

EXHAUST SYSTEMS, GENERAL & COMFORT VENTILATION

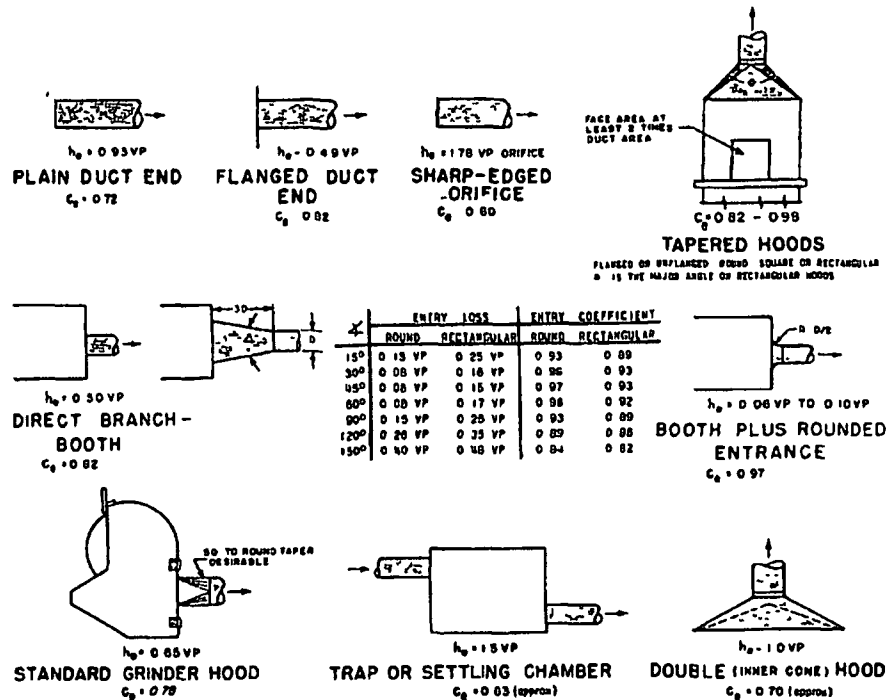


Fig. 28-6. Entry loss factor (F) and entry coefficient (C_e) for hoods of various design. Entry loss (h_e) in inches water gauge equals entry loss factor times the velocity pressure in the duct ($h_e = (F) (VP)$). Air volume (Q) in cfm equals 4,005 times the cross section at the throat in square feet times the coefficient of entry times the square root of the static pressure at throat in inches water gauge $Q = 4005A_e SP$. With tapered hoods (upper right illustration), F varies with the major angle θ , is lowest at about 40 deg.

leased, the flow of convection currents should be toward the hood. If heavy particles are thrown off, as in rough grinding, their trajectory should be toward the hood intake. But a caution should be noted the air-borne dust which is of health significance is made up of particles that are extremely small, 0.1 to perhaps 5 microns in diameter (A micron is 1/25,000 in.) It has been shown by Hatch^o and others that such particles, even if impelled at extremely high initial velocities, travel a very short distance in air—a matter of a few inches at the most.

Unlike chips or large particles, they cannot be thrown into a hood any considerable distance away. The hood acts by confining a mass air movement into it which carries the dust along.

For even distribution of the air flow through a large hood, flow may be con-

^oT. F. Hatch. "Dust Control, Present and Future Design Considerations" *Mechanical Engineering*, 57:154, 1935