
40 C.F.R. § 1037.534

Constant-speed procedure for calculating drag area (CdA).

This section describes how to use constant-speed aerodynamic drag testing to determine C_dA values, subject to the provisions of § 1037.525. This is considered to be an alternate method for tractors.

- (a) *Test track.* Select a test track that meets the specifications described in § 1037.528(c)(3).
- (b) *Ambient conditions.* At least two tests are required. For one of the tests, ambient conditions must remain within the specifications described in § 1037.528(c) throughout the preconditioning and measurement procedure. The other tests must also meet those specifications except for the wind conditions. The wind conditions must be such that 80 percent of the values of yaw angle, $\psi_{\sim\text{air}}$, from the 50 mi/hr and 70 mi/hr test segments are between 4° and 10° or between -4° and -10° .
- (c) *Vehicle preparation.* Perform testing with a tractor-trailer combination using the manufacturer's tractor and a standard trailer. Prepare tractors and trailers for testing as described in § 1037.528(b). Install measurement instruments meeting the requirements of 40 CFR part 1065, subpart C, that have been calibrated as described in 40 CFR part 1065, subpart D, as follows:
 - (1) Measure torque at each of the drive wheels using a hub torque meter or a rim torque meter. If testing a tractor with two drive axles, you may disconnect one of the drive axles from receiving torque from the driveshaft, in which case you would measure torque at only the wheels that receive torque from the driveshaft. Set up instruments to read engine speed for calculating angular speed at the point of the torque measurements, or install instruments for measuring the angular speed of the wheels directly.
 - (2) Install instrumentation to measure vehicle speed at 10 Hz, with an accuracy and resolution of 0.1 mi/hr. Also install instrumentation for reading engine speed from the engine's onboard computer.
 - (3) Mount an anemometer on the trailer as described in § 1037.528(f).
 - (4) Fill the vehicle's fuel tanks so they are at maximum capacity at the start of the measurement procedure.
 - (5) Measure the weight over each axle to the nearest 20 kg, with a full fuel tank, including the driver and any passengers that will be in the vehicle during the test.
- (d) *Measurement procedure.* The measurement sequence consists of vehicle preconditioning followed by stabilization and measurement over five consecutive constant-speed test segments with three different speed setpoints (10, 50, and 70 mi/hr). Each test segment is divided into smaller increments for data analysis.

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