
MOISTURE SENSITIVITY TESTING OF ASPHALT MIXTURES

SCOPE

This test method is intended to determine the moisture susceptibility of asphalt paving mixtures by measuring the tensile strength ratio (TSR). The apparatus and procedures are identical with those specified in AASHTO T283-07 with the following variations.

1. For Warm Mix Asphalt, when performing moisture sensitivity testing in the mixture design phase, the WMA technology should be used in fabricating specimens at the appropriate temperature as described in IM 510. Methods for WMA specimen preparation are process specific. Consult the manufacturer for detailed specimen fabrication procedures. Specimens for WMA mixtures utilizing a water-injection system may be fabricated without the WMA technology.

In lieu of the AASHTO 283 oven curing procedures, condition WMA mixtures in a flat shallow pan at an even thickness of 21-22 kg/m³ in a forced draft oven at the proposed field compaction temperature for 2 hours. Stir the mixture once after the first hour.

Compact WMA field production and mix design samples at the proposed field compaction temperature to 7.0 ± 0.5 percent air voids.

(Note: Indirect tensile strengths for lab specimens fabricated without the WMA technology may be significantly different than those for specimens fabricated from plant-produced mixture containing the WMA technology. Acceptance is based on plant-produced mixture).

2. 150mm diameter gyratory compacted specimens will be used unless it is determined that the saturation of the conditioned specimens does not penetrate completely to the center of the specimen or if the sample size is insufficient to provide enough material to fabricate 150mm diameter specimens, in which cases 100mm diameter gyratory compacted specimens may be used.
3. When evaluating anti-strip agents for laboratory produced asphalt mixture designs, the wet strength of the conditioned specimens containing the anti-strip agent will be compared to the unconditioned dry strength of specimens without any anti-strip agent to determine the tensile strength ratio (TSR).

REPORT

Determine and report the indirect tensile strengths and tensile strength ratio (TSR) as the ratio of the wet strength of the conditioned specimens to the unconditioned dry strength. The minimum required TSR on plant produced material is 80% for all mixtures placed in trafficked areas.

NOTE

Additional information on methods of determining the moisture susceptibility of asphalt paving mixtures may be found in IM 510 Appendix C.