
Standard Practice for Reducing Samples of Aggregate to Testing Size

AASHTO Designation: R 76-23¹

Technically Revised: 2023

Technical Subcommittee: 1c, Aggregates

ASTM Designation: C702/C702M-18



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1. SCOPE

- 1.1. These methods cover the reduction of large samples of aggregate to the appropriate size for testing, employing techniques that are intended to minimize variations in measured characteristics between the test samples so selected and the large sample.
- 1.2. The values stated in SI units are to be regarded as the standard.
- 1.3. *This standard does not purport to address all of the safety concerns associated with its use. It is the responsibility of the user of this procedure to establish appropriate safety and health practices and to determine the applicability of regulatory limitations prior to its use.*
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2. REFERENCED DOCUMENTS

- 2.1. *AASHTO Standards:*
- R 90, Sampling Aggregate Products
 - T 84, Specific Gravity and Absorption of Fine Aggregate
- 2.2. *ASTM Standard:*
- C125, Standard Terminology Relating to Concrete and Concrete Aggregates
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3. TERMINOLOGY

- 3.1. *Definitions*—the terms used in this standard are defined in ASTM C125.
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4. SIGNIFICANCE AND USE

- 4.1. Specifications for aggregates require sampling portions of the material for testing. Other factors being equal, larger samples will tend to be more representative of the total supply. The methods described in this standard provide for reducing the large sample obtained in the field or produced in the laboratory to a convenient size for conducting a number of tests to describe the material and measure its quality. These methods are conducted in such a manner that the smaller test sample portion will be representative of the larger sample and, thus, of the total supply. The individual test methods provide for minimum masses of material to be tested.

- 4.2. Under certain circumstances, reduction in size of the large sample prior to testing is not recommended. Substantial differences between the selected test samples sometimes cannot be avoided, as, for example, in the case of an aggregate having relatively few large-sized particles in the sample. The laws of chance dictate that these few particles may be unequally distributed among the reduced-size test samples. Similarly, if the test sample is being examined for certain contaminants occurring as a few discrete fragments in only small percentages, use caution in interpreting results from the reduced-size test sample. Chance inclusion or exclusion of only one or two particles in the selected test sample may importantly influence interpretation of the characteristics of the original sample. In these cases, test the entire original sample.
- 4.3. Failure to carefully follow the procedures in these methods could result in providing a nonrepresentative sample to be used in subsequent testing.

5. SELECTION OF METHOD

- 5.1. *Fine Aggregate*—Reduce samples of fine aggregate that are drier than the saturated surface-dry condition (Note 1) using a mechanical splitter according to Method A. Samples having free moisture on the particle surfaces may be reduced in size by quartering according to Method B, or by treating as a miniature stockpile as described in Method C.
- 5.1.1. If the use of Method B or Method C is desired, and the sample does not have free moisture on the particle surfaces, the sample may be moistened to achieve this condition, thoroughly mixed, and then the sample reduction performed.
- Note 1**—The method of determining the saturated surface-dry condition is described in T 84. As a quick approximation, if the fine aggregate will retain its shape when molded in the hand, it may be considered to be wetter than saturated surface-dry.
- 5.1.2. If use of Method A is desired and the sample has free moisture on the particle surfaces, the entire sample may be dried to at least the surface-dry condition, using temperatures that do not exceed those specified for any of the tests contemplated, and then the sample reduction performed. Alternatively, if the moist sample is very large, a preliminary split may be made using a mechanical splitter having wide chute openings 38 mm (1½ in.) or more to reduce the sample to not less than 5000 g. The portion so obtained is then dried, and reduction to test sample size is completed using Method A.
- 5.2. *Coarse Aggregates*—Reduce the sample using a mechanical splitter in accordance with Method A (preferred method) in Section 8 or by quartering in accordance with Method B in Sections 10.1.1 or 10.1.2. Do not use the sectoring Method B in Section 10.1.3 or the miniature stockpile Method C in Section 12 for coarse aggregates.
- 5.3. *Combined Coarse and Fine Aggregate*—Samples that are in a dry condition may be reduced in size by either Method A in Section 8 or Method B in Sections 10.1.1 or 10.1.2. Samples having free moisture on the particle surfaces may be reduced in size by quartering according to Method B Sections 10.1.1 or 10.1.2. When Method A is desired and the sample is damp or shows free water, dry the sample until it appears dry or until clumps can be easily broken by hand (Note 2). Dry the entire sample to this condition, using temperatures that do not exceed those specified for any of the tests contemplated, and then reduce the sample. Do not use the sectoring Method B in Section 10.1.3 or the miniature stockpile Method C in Section 12 for combined aggregates.
- Note 2**—The dryness of the sample can be tested by tightly squeezing a small portion of the sample in the palm of the hand. If the cast crumbles readily, the correct moisture range has been obtained.