

DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES

Transportation Laboratory

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**METHOD OF TEST FOR RESISTANCE OF COLD RECYCLED PAVEMENT MATERIALS TO MOISTURE-INDUCED DAMAGE****A. SCOPE**

This test method describes the procedures for testing the resistance to moisture-induced damage on cold recycled pavement materials using bituminous recycling agent and additives, including partial-depth recycling (PDR), cold central plant recycling (CCPR) and full-depth recycling using foamed asphalt (FDR-FA).

B. REFERENCES

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|-----------------|-----------------------------------------------------------------------------------------------------------------------------------|
| AASHTO T 166 | Standard Method of Test for Bulk Specific Gravity (G_{mb}) of Compacted Asphalt Mixture Using Saturated Surface-Dry Specimens |
| AASHTO T 209 | Standard Method of Test for Theoretical Maximum Specific Gravity (G_{mm}) and Density of Asphalt Mixtures |
| AASHTO T 283-22 | Standard Method of Test for Resistance of Compacted Asphalt Mixtures to Moisture-Induced Damage |
| CT 125 | Method of Test for Sampling Highway Materials and Products Used in the Roadway Structural Sections |

C. PROCEDURE

Conduct the test in accordance with AASHTO T 283-22 except for the following:

1. Replace Section 1.1 with:

This method covers preparation of specimens and the measurement of the indirect tensile strength resulting from the effects of water conditioning of compacted cold recycled pavement materials.

2. Replace Section 3.1 with:

This method is intended to evaluate the effects of moisture conditioning of compacted cold recycled pavement materials. This method can be used to test: (a) cold recycled pavement materials in conjunction with mixture design testing (lab mixed, lab-compacted); (b) cold recycled pavement materials fabricated at cold central plants or onsite (field-mixed, lab-compacted); and (c) cold recycled pavement cores obtained from completed pavements of any age (field-mixed, field-compacted).
3. Delete Section 3.2
4. Replace Section 4.1 with:
5. Test specimens for each set of mix conditions, such as those prepared with foamed asphalt or emulsified asphalt as recycling agent, recycling agent and active filler content, and/or supplementary aggregate content if specified. Each set of specimens is divided into subsets. One subset is tested in dry condition for indirect-tensile strength. The other subset is subjected to water conditioning, before being tested for indirect tensile strength.
6. Delete Section 5.4.1
7. Delete Section 5.5
8. Delete Section 5.6
9. Delete Section 5.7
10. Replace Section 6.1 with:

Prepare mixture and compact specimens in accordance with California Test 313 (FDR-FA), 315 (PDR-EA or PDR-FA), or 316 (CCPR-EA or CCPR-FA).
11. Delete Section 6.1.1
12. Delete Section 6.1.2
13. Delete Section 6.2
14. Change Section 6.3 to 6.2 and replace with:

Specimens 100 mm (4 in.) in diameter by 63.2 ± 2.5 mm (2.5 ± 0.1 in.) thick are used.
15. Replace Section 6.5 with:

Place the cooled mixture in a $40 \pm 1^\circ\text{C}$ ($104 \pm 2^\circ\text{F}$) oven for 16 ± 1 hr for curing. The pans should be placed on spacers to allow air circulation under the pan if the shelves are not perforated.

16. Delete Section 6.4
17. Delete Section 6.5
18. Delete Section 6.6
19. Delete Section 6.7
20. Delete Section 6.8
21. Delete Section 6.9
22. Replace Section 7.1 with:

Obtain field-mixed cold recycled mixture samples in accordance with CT 125.
23. Delete Section 7.2
24. Replace Section 7.3 with:

Prepare mixture for at least six specimens for each test, half to be tested dry and the other half to be tested after moisture conditioning.
25. Replace Section 7.3.1 with:

Compact specimens at room temperature ($25^{\circ}\text{F} \pm 2^{\circ}\text{C}$ [$77^{\circ}\text{F} \pm 4^{\circ}\text{F}$]) using 30 gyrations in a gyratory compactor in accordance with AASHTO T 312 or 75 blows per face in a Marshall Compactor in accordance with AASHTO T 245. Use the nuclear density gauge determined field density closest to the sample location to determine sample size.
26. Add Section 7.3.2:

Gently extrude the specimen from the mold and record the mass of the specimen.
27. Replace Section 7.4 with:

Specimens 100 mm (4 in.) in diameter by $63.2 \text{ mm} \pm 2.5 \text{ mm}$ ($2\frac{1}{2} \text{ in.} \pm \frac{1}{10} \text{ in.}$) thick are used.
28. Replace Section 7.5 with:

Cure the compacted specimens in a forced draft oven at $40^{\circ}\text{C} \pm 1^{\circ}\text{C}$ ($104^{\circ}\text{F} \pm 2^{\circ}\text{F}$) for 72 hours. If, after the 72 hour cure, the specimens have not reached constant mass (0.05 % change in 2 hours), allow the samples to continue to cure until constant mass is reached checking each additional hour. Record the additional time required for cure.

Note: During curing, specimens must not be stacked or touching, and allowance must be made for air circulation around each specimen.

29. Replace Section 7.6 with:

Remove the specimens from the oven and allow to cool to ambient temperature ($25^{\circ}\text{C} \pm 2^{\circ}\text{C}$ [$77^{\circ}\text{F} \pm 4^{\circ}\text{F}$]). When cooled, record the mass, diameter, and height of each specimen in accordance with AASHTO T 269 Section 6.2.2.

30. Delete Section 7.7

31. Replace Section 8.1 with:

Select locations on the completed pavement to be sampled and obtain cores in accordance with AASHTO R 67. For all pavement layers use $100\text{ mm} \pm 0.25\text{ mm}$ diameter cores.

32. Delete Section 8.2

33. Add Section 8.5:

Record the mass, diameter, and height of each specimen in accordance with AASHTO T 269 Section 6.2.2.

34. Delete Section 9

35. Replace Section 10.1 with:

One set will be tested dry, and the other will be water saturated, before testing. Condition specimens in accordance with California Test 313, 315, or 316 Section K.

36. Delete Section 10.2

37. Delete Section 10.3

38. Delete Section 10.4 and 10.4.1 through 10.4.12.

D. REPORTING OF RESULTS

When required, submit test results electronically in accordance with the DIMEXML format and guidance documents found at the following link:

<https://dime.dot.ca.gov/index.php?r=help/submittestresult>

E. HEALTH AND SAFETY

It is the responsibility of the user of this test method to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use. Prior to handling, testing, or disposing of any materials, testers must be knowledgeable about safe laboratory practices, hazards and exposure, chemical procurement and storage, and personal protective apparel and equipment.

Refer to the Safety Manual for your Laboratory.

End of Text
(California Test 372 contains 5 pages)