


<p>Name of Test Cantabro Test</p>	<p>Developer(s) Developed in Spain</p>
<p>Test Method(s) AASHTO TP 108-14 (2020)</p>	<p>Adoption by Agencies Virginia</p>
<p>Description The Cantabro test is a mixture toughness test rather than a cracking test. Some researchers suggest that the Cantabro test provides a general indication of durability. SGC specimens are placed one at a time in a Los Angeles abrasion machine for 300 cycles at 30 revolutions per minute. The percent abrasion loss is determined after testing.</p>	<p>Photographs/Illustrations</p> 
<p>Test Results Percent abrasion loss</p>	<p>Test Temperature(s) 25 ± 1°C</p>
<p>Equipment & Cost Los Angeles abrasion machine</p>	<p>\$10,000</p>
<p>Specimen Fabrication Gyratory specimen</p>	<p>Number of Replicate Specimens A minimum of 3 specimens</p>
<p>Specimen Conditioning Conditioning for a minimum of 4 hours at 25°C</p>	<p>Testing Time 10 minutes</p>
<p>Data Analysis Complexity Simple</p>	<p>Test Variability Medium (10-25% COV)</p>
<p>Field Validations Fair (FHWA ALF Fatigue Cracking)</p>	<p>Overall Practicality for Mix Design and QA Good for Mix Design Good for QA</p>
<p>Key References</p> <ul style="list-style-type: none"> Alvarez, A.E., A. Epps Martin, C.K. Estakhri, J.W. Button, Z. Kraus, N. Prapaitrakul, and C.J. Glover (2007). Evaluation and Recommended Improvements for Mix Design of Permeable Friction Courses. Texas Transportation Institute; Texas A&M University, 163p. Tsai, B.W., A. Fan, J.T. Harvey, and C. Monismith (2012). Improved Methodology for Mix Design of Open-Graded Friction Courses. University of California, Davis; University of California, Berkeley; California Department of Transportation, 123p. Howard, I.L., and J. D. Doyle (2015). Durability Indices via Cantabro Testing for Unaged, Laboratory-Conditioned and One-Year Outdoor Aged Asphalt Concrete, TRB 94th Annual Meeting Compendium of Papers, Paper No. 15-1366, Transportation Research Board. Doyle, J.D. and Howard, I.L. (2016). "Characterization of Dense-Graded Asphalt with the Cantabro Test," Journal of Testing and Evaluation, Vol. 44, No.1, ASTM International, pp.78-88. West, R. C., Van Winkle, C., Maghsoodloo, S., & Dixon, S. (2017). Relationships between Simple Asphalt Mixture Cracking Tests Using Ndes Specimens and Fatigue Cracking at FHWA's Accelerated Loading Facility. <i>Journal of the Association of Asphalt Paving Technologists</i>, 579-602. 	