

TRPM Flexible Chip Seal Marker Work Zone (WZ) Grade Material Specifications

1) Design

The chip seal marker shall consist of an L-shaped marker a minimum of 2.0 inches tall by 1.125 inches deep, with 0.060 inch (min.) walls, comprised of a base and an upright vertical reflector with two protective I-beams running the length of the marker. All markers shall be capable of sustaining numerous direct wheel-over impacts at 60 MPH (100 KPH) without losing adhesion to the roadway or sustaining damage to the marker body, vertical reflector or the reflective tape applied to the marker. All markers shall be constructed of virgin thermo-plastic polyurethane (TPU) for superior durability, conforming to the following material specifications:

Property	ASTM Test	Results
Specific Gravity (min.)	D 792	1.19
Hardness (min.)	D 2240	80 A
Tensile Strength @ yield, (min PSI)	D 412	4,600
Ultimate Elongation (min)	D 412	330
Compression Set (22 hrs @ 70° C)	D 396	65
Tear Strength (min PLI)	D 624, Die C	600
Taber Abrasion (CS17 Wheel)	1000 cycles	3 mg

2) Protective Cover (s)

Chip seal markers shall be provided with one (1) or two (2) clear covers to protect the vertical reflector from oil during the sealing process. For standard chip seal operations, a single cover shall be attached to the vertical reflector so as to protect the reflective tape during the oiling process but still be removed without difficulty to expose the reflector to traffic. For operations requiring a 2nd seal, markers shall be provided with two (2) covers. All covers shall be constructed of a clear, flexible polyvinyl chloride compound conforming to the following material specifications:

Property	ASTM Test	Results
Specific Gravity (min.)	D 792	1.27
Hardness (min.)	D 2240	80 A
Tensile Strength (min. psi)	D 412	1,900
Ultimate Elongation (min %)	D 412	380

3) Staples

The protective covers shall be secured to the marker body with one heavy duty high carbon steel staple for single cover markers, and three staples for double covers, two staples securing the inner cover and a single staple securing the outer cover.

4) Standard Colors

The flexible chip seal marker body shall be constructed of 100 % virgin urethane polymers and colors to ensure quality & performance. The color shall be solid throughout and match the color of the lane line on which they will be placed.

5) Reflective Performance

Reflective tape ¼-inch wide shall be affixed along the top of the vertical upright portion of the marker inside the I-beam on one or both sides. The tape shall be a cube-corner micro-prism material with the following minimum optical performance:

Reflector & Marker Color	Grade	SI*	CIL*
White	Work Zone	3.50	320
Yellow	WZ	2.50	230



* Specific Intensity (SI) or Coefficient of Luminous Intensity shall be measured at 0.2° observation angle and - 4.0° entrance angle, and expressed in CD/FC or MCD/LUX, respectively.

6) Adhesive

All markers shall be self-adhesive, with a solid butyl rubber adhesive factory-applied to the entire length of the marker base. The butyl shall be a minimum of 0.125" thick and 0.75" wide on 1.0" wide release paper and of sufficient quality to secure the marker to the roadway and retain its position on the roadway without dislocation.

7) Lengths

All markers shall be supplied in 4.0 inch lengths.

8) Packaging

Markers shall be packed in boxes of 500 pieces such that the vertical reflector will not take a permanent set in excess of 15° from true vertical with respect to the base.

9) FHWA and NTPEP Acceptance

All markers shall have the acceptance of the U.S. Department of Transportation, Federal Highway Administration. The flexible pavement markers shall be fully tested and perform satisfactorily on the **AASHTO NTPEP Test Deck**. Certifications of acceptance to these standards must be supplied by the manufacturer upon request.