
Test Procedure for**CANTABRO LOSS**TxDOT Designation: **Tex-245-F***Effective Date: 09/14-06/19*

1. SCOPE

- 1.1 This test method determines the abrasion loss of compacted hot-mix asphalt (HMA) specimens.
- 1.2 This test method measures the breakdown of compacted specimens utilizing the Los Angeles Abrasion machine. The percent of weight loss (Cantabro loss) is an indication of PFC durability and relates to the quantity and quality of the asphalt binder. This procedure can be performed on other HMA mixtures for informational purposes.
- 1.3 The values given in parentheses (if provided) are not standard and may not be exact mathematical conversions. Use each system of units separately. Combining values from the two systems may result in nonconformance with the standard.
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2. APPARATUS

- 2.1 *Apparatus used in Tex-241-F.*
- 2.2 *Apparatus used in Tex-207-F.*
- 2.3 *Apparatus used in Tex-227-F.*
- 2.4 *Apparatus used in Tex-410-A.*
- 2.5 *Temperature Chamber or Heating Oven, capable of maintaining $77 \pm 2^\circ\text{F}$ ($25 \pm 1^\circ\text{C}$).*
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3. SPECIMENS

- 3.1 Prepare two specimens in accordance with Tex-241-F. Specimen diameter must be 5.9 in. (150 mm), and height must be 4.5 ± 0.2 in. (115 ± 5 mm).
- Note 1**—Cure warm-mix asphalt (WMA) mixtures at 275°F for 4 hr. ± 5 min. before molding. WMA is defined as HMA that is produced within a target temperature discharge range of 215°F and 275°F using WMA additives or processes.
- 3.1.1 For PFC mixtures, mold test specimens to 50 gyrations (Ndesign). There is not a specific density requirement for PFC mixtures.
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Note 2—Select the mixture weight for the molded PFC specimen based on the weights used in the mix design.

3.1.2 For other HMA mixtures, density of test specimens must be $93 \pm 1\%$.

Note 3—Mixture weights for specimens that achieve the density requirement typically vary between 4200 and 4500 g.

Note 4—These mixtures are normally tested for informational purposes only.

4. PROCEDURE

4.1 Mold specimens in accordance with Section 3.

4.2 Cool molded specimens to room temperature and weigh. Record and designate the weight as *A* under Section 5.

4.3 Calculate the density of the specimens in accordance with Tex-207-F and Tex-227-F.

4.3.1 For PFC mixtures, calculate the bulk specific gravity (G_a) of the compacted specimens using dimensional analysis in accordance with Tex-207-F, Part VIII.

4.3.2 For other HMA mixtures, calculate the saturated surface dry weight (SSD) and then dry the specimens using one of the following methods.

- Air dry to remove excess moisture, and then use a vacuum device to dry the specimens to constant weight.
- Oven dry to constant weight at a temperature no higher than $60 \pm 3^\circ\text{C}$ ($140 \pm 5^\circ\text{F}$) and no lower than $50 \pm 3^\circ\text{C}$ ($122 \pm 5^\circ\text{F}$).

4.4 Discard specimens not meeting the $93 \pm 1\%$ density requirement and mold new specimens in accordance with Section 3.

Note 5—This density requirement does not pertain to PFC mixtures.

4.5 Place the specimens in the temperature chamber or oven long enough to ensure a consistent temperature of $77 \pm 2^\circ\text{F}$ ($25 \pm 1^\circ\text{C}$) throughout the specimen before testing. Do not leave the specimens in the temperature chamber or oven for more than 24 hours.

4.6 Place the test specimen in the Los Angeles testing machine.

Note 6—Do not include the steel balls.

4.7 Rotate the Los Angeles machine at a speed of 30–33 rpm for 300 revolutions.

4.8 After 300 revolutions, discard the loose material broken off the test specimen.

4.9 Without including any of the discarded material, weigh the test specimen. Record and designate this weight as *B* under Section 5.

5. CALCULATIONS

5.1 Calculate the Cantabro Loss using the following formula:

$$CL = \frac{A - B}{A} \times 100$$

Where:

CL = Cantabro Loss, %

A = Initial weight of test specimen

B = Final weight of test specimen.

6. REPORT

6.1 Report the following for each specimen:

- initial weight,
- final weight, and
- percent loss.

6.2 Report the average percent loss of the tested specimens to the nearest tenth.

7. REPORT FORMS

7.1 [Cantabro](#)

8. ARCHIVED VERSIONS

8.1 Archived versions are available.