

9443.1993(06)

United States Environmental Protection Agency
Washington, D.C. 20460
Office of Solid Waste and Emergency Response

October 12, 1993

Dr. Ed L. Schrader
Associate Professor
Director of Sorbent Laboratory
Millsaps College
1701 North State Street
Jackson, Mississippi 39210-0001

SUBJECT: Paint Filter Liquids Test Technical Guidance

Dear Dr. Schrader:

Thank you for your letter of February 4, 1993, and our subsequent discussions in which you raised questions about the applicability of the Paint Filter Liquids Test (PFT, Method 9095) to the sorbent industry. The test determines if a free liquid exists for the purposes of the Liquids in Landfills Rule.

Five items in particular seem to be of concern to sorbent manufacturers, users, and landfill operators in complying with the Liquids in Landfills Rule: (1) the light bulk density of some sorbents, which causes them to overflow the filter, (2) the need for clarifying that sorbents and sorbates are to be uniformly mixed prior to placement in the paint filter, (3) the size and shape of sorbent pillows, socks, and pads, which prevents them from fitting into the paint filter without modification, (4) the need to standardize filter paper specifications, and (5) the need to test each sorbate/sorbent combination.

With regard to the first item, if a 100-g sample of sorbent is of such low density that it would overflow the filter (potentially causing liquids to flow between the filter and funnel, yielding a false positive), then two options exist. First, the procedure specifies a "100-ml or 100-g representative sample," so a 100-ml rather than a 100-g sample may be used, if the material can be measured volumetrically (i.e., lacks major air spaces or voids).

Second, the sides of the filter can be extended upward by taping a similar paper to the inside of the filter paper (so any flow will stay within the filter) and above the mesh. In either case, settling the sample into the paint filter may be facilitated by lightly tapping the side of the filter as it is being filled.

Regarding the second item, liquid should not be poured over the sorbent after the sorbent has been placed in the paint filter. The sorbent and liquid material should be thoroughly and uniformly mixed and then a representative sample placed in the filter.

Regarding the third item, the PFT does not address how material such as sorbent pillows, socks, pads, sheets, and rolls should be placed into the paint filter. How such items are placed into the filter could result in significant variations in test results. As this is a gravity test with no external applied pressure, it is not intended for sorbent pillows, socks, etc. to be squeezed or compressed to fit into the paint filter.

In order to assure uniformity and standardization of the test, a 100-g or 100-ml sample of sorbent pad, roll, sheet, or other material which does not conform to the shape of the paint filter, should be cut into small pieces and poured into the filter. Sample size reduction may be accomplished by cutting the sorbent material with scissors, shears, knife, or other such device so as to preserve as much of the original integrity of the sorbent fabric as possible. Sorbents enclosed in a fabric should be mixed with the resultant fabric pieces. The particles to be tested should be reduced smaller than 1 cm (i.e., should be capable of passing through a 9.5 mm (0.375 inch) standard sieve). Grinding sorbent materials should be avoided as this may destroy the integrity of the sorbent and produce many "fine particles" which would normally not be present.

For brittle materials larger than 1 cm that do not conform to the filter, light crushing to reduce oversize particles is acceptable if it is not practical to cut the material. Materials such as clay, silica gel, and some polymers may fall into this category.

Regarding the fourth item, the PFT specifies "Conical paint filter: Mesh number 60 (fine meshed size). Available at local paint stores such as Sherwin-Williams and Glidden for an approximate cost

of \$0.07 each [as of September 1986]." EPA recognizes that most paint filters today are not labelled by actual mesh size, and that the specified "fine meshed size" available commercially is actually a mesh size of 60 X 48 threads or holes/inch. Since this is coarser than a 60 X 60 mesh, it has the potential to give more conservative test results (i.e., may fail more samples) and is therefore acceptable to EPA, as would be a 60 X 60 mesh. Mesh sizes greater (i.e., finer) than 60 X 60, however, would not be acceptable.

Regarding the fifth item, no materials, whether sorbed or not, may be placed in a hazardous waste landfill if they release free liquids as determined by the PFT. This should be implemented through the landfill operator's Waste Analysis Plan (WAP). The WAP should identify when samples will be tested using the PFT. In cases of controlled treatment by sorbents, it may not be necessary to test each treated sample if sufficient data have been obtained by testing each sorbate/sorbent combination to establish the loading ratio that assures no free liquids, and the treatment is done to assure such ratios are not exceeded. Each sorbate/sorbent combination should be tested because sorbents have different sorption characteristics and sorption ratios based on the type of sorbate (e.g., oily vs water-based sorbates).

As we discussed, this test is not designed to evaluate the efficiency of a sorbent product relative to other sorbents. It is designed to determine if a specific sample, be it sorbent or other material, contains free liquid and thus should not be placed in a hazardous waste landfill. As discussed under item 5 above, the PFT may also be used to determine the "saturation" or pass/fail level of a particular sorbent/sorbate combination. Our testing shows that at the "saturation" level some failures may occur since the "saturation" level is more a range than a line, but that at some lower liquid loading level, that can be determined in the lab, passing the PFT is consistently achieved. This knowledge is invaluable to a treater using sorbents to assure successful treatment (i.e., a high pass rate). It is less valuable when sorbents are used to control or clean up spills since sorbate/sorbent ratios are less controlled.

I hope this information will help clarify technical details about the applicability of the Paint Filter Liquids Test to sorbents and assist you in your analytical program. EPA plans to incorporate appropriate parts of this technical guidance into

Method 9095 when we propose a third update to the third edition of SW-846. Realistically the proposal and promulgation of this update is several years away, so I hope this technical guidance will serve your purposes in the interim.

Sincerely,
Oliver M. Fordham, Jr.
National Inorganic Program Manager for RCRA

cc:
David Bussard, Mike Flynn, Alec McBride, Gail Hansen, Tom
Beisswenger, Matt Hale, Ken Shuster, Dave Eberly, RCRA Hotline