

## EXHAUST SYSTEMS, GENERAL & COMFORT VENTILATION

TABLE 28-N  
EXHAUST HOODS FOR GRINDER AND CUTOFF WHEELS

| Wheel                   |             | Good Enclosure      |       | Poor Enclosure      |       |
|-------------------------|-------------|---------------------|-------|---------------------|-------|
| Diameter (in.)          | Width (in.) | Duct diameter (in.) | Cfm   | Duct diameter (in.) | Cfm   |
| Up to 9 . . . . .       | 1½          | 3                   | 220   | 3½                  | 330   |
| Over 9 to 16 . . . . .  | 2           | 4                   | 390   | 5                   | 600   |
| Over 16 to 19 . . . . . | 3           | 4½                  | 500   | 5½                  | 750   |
| Over 19 to 24 . . . . . | 4           | 5                   | 610   | 6                   | 920   |
| Over 24 to 30 . . . . . | 5           | 6                   | 880   | 7                   | 1,300 |
| Over 30 to 36 . . . . . | 6           | 7                   | 1,200 | 8                   | 1,600 |

Note: These figures should be considered adequate only for nontoxic metals, such as gray iron. Where toxic metals or alloys are encountered, these types of hoods are not adequate for control.  
From American Standards Association, 10 East 40th St., New York City  
*Grinding, Polishing, and Buffing Equipment Sanitation* 243.

mills, sandblast cabinets, sandblast rooms, and automatic cleaning machines, the required air volumes and duct sizes are specified.\*

### Grinding operations

Health, comfort, and good housekeeping demand that grinding, buffing, and polishing equipment be equipped with local exhaust systems. Many state codes require them, and where such codes exist, the safety director should obtain a copy. Its regulations should be met.

Hoods on grinding and cutting wheels serve a dual purpose: they protect the operator from hazards of bursting wheels, and they provide for removal of dust and dirt generated. Most such wheels today are made of artificial abrasives containing no free silica in order to eliminate silicosis hazard. There is no hazard from iron or steel dust.

Uncleaned castings, on the other hand, may have mold sand adhering to them, which can be ground to dust, causing a silicosis hazard. In addition, grinding of some alloys, such as high-manganese steel, cemented tungsten-tipped tools, and spark-resistant tools, presents other occupational disease hazards.

Furthermore, all grinding operations need local exhaust hoods to remove the dust and grindings that would otherwise cause poor housekeeping in the shop.

The exhaust hoods must have sufficient structural strength, and must enclose the wheel sufficiently. Details are given in state codes, industry codes, and codes of the American Standards Association.

The hoods for a floor stand, pedestal, or bench grinder should have an adjustable tongue, which can be placed within ½ in. of the periphery of the wheel at all times. This is an important adjunct, because it tends to "peel" off the dust as it is carried around the wheel in the air stream set up by the wheel's rotation. No more than 25 per cent of the wheel should be exposed.

Minimum velocity in the branch ducts should be 4,500 fpm, and in the main duct, 3,500 fpm. The branch duct should attach to the hood at a tapered connecting piece. It should be inclined in the direction that material is thrown off the wheel. Chip trays may be provided if desired for heavy grinding.

Exhaust requirements of American Standard code Z43, *Grinding, Polishing, and Buffing Equipment Sanitation*, are given in Table 28-N.

\*American Foundrymen's Society, Des Plaines, Ill. *Engineering Manual for Control of In-Plant Environment in Foundries*, 1956.