
F

Proficiency Checklists

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Test for Moisture in Pavement Prior to Application of Liquid Markings

Equipment Needed:

- Minimum size 6" x 6" plastic
- Duct Tape

Procedure:

1. Select a location representative of the pavement surface where markings are to be applied.
2. Secure all edges of the plastic to the pavement surface with the duct tape.
3. After a period of time (20 minutes recommended), check for condensation of moisture on the underside of the plastic.
4. If moisture is present, wait 1 hour and retest.

Test for Moisture in Pavement with Thermoplastic Application

Equipment Needed:

- #15 Tar Paper
- Duct Tape

Procedure:

1. Select a location representative of the pavement surface where markings are to be applied.
2. Place the tar paper on the pavement surface and secure the tar paper to the surface with duct tape, such that it will not be displaced when the thermoplastic is applied.
3. Apply the thermoplastic to the tar paper.
4. Wait approximately one (1) minute to allow any moisture in the pavement to condense onto the underside of the tar paper.
5. Carefully remove the tar paper from the pavement.
6. Inspect the underside of the tar paper for condensation of moisture.
7. If moisture is present, wait 1 hour and retest.

Test for Determining the Wet Film Thickness of Liquid Marking Materials

Verify the thickness of all liquid pavement marking materials, except thermoplastic, immediately following application.

Equipment Needed:

- Calibrated Wet Mil Thickness Gauge
- Sample Plate (sheet metal – 4" x 6", 20 to 40 mils thick)*
*Thickness must be maintained: thinner plate will deform while taking readings, thicker plate will alter distance between gun and pavement. Both result in false readings.
- Piece of Cloth
- Duct Tape

Procedure:

1. Select a level location in the path where the markings are to be applied.
2. Place the plate on the pavement surface and secure it with duct tape.
3. Apply the marking material to the sample plate using the equipment being evaluated.
4. Make sure the glass bead gun is turned off prior to applying the marking material to the sample plate.
5. Immediate after application, place the gauge into the material on the sample plate until the posts on the gauge are firmly in contact with the plate. The gauge is configured such that the probes indicate a thickness from a line drawn between the posts. The last probe with material on it indicates the thickness.
6. Read the thickness from the gauge.
7. Gauge should be cleaned with a cloth immediately after taking the reading.

Test for Determining the Film Thickness of Thermoplastic Markings

Equipment Needed:

- Calipers accurate to 0.001 inch
- Sample Plate (sheet metal – 4" x 6", 20 to 40 mils thick)
- Duct Tape

Procedure:

1. Measure and record the thickness of the sample plate.
2. Select a location in the path where the markings are to be applied and place the plate on the pavement surface and secure it with duct tape.
3. Make sure the glass bead gun is turned off prior to applying the marking material to the sample plate.
4. Apply the marking material to the sample plate using the equipment being evaluated.
5. Wait until the sample cools sufficiently to be moved without flowing. Carefully remove the sample plate from the pavement.
6. Using calipers, measure the total thickness of the thermoplastic and the sample plate.
7. Subtract the plate thickness from the total thickness to obtain the thickness of the applied material.

Test for Determining Application Rate of Glass Beads – Method 1

Equipment Needed:

- Calibrated 1 gallon bucket
- Stop watch or watch with second hand

Procedure:

1. Determine the time required to dispense the specified quantity of beads from Table 1. Find vehicle speed. Go to column on right for time needed to dispense 6 lbs. of beads.
2. Position the bucket under the bead gun such that all beads dispensed will be caught in the bucket.
3. Turn on the bead gun for the time increment from Table 1 (the pressure must be at the same setting that is used while applying markings).
4. Compare the level of beads in the bucket with the appropriate graduation.

If there is a difference of ½ inch or greater between the level of beads and the calibration mark in the bucket what would you do?

Make adjustments to the equipment to close the gap.

How is the bucket calibrated?

Pour 6 pounds of glass beads into bucket and mark depth on bucket by using indentions, drilled holes or marks. Then, add 1 pound increments of beads, marking on side of bucket after each addition.

Table 1

Vehicle Speed (mph)	Time to Dispense Specified Quantity of Glass Beads (seconds)
4	54.5
5	43.6
6	36.4
7	31.2
8	27.3
9	24.2
10	21.8
11	19.8
12	18.2
13	16.8
14	15.6
15	14.5
16	13.6
17	12.8
18	12.1

Visual Inspection

Knowing material quantities does not assure that everything was distributed correctly. This procedure provides guidelines for the visual inspection of pavement markings. Markings which do not meet the criteria stated below, fail this procedure and should be rejected.

Visual inspections are made with regard to one of two (2) items: the marking itself or the glass beads.

1) The Marking

- a. The location of markings should be compared with the plans and/or Manual of Uniform Traffic Control Devices (MUTCD). Markings that do not conform to these requirements are unacceptable.
- b. Markings must be of the specified width.
- c. Markings must be checked for even thickness. This may be done by either inspecting the samples taken for thickness measurements or viewing the marking directly on the pavement. With either method, look for uneven thickness in the cross-section of the marking.

2) The Glass beads

Visual inspection of glass bead application is either with regard to distribution or embedment.

Distribution

- a. Beads should cover the entire marking.
- b. Beads should be evenly distributed across the entire marking.
- c. All beads should either be embedded into or onto the marking with little or no loss onto the adjacent pavement.

Embedment

- a. Visual evaluation of bead embedment should be made on the marking after application to the road surface. The specifications for bead embedment are general. It is not feasible to obtain exact percentages of buried vs. non-buried beads.

Generally, a marking that fails the visual inspection for bead embedment exhibits one of the following conditions:

- 1) Most or all of the beads are buried in the marking material.
- 2) Beads are insufficiently buried (most or all of the beads are on the surface of the marking).
- 3) "Pulsed" beads – this is caused by rapid fluctuations in the delivery of the beads to the gun.
- 4) Most or all of the beads are on one side of the marking.

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Liberally excerpted from Reflection Beads:

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