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**Evaluation method for the cracking resistance of
asphalt mixture at low temperature**

沥青混合料低温抗裂性能评价方法

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Table of Contents

Foreword.....	3
1 Scope.....	4
2 Normative references.....	4
3 Terms and definitions	4
4 Test equipment.....	5
5 Preparation	5
6 Test procedure	7
7 Calculation	7
8 Test report.....	9
Appendix A (Informative) Test report on the cracking resistance of asphalt mixture at low temperature	11

Evaluation method for the cracking resistance of asphalt mixture at low temperature

1 Scope

This Standard specifies test equipment, preparation, test procedures, calculation, and test report for the evaluation of the cracking resistance of asphalt mixture at low temperature.

This Standard applies to all kinds of hot-mixed, warm-mixed and cold-mixed asphalt mixtures whose nominal maximum particle size is no more than 26.5 mm.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only the dated version applies to this document. For undated references, the latest edition (including all amendments) applies to this document.

JTG E20, Standard Test Methods of Bitumen and Bituminous Mixtures for Highway Engineering

3 Terms and definitions

The following terms and definitions are applicable to this document.

3.1 Bend strain energy of asphalt mixture

The energy that is stored in the asphalt mixture when the asphalt mixture reaches the critical state of crack formation during the bending test destruction process.

Note: in kilojoules (kJ).

3.2 Bend strain energy density of asphalt mixture

The energy that is stored in the unit volume of asphalt mixture when the asphalt mixture reaches the critical state of crack formation during the bending test destruction process.

Note: in kilojoules per cubic meter (kJ/m³).

5.2 Form the test piece according to the method that is specified in T0703 of JTG E20; after placing the ordinary asphalt mixture test piece for 24 h and the modified asphalt mixture test piece for 48 h at room temperature, cut the test piece according to T0715 in JTG E20; the dimensions of test pieces shall meet the requirements of Table 2; dry naturally at room temperature; mark the height direction of test pieces.

Table 2 -- Dimensions of test pieces for the bending test at low temperature

5.3 Use a vernier caliper to measure the dimensions of each test piece in the mid-span of the rectangular parallelepiped and the two fulcrum sections. When the difference between the height (width) of the three sections of a single test piece exceeds 2 mm, the test piece shall be invalid. The mid-span section width is b ; the height is h . Take the average of 3 sections, to the nearest 0.1 mm.

5.4 On the basis of the mixture type, determine the density, voidage and other indicators of the test piece according to the method that is specified in T0705/0706 of JTG E20. When the difference between the measured voidage and the designed voidage exceeds 0.5%, the test piece shall be invalid.

5.5 The number of rectangular parallelepiped test pieces in each group should not be less than 6; the number of effective test pieces shall not be less than 4.

5.6 The constant temperature time of the test piece shall not be less than 4 h from the time when the thermal insulation environmental box reaches the test temperature; the distance between the test pieces in the thermal insulation box shall not be less than 20 mm.

5.7 Place the beam-type test piece support of the testing machine; the distance between the fulcrums shall be $200\text{ mm} \pm 0.5\text{ mm}$; keep the upper indenter and the lower support parallel, and the two sides equidistant, as shown in Figure 1; then, fix its position.

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