

SUPPLIERS' TIPS

My mixing process requires sanitation between batches. What type of cleaning process should I use?

If your process requires cleaning and sanitation between each or most batches, I'd recommend a wash-in-place (WIP) system. The following step-by-step list is a typical cleaning sequence for a horizontal mixer using a WIP system:

1. Machine WIP preparation

WIP nozzles and hoses as well as a drain should be connected to your mixer. If applicable, the mixer's main shaft and chopper seals should be switched from gas to water purge.

2. Filter and filter housing cleaning

Filters should be removed for separate cleaning after being wetted. If applicable, the filter housing should be cleaned inside by WIP nozzles. If the machine is designed with a simple bag filter arrangement and no filter housing, the bag filter should be removed and replaced by a special venting lid.

3. Feeding port(s) cleaning

The feeding port(s) and feeding flap(s) should be cleaned by WIP nozzles, which can be either permanently installed in the port or placed in a cleaning lid that's installed during the preparation stage in step 1. To ensure a proper cleaning of both sides of the feeding flap, operate the flap in an interval mode during cleaning, so the flap opens and closes during washdown.

4. Mixer drum cleaning

The cleaning media used in steps 2 and 3 should be collected in the mixer's drum to no more than 30 to 40 percent of the drum's capacity. The mixing elements should be rotated forward and backward in interval mode, which cleans the mixing drum very effectively. Runtime depends on material solubility and the amount of caking, if any, on the interior mixing drum and mixing elements. Once this process is complete, wastewater from the drum should be drained through the discharge port.

5. Discharge port cleaning

Discharge port(s) and flap(s) are cleaned by WIP nozzles. Again, the flap should be operated in interval mode for full cleaning of all material-contact surfaces.

Steps 3 through 5 are usually carried out first with cold tap water as a prewash and then one or more times with warm tap water and alkaline or acid detergent. Solvent-based cleaners might be necessary if your material isn't water soluble. Depending on your material's chemical characteristics and solubility and the severity of any material caking on the mixer's interior surfaces, further cleaning cycles may be needed. After the final cleaning cycle, steps 3 through 5 are repeated with purified or clean process water, and conductivity tests can be performed to verify cleaning results.

After a hot water rinse, all WIP lines are blown dry and the machine is allowed to dry through evaporation, by blowing hot air through the machine, by using a heated jacket, or by using a combination of these methods. Seals for the main shaft and chopper(s) are switched back from water to gas purge. Finally, the machine is inspected and returned to operational configuration.

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Equipment suppliers are a valuable source of information about equipment and processes. In light of this, each month we ask suppliers a question of concern to our readers. Answers reflect the suppliers' general expertise and don't promote the suppliers' equipment. If you have a question you'd like suppliers to answer, send it to Kayla Carrigan, Associate Editor, Powder and Bulk Engineering, 1155 Northland Drive, St. Paul, MN 55120; fax 651-287-5650 (kcarrigan@cscpub.com).