
40 C.F.R. § 1037.528

Coastdown procedures for calculating drag area (C_dA).

The coastdown procedures in this section describe how to calculate drag area, C_dA , for Phase 2 tractors, trailers, and vocational vehicles, subject to the provisions of §§ 1037.525 through 1037.527. These procedures are considered the reference method for tractors, but an alternate method for trailers. Follow the provisions of Sections 1 through 9 of SAE J2263 (incorporated by reference in § 1037.810), with the clarifications and exceptions described in this section. Several of these exceptions are from SAE J1263 (incorporated by reference in § 1037.810). The coastdown procedures in 40 CFR 1066.310 apply instead of the provisions of this section for Phase 1 tractors.

- (a) The terms and variables identified in this section have the meaning given in SAE J1263 and SAE J2263 unless specified otherwise.
 - (b) To determine C_dA values for a tractor, perform coastdown testing with a tractor-trailer combination using the manufacturer's tractor and a standard trailer. To determine C_dA values for a trailer, perform coastdown testing with a tractor-trailer combination using a standard tractor. Prepare tractors and trailers for testing as follows:
 - (1) Install instrumentation for performing the specified measurements.
 - (2) After adding vehicle instrumentation, verify that there is no brake drag or other condition that prevents the wheels from rotating freely. Do not apply the parking brake at any point between this inspection and the end of the measurement procedure.
 - (3) Install tires mounted on steel rims in a dual configuration (except for steer tires). The tires must—
 - (i) Be SmartWay-Verified or have a coefficient of rolling resistance at or below 5.1 kg/metric ton.
 - (ii) Have accumulated at least 2,000 miles but have no less than 50 percent of their original tread depth, as specified for truck cabs in SAE J1263.
 - (iii) Not be retreads or have any apparent signs of chunking or uneven wear.
 - (iv) Be size 295/75R22.5 or 275/80R22.5.
 - (v) Be inflated to the proper tire pressure as specified in Sections 6.6 and 8.1 of SAE J2263.
 - (vi) Be of the same tire model for a given axle.
 - (4) Perform an inspection or wheel alignment for both the tractor and the trailer to ensure that wheel position is within the manufacturer's specifications.
 - (c) The test condition specifications described in Sections 7.1 through 7.4 of SAE J1263 apply, with certain
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exceptions and additional provisions as described in this paragraph (c). These conditions apply to each run separately.

- (1) We recommend that you not perform coastdown testing if winds are expected to exceed 6.0 mi/hr.
 - (2) The average of the component of the wind speed parallel to the road must not exceed 6.0 mi/hr. This constraint is in addition to those in Section 7.3 of SAE J1263.
 - (3) If road grade is greater than 0.02% over the length of the test surface, you must determine elevation as a function of distance along the length of the test surface and incorporate this into the analysis.
 - (4) Road grade may exceed 0.5% for limited portions of the test surface as long as it does not affect coastdown results, consistent with good engineering judgment.
 - (5) The road surface temperature must be at or below 50 °C. Use good engineering judgment to measure road surface temperature.
- (d) C_dA calculations are based on measured speed values while the vehicle coasts down through a high-speed range from 70 to 60 mi/hr, and through a low-speed range from 20 to 10 mi/hr. Disable any vehicle speed limiters that prevent travel above 72 mi/hr. Measure vehicle speed at a minimum recording frequency of 10 Hz, in conjunction with time-of-day data. Determine vehicle speed using either of the following methods:
- (1) *Complete coastdown runs.* Operate the vehicle at a top speed above 72.0 mi/hr and allow the vehicle to coast down to 8.0 mi/hr or lower. Collect data for the high-speed range over a test segment that includes speeds from 72.0 down to 58.0 mi/hr, and collect data for the low-speed range over a test segment that includes speeds from 22.0 down to 8.0 mi/hr.
 - (2) *Split coastdown runs.* Collect data during a high-speed coastdown while the vehicle coasts through a test segment that includes speeds from 72.0 mi/hr down to 58.0 mi/hr. Similarly, collect data during a low-speed coastdown while the vehicle coasts through a test segment that includes speeds from 22.0 mi/hr down to 8.0 mi/hr. Perform one high-speed coastdown segment or two consecutive high-speed coastdown segments in one direction, followed by the same number of low-speed coastdown segments in the same direction, and then perform that same number of measurements in the opposite direction. You may not split runs as described in Section 9.3.1 of SAE J2263 except as allowed under this paragraph (d)(2).

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