

Coarse Aggregate Angularity Apparatus SG-42

AASHTO T 326

INTRODUCTION:

The void content of coarse aggregate value provides an indication of angularity, sphericity, and surface texture compared to other aggregates of the same grading. The test aggregate is allowed to free fall from the funnel of a cylindrical hopper into a cylindrical measure. Excess heaped aggregate is struck off, and the mass is measured. Uncompacted void content is computed as the difference between the volume of the cylindrical measure and the absolute volume of the coarse aggregate collected in the measure (based on bulk dry specific gravity as determined by AASHTO T 85). Higher void content in samples of equal size gradation by this procedure indicates a combination of greater angularity, less sphericity, or rougher surface texture.

NOTE: These instructions are a guideline to operation and use of this device. The operator is responsible for following test procedures outlined in AASHTO T 326.

SG-42



CALIBRATION OF CYLINDRICAL MEASURE:

Apply a light coat of grease to the top edge of the dry, empty, cylindrical measure. Determine the mass of measure, grease and glass plate. Fill the measure with freshly boiled, deionized water at 18°–24°C. Record water temperature. Place the glass plate on the measure, taking care that no air bubbles remain. Dry all outer surfaces, and determine the mass of the measure, glass plate, grease, and water to the nearest 0.1g. Also determine the mass of the clean, dry, empty measure for subsequent tests. Calculate the volume of the measure as follows:

$$V = 1,000 (M/D)$$

Where: V = Volume of cylindrical measure, ml

M = Net mass of water, g

D = Density of water at temperature used, kg/m³
(See table in AASHTO T 19)

Determine the volume to the nearest 0.1ml.

OPERATING INSTRUCTIONS:

Refer to AASHTO T 326 for details of sample preparation.

1. Position the cylindrical measure under the cylindrical hopper, being sure that the measure is seated on the centering pin. Place entire apparatus in a suitable overflow pan, such as Gilson's SC-181.
2. Close and lock the gate of the hopper.
3. Mix the sample until it is homogeneous, and pour into the hopper. Gilson TSA-163 Chute-end Handling Pan works well for weighing sample fractions, mixing, and pouring into hopper.
4. The sample must fall freely from the hopper by rapid opening of the hopper gate, and the gate doors must swing away quickly and remain out of the flow of sample. It may be helpful to hold the gate shut while releasing the latch, then release the gate manually.

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5. Following the procedure in AASHTO T 326, strike off excess heaped aggregate from the cylindrical measure being careful to avoid vibration or other disturbance that could cause compaction of sample in the cylinder.
6. Determine the mass of the cylindrical measure and contents to the nearest 0.1g. Also record the mass of the empty measure.
7. Recover all aggregate particles and repeat as above. Reported void contents are an average of two tests.
8. Calculate uncompacted voids percent to the nearest 0.1% for each determination as follows:

$$U = (V - F/G) / V \times 100$$

Where: **V** = Volume of cylindrical measure, ml

F = Net mass of coarse aggregate in measure, g

G = Bulk dry specific gravity of coarse aggregate
(By AASHTO T 85 procedure)

U = Uncompacted voids, percent, in the material