

## **RESISTANCE AGAINST FATIGUE OF ASPHALT PAVEMENTS WITH DIFFERENT COMPACTION DEGREE**

-Comparison of Conventional and Polymer modified Asphalt-

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### *ABSTRACT*

In order to keep the post compaction and traffic related damages as low as possible an asphalt compaction degree of about 100 % of Marshall density should be reached in situ. The compaction degree has a high influence on the performance behaviour of asphalt pavements. This paper describes the effect of the compaction degree on the properties of asphalt base layer, asphalt binder layer and stone matrix asphalt layer regarding the fatigue strength and temperature dependent resilient modulus. A conventional (50/70), a polymer modified (PmB 45A) and a high polymer modified bitumen (PmB 25H) were used as binders. Asphalt slabs with compaction degrees between 94 % and 101 % of Marshall density were prepared by means of a laboratory roller compaction machine. They were used to drill test cores for resilient modulus tests and fatigue tests. The test results show decreasing resilient moduli and fatigue resistance with decreasing compaction degree. The loss of resistance against fatigue with decreasing compaction degree was much lower for innovative asphalt variants (PmB 25H) than for conventional asphalt variants (50/70). Thus the deterioration of the asphalt pavement performance is highly dependent on the compaction degree of asphalt layers but in case of innovative asphalt, much lower than in case of conventional asphalt mixtures.

**KEY WORDS:** Compaction degree, innovative asphalt, fatigue, resilient modulus