammer mills Oscillators Shakers Mixers	Local hood	200 fpm but not less than 50 cfm		
Process kettles and tanks	Hood	Not less than 75 cfm per sq ft of plan area	2500-3500	Hood with slot at each end of mixer Ref. 33. Use higher ventilation rate when contents are being heated
	Enclosure	100-250 fpm through opening or manhole	1500-2000	