

Standard Method of Test  
 for  
**Quantitative Extraction of Asphalt Binder from Hot Mix Asphalt (HMA)**

Reference AASHTO T 164-14 ([2018](#)) (ASTM D 2172 / D 2172M-11)

<b>AASHTO Section</b>	<b>Illinois Modification</b>
2.1	Replace AASHTO Standard T 84 with the following: <ul style="list-style-type: none"> <li>• Illinois Test Procedure 84</li> </ul>
<a href="#">2.2</a>	<a href="#">Add the following:</a> <ul style="list-style-type: none"> <li>• <a href="#">Illinois Modified ASTM D8159, Standard Test Method for Automated Extraction of Asphalt Binder from Asphalt Mixtures</a></li> </ul>
3.2	Replace with the following: <i>Constant mass</i> – shall be defined as the mass at which further drying does not alter the mass by more than 0.5 g when weighed at 1 hour intervals.
4.1	Replace with the following: The HMA mixture is extracted with trichloroethylene; <i>normal</i> -propyl bromide; or methylene chloride, using the extraction equipment applicable to Test Method A, B, <a href="#">E</a> or <a href="#">F</a> . The asphalt binder content is calculated by differences from the mass of the extracted aggregate and moisture content, and mineral matter <a href="#">in the extract</a> (when using centrifuge extraction from Test Method A <a href="#">and when using the automated extraction in Method F</a> . The asphalt binder content is expressed as a mass percent of moisture-free mixtures.
5.1	Replace the first sentence with the following: Method A, B, <a href="#">or F</a> shall be used for quantitative determinations of asphalt binder in HMA mixtures and pavement samples for specification acceptance, service evaluation, quality control, and research.
7.4	Delete
Note 4	Delete
9.2.1	Add at the end: Illinois requires the material to be split to the sample size by use of the splitter specified in Illinois Test Procedure 248 and further as specified in IL Modified AASHTO T 312.
<a href="#">9.2.2</a>	<a href="#">Add at the end:</a> <a href="#">Refer to IL Modified ASTM D8159 for the sample size requirements when using Method F.</a>

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10.1	Replace with the following: When required, calculate the moisture content of the mixture. Moisture content in the sample is defined as follows:  $\frac{\text{Original Mass} - \text{Oven Dry Mass}}{\text{Original Mass}} \times 100$
Note 9	Delete
12.3	Replace the first sentence with the following: Cover the test portion in the bowl with trichloroethylene, methylene chloride, or <i>normal</i> -propyl bromide extractant, and allow sufficient time for the solvent to disintegrate the test portion (not more than 1 h).
12.4	Allow the machine to stop; add 200 mL (or more as appropriate for the mass of the sample) of trichloroethylene, methylene chloride, or <i>normal</i> -propyl bromide extractant, and repeat the procedure.
12.6	Replace with the following: When centrifuge extraction from Test Method A is used, the amount of mineral matter in the extract shall be determined. Any of the test procedures specified in Annex A1 may be used to determine the amount of mineral matter.
13.	Replace with the following: If centrifuge extraction from Test Method A is used, or when any other method of extraction is used and the amount of mineral matter in the extract is determined, then the asphalt binder content in the test portion shall be calculated as follows:  $\text{Asphalt Binder Content, \%} = \frac{(W_1 - W_2) - (W_3 + W_4)}{W_1 - W_2} \times 100$ ( <a href="#">continued next page</a> )

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<b>AASHTO Section</b>	<b>Illinois Modification</b>
13. <a href="#">(cont'd)</a>	<p>Where:</p> <p>W<sub>1</sub> = mass of test portion,                      W<sub>2</sub> = mass of water in test portion,                      W<sub>3</sub> = mass of extracted mineral aggregate, and                      W<sub>4</sub> = mass of mineral matter in the extract.</p> <p>When method B, E, or F is used and the amount of mineral matter in the extract is not determined, then the percent asphalt binder content in the test portion shall be calculated as follows:</p> $\text{Asphalt Binder Content, \%} = \frac{\text{Sample Mass, Dry} - \text{Aggregate Mass, Dry}}{\text{Sample Mass, Dry}} \times 100$
14.1.1.2	Revise the first sentence as follows: <i>Cylindrical Metal Frames</i> , two.
16.2.1	Replace with the following: Dry two sheets of filter paper for each metal frame to a constant mass in an oven at 110 ± 5 °C (230 ± 9 °F). Fold each filter paper into quarters. Place the first filter paper into the metal frame in the shape of a cone with three layers on one side and one layer of filter paper on the other side. Place the second filter paper in the cone in the opposite direction, creating four layers of filter paper around the basket.
16.2.2	Replace with the following: Determine the mass of each sample, weighing the pan, sample, and filter paper to the nearest 0.1 gram.
16.2.3	Delete the last two sentences.
16.2.6	Replace the second sentence as follows: Dry the frames in the vented hood; transfer the sample and filters into the original tared pan; and place the pan, sample, and filters in a vented oven at 110 ± 5 °C (230 ± 9 °F) for 3 hours before determining the constant mass. Record the mass.

Illinois Modified Test Procedure  
 Effective Date: June 1, 2012  
 Revised Date: February 28, 2019

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<b>AASHTO Section</b>	<b>Illinois Modification</b>
Test Method D	Delete: Test Method D
18	Delete
19	Delete
20	Delete
Note 18	Delete
25.2.6	Delete the third and fourth sentences.
New Section	After Section 26.1, add the heading: TEST METHOD F
New Section 27	Add the following: Extraction to determine asphalt content and gradation may be done according to Illinois Modified ASTM Designation D8159.
27	Re-number old Section 27 to be Section 28.
27.1	Re-number old Section 27.1 to be Section 28.1. Delete the last sentence.
27.2	Re-number old Section 27.2 to be Section 28.2. Delete the last sentence.
28	Re-number old Section 28 to be Section 29.
28.1	Re-number old Section 28.1 to be Section 29.1.
A1.2.2.1	Replace the third sentence with: Transfer all of the extract (from Method A, B, E, or F as appropriate) to an appropriate (feed) container suitably equipped with a feed control (valve or clamp, etc.).