from experience

Sweeping Dust Under the Hood: Local Exhaust Ventilation

Effective collection and control of dust and vapors within a food plant is accomplished by "capturing" the dust - or vapor-laden air in an opposing air stream, which is then drawn into a Local Exhaust Ventilation (LEV) hood. The air flow toward the opening of the hood must be sufficiently high to generate the capture velocity necessary to overcome gravity, and any opposing air currents created by the process or present in the surrounding room. Hixson uses the information in the table below to assist in capture velocity selection and the design of LEV hoods:

Range of Capture Velocities*

Condition of Dispersion	Food Plant Example	Typical Capture Velocity (Ft/Min)
Released with practically no velocity into quiet air.	Evaporation from tanks, powder degassing or de-aeration.	50 - 100
Released at low velocity into moderately still air.	Powdered coating spray or sprinkle systems; bag dumping; container filling; low-speed conveyor transfers.	100 - 200
Active generation into a zone of rapid air motion.	Rapid bag dumping; barrel filling; conveyor loading; sifters.	200 - 500
Released at high initial velocity into a zone of very rapid air motion.	Dry ingredient blending or tumbling; sugar or salt de-lumping or sifting; block ingredient grinding.	500 - 2000

For each of the conditions above, a range of capture velocities is shown. The proper value depends upon several design parameters as shown below:

	CAPTURE VELOCITY	
Design Parameter	**Use Low End When...**	**Use High End When...**
Room Air Currents	Minimal, favorable for capture	High, air disturbances present
Toxicity	Low, nuisance	High
Dust Production	Low or intermittent	High or frequently generated
LEV Hood Size	Large hood / air mass	Small hood for local control

**Reference: The American Conference of Governmental Industrial Hygienists. Industrial Ventilation: A Manual of Recommended Practice, 29th edition. 2016.*

experience in brief

As discussed in the first paragraph, "Capture" is one of the 4 C's of dust collection: Contain, Capture, Convey, Collect. For more information on mitigating combustible hazards from dust collection, request the July 2013 From Experience article, "Mitigating Dust Collection Hazards."

continuing education

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2018 AHR/ASHRAE Expo
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January 21-23, 2018

Boiler University 201
Louisville, KY
January 9-11, 2018

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