

A Review of Penetration Grading System and the Suitability of Alternate Grading System for Asphalt Binders in Sri Lankan Highways

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Grading of asphalt cement is a very important factor in usage hot mix asphalt. It allows selecting the correct bitumen for road construction work. Bitumen or asphalt grading systems have changed from simple fundamental tests to more scientific methods in the past century. The development of grading of asphalt cement has lead to improve the performance of the road against the increasing traffic in last few decades. The fundamental test as chewing or penetration has been replaced by viscosity and aging properties of asphalt cement which gives more data about performance of roads.

However, number of countries in the world including Sri Lanka still using the traditional penetration grading system while developed countries have advanced to viscosity and superpave grading system. In Sri Lanka, 80/100 asphalt cement was used for road construction up to the year 2003. Due to high surface undulation problems, 60/70 binder asphalt cement was introduced. However, surface undulation problems still remain. Sri Lanka is a country with different temperature zones and penetration grade system is more susceptible for temperature.

This research attempts to review the use of penetration grading asphalt cement that is using Sri Lankan road construction and propose a possible alternative grading system. The important properties (viscosity, aging) of asphalt cement have not been tested in penetration grading system. There is no evidence for the performance of the properties of asphalt cement in mixing and laying temperatures. The research will penetrate through these facts and seek for better performance asphalt cement for Sri Lankan road construction.

Key words: *Asphalt Grading, Viscosity, Penetration*

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