

FOUR SIMPLE WAYS TO EVALUATE THE CHARACTERISTICS OF DUST

THAT WILL IMPACT YOUR DUST COLLECTOR SELECTION

As a dust collector owner, you can utilize some very simple field examination techniques to assist you in characterizing the dust samples you contend with in your work environment. These techniques will allow you to better understand the characteristics of the dusts and will enable you to more competently evaluate your current or future dust collection methods.

The field evaluation techniques are as follows:

- Fines Test
- Paper Pleat Test
- Paper Plate Test
- Hygroscopic Test

Before performing any test, check the Material Safety Data Sheets (MSDS) for risks and proper handling considerations associated with any dust you are handling.

THE FINES TEST



The Fines Test provides some idea of the size or “fineness” of a dust, sometimes referred to as the “fingerprint” or “flick” test. To perform the “Fines Test”, simply form a fingerprint into the sample. If the dust remains in the print on your finger, the dust is typically small, generally less than 10 microns. A “flick test” involves ‘flicking’ the bottom of a sealed container holding a sample of the dust. If the flick to the lower corner of the container creates a plume at the top of the container, the dust is relatively fine and a more conservative filtration velocity may be appropriate.

THE PAPER PLEAT TEST



The Paper Pleat Test provides an indication of the agglomerative nature of the dust, or the tendency of the dust to “nest together.” This characteristic affects the dust’s ability to pulse out of the pleats of a cartridge filter. This test is performed by folding the dust sample into a piece of paper. The folded piece of paper represents the pleat of a cartridge filter. If there is no clumping when the pleat is gently opened, the dust is likely not very agglomerative and should easily pulse out of the cartridge pleats. However, if clumping is observed, the dust is likely agglomerative and may nest within the pleats of a cartridge filter.

THE PAPER PLATE TEST



The Paper Plate Test will give some indication of oil content in a dust sample. To perform the test, place a dust sample on a paper plate or paper towel and let it sit for a period of time - overnight if possible. If an oil ring forms around the dust, oil is definitely present and there may be challenges using a dry barrier dust collector. Because oil saturation in media filters can eventually result in plugging the media, oleophobic media and/or oil adsorbent filtration aids may be necessary to increase the time before oil saturation of the media results in the need to replace the filter media due to plugging.

THE HYGROSCOPIC TEST



The Hygroscopic Test can provide some indication as to whether or not the dust is going to take on moisture and become difficult to handle in a dust collector. To perform this test, place the sample of the dust in a small open container. Fill an additional container with water and place both open containers in a covered pan near a radiator or other heat source overnight. When examined the next day, a moist or tacky feeling or a crusty appearance to the dust suggest the dust is reactive to moisture and care should be taken. The airstream conditions should be controlled and monitored to ensure moisture is not present for the dust to absorb.