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TABLETS & CAPSULES

Solid Dose Digest

Insights, advice, and industry news about formulating, manufacturing, and packaging solid dosage forms brought to you by Tablets & Capsules magazine

Ask an Expert

Tablet dedusting

Q: How can a tablet deduster improve my tableting process?

A: [Andre Petric](#), [Kraemer US](#), says:



The tablet deduster, which is located downstream from a tablet press, has a very important but sometimes overlooked role in the tablet manufacturing process. During compression of formulations into pharmaceutical and nutraceutical tablets, dust sometimes adheres to tablets as they exit the tablet press. Also, powder in the gap between the punch tip and the die bore wall can form burrs, also called flashing, around tablet edges during compression, which a deduster helps to remove.

Dust removal

Tablet-deduster inefficiency often is the cause of dust finding its way into downstream processes. A properly working deduster not only gently conveys tablets at the same speed as the tablet press output but also cleans them properly.

Deduster suppliers offer three basic types of tablet dedusters: horizontal, downward conveying, and upward conveying. They all consist of a perforated or screened surface that either vibrates or oscillates, shaking the tablets and dislodging the dust from their surfaces as it conveys them forward, while a dust collection system provides a vacuum to draw away the dust.

To effectively clean the tablets, the deduster must be operating properly, and the dust collection system must have sufficient air volume and pressure.

Improved operations

Both formulation dust and burrs can lead to unwanted dust in downstream processing and packaging equipment. Removing dust as the tablets leave the tablet press permits these operations to work more efficiently, with less maintenance.

Improved tablet coating. Removing dust from tablets results in improved quality and gloss for tablet coatings. Burr removal also improves coating quality, provides tablets with a smoother appearance, and makes the tablets easier and less irritating for patients to swallow.

Reduced dust hazards. Dust in the tableting room can be hazardous to operators' health if it becomes airborne. Airborne dust can also cause housekeeping problems in the tableting room, requiring increased cleaning. If the area around the press is too dusty, operators can track dust into hallways, leading to cross contamination, requiring further cleaning, and compelling workers to wear additional personal protective equipment (PPE). Dust can also become airborne when operators dump tablets into downstream processes.

May 11, 2020



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Equipment operation. Dust causes numerous issues with packaging equipment, interfering with sensors and dosing mechanisms, and causing machine malfunctions. These malfunctions can reduce efficiency, increase downtime and maintenance, and result in rejected drug product. Dust can also cause bottle and blister package seals to fail and labels to not adhere correctly.

Metal detection. Vertical, or upward-conveying, tablet dedusters can facilitate the use of metal detection at the tablet press, separating tablets containing stray metal particles from the product stream at the source. Metal-detector sensitivity is a function of the distance between the tablet passing through the detector and the metal detector's opening, the aperture. The bigger the aperture is, the farther away the tablet is from the metal detector. Metal detectors with large apertures may not detect small metal pieces in a tablet, such as pieces of ferrous metal with 0.3-millimeter diameters.

A metal detector with a 1.5-inch aperture at the tablet press will be much more sensitive than one at another location, such as at packaging, where the opening might be 5 inches or larger. At the tablet press, the detector can catch all contaminated tablets, but at packaging, the sensor is too far away to detect a small piece of metal and may detect only large contaminants, such as a bolt in a bottle.

Metal particles in tablets can be a sign of a tablet tooling problem that you should address before the process discards too many tablets. By addressing the problem early and at the source, you can minimize product loss, improve press performance, and prevent a catastrophic failure requiring press downtime.

Material handling. Vertical dedusters not only dedust tablets but also convey them upward, allowing you to use larger tablet collection containers, providing better ergonomics for operators and easier, more efficient material handling, storage, and loading into downstream processes.

Andre Petric is president at [Kraemer US](#), Allendale, NJ. The company manufactures tablet dedusters.

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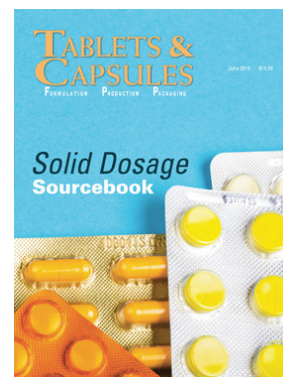
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