

## MoDOT Test Method 1xx

### Determination of Loose Aggregate on Seal Coats

In an effort to determine the amount of loose material remaining after a seal coat, this method is being developed to quantify this occurrence.

#### Apparatus:

- 1) One push broom with a 24" wide head and 60" long handle. Bristles shall be heavy duty plastic.
- 2) Tarp or other flexible material with a rectangular opening of one foot wide by two feet long.



- 3) Portable scale with digital readout capable of measuring no less than 20 pounds and within 0.05 pound increments. The scale must have digital readout and ability to hold a container. An example is shown above.
- 4) Container that can attach to the scale.
- 5) Dust pan
- 6) Duct tape or other adhesive material
- 7) A five-pound weight attached to the broom head and evenly distributed on each side of the broom handle.
- 8) One 2" or larger eyelet or hook. This eyelet shall be inserted into the broom handle a distance of no less than 4" to no greater than 6" from the top of the handle.

**Procedure:**

This test is to be performed after the final sweeping and before the work zone speed limit signs are removed opening the road back to free-flowing traffic. This test can also be utilized should loose aggregate become a concern prior to acceptance of the seal coat.

Pick any spot in the newly sealed lane between the outside wheel path and the centerline.

Place the tarp with the 2' opening parallel with the direction of traffic. Attach it with duct tape around outside edges and inside opening. Ensure there are no wrinkles that might diminish the opening.

Using one finger inserted into the eyelet to pull the broom, sweep 10 times over the 2' x 1' opening. Sweep the 2' long opening along the 1' width, such that material is being swept perpendicular to the direction of traffic. All sweeping motions shall be made toward the tester with no downward pressure being exerted on the broom. Keep the broom head parallel to the roadway to engage all bristles.

Sweep all remnants onto the empty dust pan. Collect any other rock that may have bounced onto the tarp from the sweeping process. Place this material into the dust pan.

Place the container onto the scale and zero out the weight of the container.

Using the scales, empty the dust pan into the container and weigh the contents.

Record the results; repeat test up to twice per lane mile. If the contractor has demonstrated good quality as reflected in results of this test, remaining tests along the entirety of the route may be eliminated.

**Results:**

After weighing material collected, compare this amount to whip-off factor table:

ADT	Maximum Percent Wastage
1-499	5% of aggregate application / yd <sup>2</sup>
500-999	10% of aggregate application / yd <sup>2</sup>
≥ 1000	15% of aggregate application / yd <sup>2</sup>

Aggregate collected should not exceed the percentages shown.

**Example:**

A chip seal application rate is 18 pounds per square yard. The sweep test collects 6 ounces of material on a road having an ADT = 1452.

Step 1:  $(18 \text{ lbs / square yard}) * (1 \text{ square yard / 9 square feet}) * (15\%) = 0.3 \text{ lbs / square foot}$

Step 2:  $(6 \text{ oz collected}) * (1 \text{ lb / 16 ounces}) = 0.375 \text{ lbs collected}$

Step 3: 0.375 lbs collected over 2 square feet equates to 0.188 lbs / square foot of loose aggregate.

Step 4:  $0.188 \text{ lbs} < 0.300 \text{ lbs}$ , therefore this test indicates a successful seal coat at this location.

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