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Technical Data

Effect of MR on Asphalt Deformation Resistance

Importance to Roads

Deformation resistance is widely recognised as a key engineering property of asphalt used for road construction and surfacing.

Higher deformation resistance is an indicator of reduced potential for asphalt rutting, asphalt shearing and asphalt shoving, primarily under slow moving and heavy loads.

Methods of Evaluation

Deformation resistance can be measured directly in the laboratory, using one of a range of available wheel tracking devices.

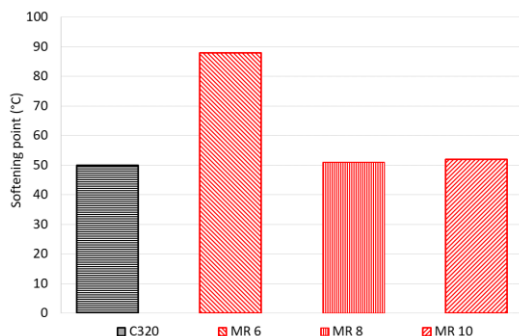
The contribution of the bituminous binder to deformation resistance can also be indirectly evaluated in the laboratory by various bitumen properties. Higher viscosity, higher softening point, lower penetration and higher Performance Grade (PG) are all indicators of a bituminous binder that will produce more deformation resistant asphalt.

Higher asphalt mixture modulus or stiffness is also generally associated with greater deformation resistance.

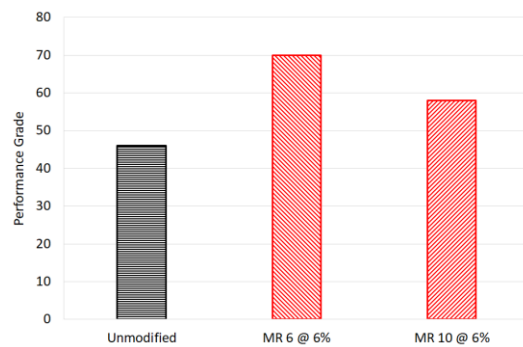
Effect of MacRebur

MacRebur MR 6 and MR 10 significantly improve the deformation resistance of asphalt mixtures compared to unmodified (penetration or viscosity grade) bitumens, while MR 8 made of slight improvement or had limited impact.

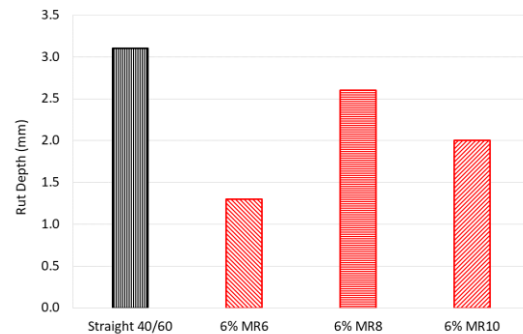
Testing in Australia demonstrated an increase in bituminous binder softening point, compared to unmodified C320, which is similar to 50-70 penetration bitumen.



MR 6 and MR 10 increased the US high temperature PG rating by MSCR under Extreme traffic, of 100-150 penetration bitumen.



Asphalt testing of British SMA 10 mixtures demonstrated a decrease in wheel track rutting potential for MR 6, MR 8 and MR 10 modified asphalt.



Similarly, testing of Australian dense graded asphalt indicated a significant increase in stiffness for MR 6 and MR 10 modified mixtures.

