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Basalt fiber modified asphalt mixture for road engineering

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part

1. Structure and drafting rules for standardization documents" Drafting is required. Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents. This document was proposed by the Ministry of Housing and Urban-Rural Development of the People's Republic of China. This document is under the jurisdiction of the National

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1 Scope

GB/T 45019-2024 covers asphalt mixtures reinforced with basalt fibre. Adding short fibres to asphalt addresses the two ways a pavement fails: rutting, where the mix deforms permanently under wheel loads in hot weather, and cracking, where it becomes brittle in cold weather and under repeated loading. Fibres bridge microcracks and hold the binder in place, improving both at once - which conventional binder modification struggles to do, since making a mix stiffer against rutting usually makes it more brittle against cracking. Basalt fibre is drawn from melted volcanic rock, which makes it cheap, chemically stable, and unproblematic at the temperatures asphalt is mixed and laid at. What decides whether it works is dispersion: fibres that clump rather than distribute do nothing for the mix and create weak points instead. This document specifies the types and specifications, the constituent materials, the technical requirements, the inspection rules and the transport requirements for basalt fibre asphalt mixtures for roads, and applies to their production, inspection and use. Under ICS 93.080.20 and CCS Q20, it is written for asphalt producers, paving contractors and road authorities.

This document specifies the types and specifications, materials, technical requirements, inspection rules and transportation of basalt fiber asphalt mixtures for roads. This document applies to the production, inspection and use of basalt fiber asphalt mixtures for roads.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document. For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies. in this document.

GB/T 42280 Chopped basalt fiber for road asphalt mixture CJJ

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 Basalt fiber Continuous fibers are made from basalt ore through key processes such as high-temperature melting, high-speed wire drawing and surface infiltration treatment.

3.2 Chopped basalt fiber Basalt fiber raw yarn segments or basalt fiber roving segments cut to a certain length.

3.3 Content of basalt fiber The mass fraction of basalt fiber in asphalt mixture.

3.4 Basalt fiber modified asphalt mixture A mixture made by mixing mineral materials, basalt fiber and asphalt binder in a certain proportion.

3.5 Basalt fiber modified dense graded asphalt mixture Dense graded asphalt mixture with added basalt fiber.

3.6 Basalt fiber modified stone mastic asphalt mixture Asphalt mastic macadam mixture with basalt fiber as fiber stabilizer.

20 Test procedures for asphalt and asphalt mixtures in highway engineering JTG F

40 Technical Specifications for Highway Asphalt Pavement Construction