

Populations, Activity and Emissions of Diesel Nonroad Equipment in EPA Region 7

Gravimetric Filter Handling Standard Operating Procedures Appendix L

Assessment and Standards Division
Office of Transportation and Air Quality
U.S. Environmental Protection Agency

Prepared for EPA by
Eastern Research Group, Inc. (ERG)
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Filter Field Handling SOPs for National PEMS Deployment

This standard operating procedure (SOP) presents the procedures to follow when testing using PM_{2.5} gravimetric filters received from EPA.

This SOP should be used in conjunction with the SOPs developed for other field sampling tasks associated with the Populations, Activity and Emissions of Diesel Nonroad Equipment in EPA Region 7 project.

The filters will be provided by USEPA, either shipped to the hotel or sent in the Sensors trailer. When these are received, check to see if they have a unique, new filter ID number. If not, contact Michael.Sabisch@erg.com (512-791-7739) to obtain a filter ID number. Record the filter ID numbers in the filter log. This number will be used for all filter tracking (including the installation forms and post-weight measurements).

Each shipping container (plastic container) contains a pre-weighed Teflon filter loaded into a cassette (white holder). The cassette in which the filter is loaded has a support grid with an imprinted number on it. This number can be seen only from the bottom of the cassette. There are two codes on the dish: the filter identification bar-code label (as described above) and the screen ID label containing the last three digits of the filter cassette screen ID. The screen ID label will not be used.

When handling the filter, handle the cassette by the white holder only, so as not to touch or contaminate the filter. **NEVER TOUCH THE FILTER.** If the filter is inadvertently touched, please note on the data collection form.

Sensors will install the filters in the sample holders in their test equipment. Record the filter ID and sample holder number (i.e., "Sampler Location 1, 2, or 3") in the appropriate location on the instrumentation data collection form. Also, note the type of gravimetric sample on the instrumentation data collection form. Types of gravimetric samples are cold start, warm operation, and hot start. Sensors will conduct all gravimetric filter testing. ERG will be responsible for gravimetric filter handling and tracking outside of the sampling unit.

After the sample has been collected and the filter removed from the sample holder, replace the filter in its original container (with appropriate ID). Put this container in an individual sandwich-sized ziplock bag, as described in Item 1. b. below. Place all the bagged, used filters in a cooler with frozen blue ice immediately after sampling, return to the hotel room (or ship immediately) and keep refrigerated (near freezing) and keep the blue ice frozen until ready to ship to EPA. Update the filter log with all relevant information from the day's testing, and also update the filter log whenever shipments are sent to or received from EPA.

When returning filters to the USEPA:

1. Keep all filters cold before shipping:
 - a. Place blue ice in a freezer for at least 24 hours prior to shipping;
 - b. individually seal each filter in a small (sandwich-sized) ziplock bag, then place all ziplocked filters into a large ziplock bag.
2. Pack the cooler carefully:
 - a. Cover the bottom of the cooler with frozen blue ice;
 - b. If there is room, place frozen blue ice around the sides of the cooler;
 - c. Bubble wrap sealed bags containing the filters/cassettes to minimize movement of filter cassettes during shipping,
 - d. Place the bubble wrapped sealed bags directly on top of the blue ice on the bottom of the cooler;
 - e. Make sure that the bags are packed in closely to avoid empty spaces;
 - g. Immediately cover the bags completely with a layer of blue ice;
 - i. Blue ice on top of the filters is an important step to keep the filters cold,
 - h. If necessary, use plastic filler on top of the blue ice to keep cooler contents from moving around during shipment;
 - h. Never place plastic or other filler between the blue ice and the filter bags
 - i. Close the cooler lid securely and tape shut.
3. Ship smart:
 - a. Ship weekly by Wednesday and never on a Thursday or Friday;
 - i. If you miss a Wednesday shipment, wait until Monday to ship,
 - ii. Notify Michael Sabisch by e-mail (Michael.Sabisch@erg.com) to advise # of filters to come, and record details on "filter Log" (on CVS)
 - b. Make sure that FedEx can pick the shipment up the day you want;
 - i. If there is a problem on pickup, unload the cooler contents and keep them cold (described in Item 1 above),
 - ii. Repeat packing for day of next shipping,
 - c. Ship FedEx (priority overnight) express service,

Ship to:

Carl Fulper
US EPA
2000 Traverwood Drive
Ann Arbor, Mi 48105
734-214-4400

Always indicate the shipment is from ERG, and notify Carl Fulper prior to each shipment, indicating scheduled delivery time. Securely transmit a secure version of the filter log to Carl each time filters are shipped, and confirm delivery of all filters.