



Standard Test Method for Centrifuge Kerosine Equivalent¹

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1. Scope

1.1 This test method determines the centrifuge kerosine equivalent (CKE) of aggregate used in bituminous mixtures.

1.2 Units of Measure:

1.2.1 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard. An exception is made in the values used for mass because this standard was originally developed using even values of grams, and use of ounces as a standard would make those measures cumbersome.

1.2.2 Regarding sieves, per ASTM Specification E11 Section 1.2, “the values stated in SI units shall be considered standard for the dimensions of the wire cloth openings and the diameter of the wires used in the wire cloth. The values stated in inchpound units shall be considered standard with regard to the sieve frames.” When sieve mesh sizes are referenced, the alternate inch-pound designations are provided for information purposes and enclosed in parentheses.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.* For specific hazard statements, see 7.1.

2. Referenced Documents

2.1 ASTM Standards:²

C127 Test Method for Relative Density (Specific Gravity) and Absorption of Coarse Aggregate

C128 Test Method for Relative Density (Specific Gravity) and Absorption of Fine Aggregate

¹ This test method is under the jurisdiction of ASTM Committee D04 on Road and Paving Materials and is the direct responsibility of Subcommittee D04.51 on Aggregate Tests.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

C702 Practice for Reducing Samples of Aggregate to Testing Size

D75 Practice for Sampling Aggregates

D3666 Specification for Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials

D4753 Guide for Evaluating, Selecting, and Specifying Balances and Standard Masses for Use in Soil, Rock, and Construction Materials Testing

E11 Specification for Woven Wire Test Sieve Cloth and Test Sieves

E832 Specification for Laboratory Filter Papers

3. Terminology

3.1 Symbols:

3.1.1 *C*—coarse aggregate fraction, that portion of the sample which passes the 9.5 mm ($\frac{3}{8}$ in.) sieve and is retained on the 4.75 mm (No. 4) sieve.

3.1.2 *F*—fine aggregate fraction, that portion of the sample which passes the 4.75 mm (No. 4) sieve.

3.1.3 *SA*—surface area. The sum, ft^2/lb (m^2/kg), obtained by adding the products of the percent passing each sieve and its corresponding factor, (see 11.1) and dividing by 100.

3.1.4 *K factors*—values determined as described in 3.1.5 through 3.1.8 and identified as K_c , K_f , or K_m .

3.1.5 K_c —determined from the percent of SAE No. 10 oil retained, which represents the total effect of the aggregate's absorptive properties and surface roughness of the aggregates coarse fraction.

NOTE 1—Based on comparative testing in California, the same results can be obtained substituting Shell Tellus No. 100 oil for SAE No. 10 oil.

3.1.6 K_f —determined from the following factors:

3.1.7 Percent of kerosine retained, which represents the total effect of superficial area, the aggregate's absorptive properties and surface roughness of the aggregate's fine fraction.

3.1.7.1 Computed surface area, based on particle size.

3.1.7.2 Percent of aggregate passing 4.75 mm (No. 4) sieve.

3.1.8 K_m —the “mean” or composite value of *K* for a given combination of coarse and fine materials on which K_c and K_f have already been determined independently.