

verification requires an independent verification of PM balance performance, and this must be performed within 370 days before emission testing. The second verification requires zeroing and spanning the balance, and this must be performed within 12 h before weighing. The third verification requires comparing a current mass determination of pooled reference samples with the previous mass determination of the pooled reference samples. This verification must be performed within 12 h before weighing.

(b) *Independent verification.* Have the balance manufacturer (or a representative approved by the balance manufacturer) verify the balance performance within 370 days of testing.

(c) *Zeroing and spanning.* You must verify balance performance by zeroing and spanning it with at least one calibration weight, and any weights you use must meet the specifications in §1065.790 to perform this verification.

(1) Use a manual procedure in which you zero the balance and span the balance with at least one calibration weight. If you normally use mean values by repeating the weighing process to improve the accuracy and precision of PM measurements, use the same process to verify balance performance.

(2) You may use an automated procedure to verify balance performance. For example many balances have internal calibration weights that are used automatically to verify balance performance. Note that if you use internal balance weights, the weights must meet the specifications in §1065.790 to perform this verification.

(d) *Reference sample weighing.* You must also verify the PM-weighing environment and weighing process by weighing reference PM sample media. Repeated weighing of a reference mass must return the same value within ± 10 μg or $\pm 10\%$ of the net PM mass expected at the standard (if known), whichever is higher. Perform this verification as follows:

(1) Keep at least two samples of unused PM sample media in the PM-stabilization environment. Use these as references. If you collect PM with filters, select unused filters of the same material and size for use as references.

You may periodically replace references, using good engineering judgment.

(2) Stabilize references in the PM stabilization environment. Consider references stabilized if they have been in the PM-stabilization environment for a minimum of 30 min, and the PM-stabilization environment has been within the specifications of §1065.190(d) for at least the preceding 60 min.

(3) Exercise the balance several times with a reference sample. We recommend weighing ten samples without recording the values.

(4) Zero and span the balance.

(5) Weigh each of the reference samples and record their masses. We recommend using substitution weighing as described in §1065.590(j). If you normally use mean values by repeating the weighing process to improve the accuracy and precision of PM measurements, use the same process to measure reference masses.

(6) Record the balance environment dewpoint, ambient temperature, and atmospheric pressure.

(7) Use the recorded ambient conditions to correct results for buoyancy as described in §1065.690. Record the buoyancy-corrected mass of each of the references.

(8) Subtract each of the reference's buoyancy-corrected masses from the most recent previous determinations of their masses.

(9) If the mean of the reference's masses changes by more than that allowed under paragraph (d) of this section, then invalidate all PM results that were determined between the two times that the reference masses were determined.

§1065.395 Inertial PM balance verifications.

This section describes how to verify the performance of an inertial PM balance.

(a) *Independent verification.* Have the balance manufacturer (or a representative approved by the balance manufacturer) verify the inertial balance performance within 370 days before testing.

(b) *Other verifications.* Perform other verifications using good engineering

judgment and instrument manufacturer recommendations.

Subpart E—Engine Selection, Preparation, and Maintenance

§ 1065.401 Test engine selection.

While all engine configurations within a certified engine family must comply with the applicable standards in the standard-setting part, you need not test each configuration for certification.

(a) Select an engine configuration within the engine family for testing, as follows:

(1) Test the engine that we specify, whether we issue general guidance or give you specific instructions.

(2) If we do not tell you which engine to test, follow any instructions in the standard-setting part.

(3) If we do not tell you which engine to test and the standard-setting part does not include specifications for selecting test engines, use good engineering judgment to select the engine configuration within the engine family that is most likely to exceed an emission standard.

(b) In the absence of other information, the following characteristics are appropriate to consider when selecting the engine to test:

- (1) Maximum fueling rates.
- (2) Maximum loads.
- (3) Maximum in-use speeds.
- (4) Highest sales volume.

(c) For our testing, we may select any engine configuration within the engine family.

§ 1065.405 Test engine preparation and maintenance.

(a) If you are testing an emission-data engine for certification, make sure it is built to represent production engines. This includes governors that you normally install on production engines. If you do not install governors on production engines, simulate a governor that is representative of a governor that others will install on your production engines.

(b) Run the test engine, with all emission-control systems operating, long enough to stabilize emission levels. Unless otherwise specified in the standard-setting part, you may con-

sider emission levels stable without measurement if you accumulate 12 h of operation for a spark-ignition engine or 125 h for a compression-ignition engine. If the engine needs more or less operation to stabilize emission levels, record your reasons and the methods for doing this, and give us these records if we ask for them. To ensure consistency between low-hour engines and deterioration factors, you must use the same stabilization procedures for all emission-data engines within an engine family.

(c) Record any maintenance, modifications, parts changes, diagnostic or emissions testing and document the need for each event. You must provide this information if we request it.

(d) For accumulating operating hours on your test engines, select engine operation that represents normal in-use operation for the engine family.

(e) If your engine will be used in a vehicle equipped with a canister for storing evaporative hydrocarbons for eventual combustion in the engine, attach a canister to the engine before running an emission test. You may request to omit using an evaporative canister during testing if you can show that it would not affect your ability to show compliance with the applicable emission standards. You do not have to accumulate engine operation before emission testing with an installed canister. Prior to an emission test, use the following steps to attach a canister to your engine:

(1) Use a canister and plumbing arrangement that represents the in-use configuration of the largest capacity canister in all expected applications.

(2) Use a canister that is fully loaded with fuel vapors.

(3) Connect the canister's purge port to the engine.

(4) Plug the canister port that is normally connected to the fuel tank.

§ 1065.410 Maintenance limits for stabilized test engines.

(a) After you stabilize the test engine's emission levels, you may do maintenance as allowed by the standard-setting part. However, you may not do any maintenance based on emission measurements from the test engine (i.e., unscheduled maintenance).