

## Aggregate Degradation Proficiency Samples 3(A) and 4(B) Instructions for Testing and Reporting

**Closing Date: March 16<sup>th</sup>, 2023**

All tests should be conducted on each of the two samples according to the AASHTO or ASTM Standard Test Methods indicated. To permit an estimate of single-operator precision, the same operator should conduct an individual test on both samples. It is not necessary for all tests to be performed by the same person. Please use the same set of sieves for both samples. Report the results of a single determination only, not the average of two or more. For any tests you choose not to perform, leave the appropriate spaces blank on the data sheet.

***Note: Samples 3(A) and 4(B) are not identical. The program is designed to obtain two independent test results, one for each numbered sample, for each test method that the laboratory chooses to perform.***

***The boxes are labeled 3(A) and 4(B). The bags inside the boxes are labeled only (A) or (B). The bag labeled (A) is sample 3. The bag labeled (B) is sample 4.***

Each sample box should contain the following items:

1. A bulk bag (appx. 11.5 kg) of material that is 100% passing the 19.0 mm (3/4") sieve
2. A bulk bag (appx. 1.5 kg) of material that is 100% passing the 2.36 mm (No. 8) sieve

**Directions for the individual tests on Samples No. 3(A) and No. 4(B) are as follows:**

**NOTE: The following steps should be taken in handling and preparing the samples.**

1. Oven-dry the material at  $110 \pm 5^\circ\text{C}$  ( $230 \pm 9^\circ\text{F}$ ) before testing is begun.
2. Wash and dry the material in accordance with AASHTO T11/ASTM C117
3. Separate the material into size fractions by sieving in accordance with the sample masses specified in the test methods or as described in these instructions.

**Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine, AASHTO T96-22 or ASTM C131-20:** Perform the ***B Grading*** using 11 steel spheres. In determining the loss, wash the material retained on the 1.70-mm (No. 12) sieve and oven-dry at  $110 \pm 5^\circ\text{C}$  ( $230 \pm 9^\circ\text{F}$ ) to a constant mass. Report the percentage of loss by abrasion and impact to the nearest 0.01 percent.

**Coarse Aggregate Soundness by Use of Sodium Sulfate or Magnesium Sulfate, AASHTO T104-99 or ASTM C88-18:** The test may be performed using sodium or magnesium sulfate, or both solutions if desired. Perform five cycles on the following size fractions: passing the 19.0-mm and retained on the 9.5-mm sieve; passing the 9.5-mm and retained on the 4.75-mm sieve. For each size fraction, report the material finer than the designated sieve, expressed to the nearest 0.01 percent of the original weight of the fraction. ***Do NOT compute the weighted average or weighted percentage loss.***

**Fine Aggregate Soundness by Use of Sodium Sulfate or Magnesium Sulfate, AASHTO T104-99 or ASTM C88-18:** The test may be performed using sodium or magnesium sulfate, or both solutions if desired. Perform five cycles on the following sizes: passing the 2.36-mm and retained on the 1.18-mm sieve; passing the 1.18-mm and retained on the 600- $\mu\text{m}$  sieve; passing the 600- $\mu\text{m}$  and retained on the 300- $\mu\text{m}$  sieve. For each size fraction, report the amount of material finer than the designated sieve as a percentage of the original mass of the fraction to the nearest 0.01 percent. ***Do NOT compute the weighted, or weighted average, loss.***

**Resistance of Coarse Aggregate to Degradation by Abrasion in the Micro-Deval Apparatus, AASHTO T327-12 or ASTM D6928-17:** Perform the test using a  $1500 \pm 5$  g sample (**AASHTO Table 2, ASTM Section 8.3**), where the nominal maximum size of the coarse aggregate gradation is 12.5 mm or less. Run the abrasion procedure in accordance with the interval or rotation as specified for a 12.5 mm nominal maximum size aggregate. If performing the test in accordance with ASTM D6928-17, please remove the steel balls using the procedure described as Option 1 of Section 9.5.1. Report the percentage of loss due to Micro-Deval abrasion to the nearest 0.01 percent.

**Resistance of Fine Aggregate to Degradation by Abrasion in the Micro-Deval Apparatus, ASTM D7428-15:** Using the material retained from the wash and sieve analysis portion of the sample preparation, prepare  $500 \pm 5$  g of the test sample in accordance with the following table (Section 8.2 of D7428-15):

Sieve Size		Sample Mass (g)
Passing	Retained	
4.75-mm (No. 4)	2.36-mm (No. 8)	50 g
2.36-mm (No. 8)	1.18-mm (No. 16)	125 g
1.18-mm (No. 16)	0.600- $\mu$ m (No. 30)	125 g
0.600- $\mu$ m (No. 30)	0.300- $\mu$ m (No. 50)	100 g
0.300- $\mu$ m (No. 50)	150- $\mu$ m (No. 100)	75 g
150- $\mu$ m (No. 100)	75- $\mu$ m (No. 200)	25 g
<b>Approximate Sample Mass:</b>		<b>500 g</b>

Perform the test as directed in Section 9 of D7428. Determine the percent loss of the total sample mass and report it to the nearest 0.01 percent.

**Coarse Aggregate Soundness by Freezing and Thawing, AASHTO T103-08(2021):** Perform the tests for coarse aggregates using two gradations. The first sample gradation shall total  $1000 \pm 10$  g of material (19.0 mm to the 9.5 mm) and the second sample gradation shall total  $300 \pm 5$  g of material (9.5 mm to the 4.75 mm) (**AASHTO Table 3**). Select Procedure A, B, or C to perform the test. Please indicate which procedure was followed on the Data Sheet. Perform 25 freeze-thaw cycles on both gradations for this round. For the Quantitative Examination (Section 8), report the percent loss (passing) from the original sample mass. The  $1000 \pm 10$  g sample shall be sieved over the 8.0 mm (5/16-in) sieve and the  $300 \pm 5$  g sample shall be sieved over the 4.0 mm (No. 5) sieve. Report the percent passing for each sample to the nearest 0.1 percent. **Do NOT compute the weighted average or weighted percentage loss.**