

<p>Name of Test Semi-Circular Bend Test (Louisiana method)</p>	<p>Developer(s) Mohamad and co-workers Louisiana Transportation Research Center</p>								
<p>Test Method(s) LADOTD TR 330-14/ASTM D8044-16</p>	<p>Adoption by Agencies Louisiana</p>								
<p>Description Semi-circular specimens are prepared with three notch depths: 25.4 mm, 31.8 mm, and 38.0 mm. Each specimen is simply supported by two bars on the flat surface and the load is applied to the curved surface above the notch. The load is applied at a vertical rate of 0.5 mm/min. For each specimen, the fracture toughness is calculated based on the load and displacement data. Fracture toughness versus notch depth is used to determine the energy release rate, J-integral. Three specimens are tested at each notch depth for a total of nine specimens per mix.</p>	<p>Photographs/Illustrations</p> 								
<p>Test Results J-integral</p>	<p>Test Temperature(s) 25°C</p>								
<p>Equipment & Cost</p> <table border="0"> <tr> <td>Load Frame and Fixture</td> <td>\$10,000-\$20,000</td> </tr> <tr> <td>Saw for cutting specimens</td> <td>\$6,000</td> </tr> <tr> <td>Environmental chamber</td> <td>\$3,000</td> </tr> <tr> <td>Saw for notching specimens</td> <td>\$3,000</td> </tr> </table>		Load Frame and Fixture	\$10,000-\$20,000	Saw for cutting specimens	\$6,000	Environmental chamber	\$3,000	Saw for notching specimens	\$3,000
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<p>Specimen Fabrication Gyratory specimens, 3 cuts, 1 notch (4 hours)</p>	<p>Number of Replicate Specimens 4 specimens for each notch depth</p>								
<p>Specimen Conditioning Conditioning for a minimum of 0.5 hour at 25°C</p>	<p>Testing Time 1 hour</p>								
<p>Data Analysis Complexity Fair</p>	<p>Test Variability Medium (20% COV)</p>								
<p>Field Validations Fair (pavement sections in Louisiana)</p>	<p>Overall Practicality for Mix Design and QA Good for Mix Design Fair for QA</p>								
<p>Key References</p> <ul style="list-style-type: none"> • Wu, Z., L. Mohammad, L. Wang, and M. Mull (2005). Fracture Resistance Characterization of Superpave Mixtures Using the Semi-Circular Bending Test, Journal of ASTM International, Vol. 2, No. 3, pp. 1-15. • Kim, M., L.N. Mohammad, and M.A. Elseifi (2012). Characterization of Fracture Properties of Asphalt Mixtures as Measured by Semicircular Bend Test and Indirect Tension Test, Transportation Research Record, No. 2296, pp. 115-124. 									