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**Durable high modulus asphalt
mixture for road engineering**

道路用高模量抗疲劳沥青混合料

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Durable high modulus asphalt mixture for road engineering

1 Scope

This Standard specifies terms and definitions, requirements, test methods, inspection rules, transport for high modulus anti-fatigue asphalt mixture for road engineering.

This Standard is applicable to the lower layer of the asphalt pavement in the new or rebuilt and expanded roads of various grades of highways, urban roads, airport pavements and port roads in the cold regions outside the winter and cold winter regions.

2 Normative references

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

JTG E20-2011, *Standard Test Methods of Bitumen and Bituminous Mixtures for Highway Engineering*

JTG F40-2004, *Technical Specification for Construction of Highway Asphalt Pavements*

JTG E60-2008, *Field Test Methods of Subgrade and Pavement for Highway Engineering*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1 asphalt binder

a bituminous substance that is capable of binding aggregates into a mass

[NB/SH/T 0652-2010, definition 3.1.7]

3.2 dynamic modulus

the absolute value of the ratio of stress to recovery strain peak for asphalt mixture test piece at specific test temperature and sinusoidal loading mode

3.3 fatigue life

the corresponding number of loading cycles of asphalt mixture test piece when its bending stiffness modulus is reduced to a certain extent under continuous sine wave loading mode controlled by certain temperature, loading frequency and constant strain control

NOTE: In general, a certain extent means that the bending stiffness modulus of the test piece is reduced to 50% of the initial bending stiffness modulus.

4 Requirements

4.1 Raw material

4.1.1 Asphalt binder

4.1.1.1 Asphalt binder shall meet the requirements for road petroleum asphalt specified in Table 4.2.1-2 of JTG F40-2004 and polymer modified asphalt specified in Table 4.6.2. And add additives as needed.

4.1.1.2 Asphalt binder can also use the asphalt of which the penetration is 10~20 [25°C, 100g, 5s (0.1mm)].

4.1.2 Aggregate, packing

Aggregate and packing shall meet the relevant requirements for aggregate and packing in JTG F40-2004.

4.2 Asphalt mixture

4.2.1 Volume design

4.2.1.1 Mineral grade distribution shall meet the requirements of Table 1.

Type inspection items shall be all provisions of 4.2.

Type inspection shall be carried out when the asphalt mixture is produced for the first time and one of the followings occurs during the production process:

- a) When the source, type or specification of raw materials (aggregate, packing, asphalt binder, etc.) changes;
- b) After the production equipment fails or is recalibrated;
- c) When there is a significant change in the asphalt mixture produced;
- d) When the quality supervision agency makes a request.

6.3 Sampling and batching

6.3.1 Sampling

Sampling of asphalt mixture shall meet the requirements of T 0701 in JTG E20-2011.

6.3.2 Batching

6.3.2.1 Conduct sampling and testing by batch.

6.3.2.2 For the same project, the asphalt mixture produced by the same raw materials, in the same mix ratio and the same production process shall be sampled according to the following requirements:

- a) The sampling of mineral grade, asphalt binder and void ratio shall be batched according to 3000t/shift. When it is less than 3000t/shift, it shall be according to one batch;
- b) The sampling of freeze-thaw splitting tensile strength ratio, dynamic stability and failure strain of low-temperature bending test shall be batched according to 10,000 t/shift. When it exceeds 3000t/shift but less than 10,000t/shift, it shall be according to one batch;
- c) At least one dynamic modulus and fatigue life sampling shall be performed.

6.4 Rules for determination

When the performance of the asphalt mixture meets the requirements of 4.2.2, the batch is determined as qualified. When one item fails in the test results, it shall be determined that this batch of products are unqualified.

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