

# Modification of Asphalt Mixture Performance by Rubber-Silicone Additive

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This study is the second stage of the paper “Studying the Effect of Rubber- Silicone on Physical Properties of Asphalt Cement”. The present study examines the effect of additives on asphalt mixture performance. [Asphalt mixture](#) has been designed by [Marshall Method](#) for determining the optimum asphalt content and geophysical properties of mix according to ASTM (D-1559). Rubber-silicone at different percentages (1%, 2%, 3% and 5%) was added to asphalt binder. Six specimens of asphalt rubber silicone mixture (ARSM) for each percentage are prepared and evaluated according to Marshall method. Diametric tensile creep test ASTM (D-1075) at 60 Co was used to evaluate permanent deformation and modulus of elasticity for ARSM. The study showed that the Rubber-Silicone has more effects on performance of asphalt mixture by increasing the Marshal stability, air voids, and reducing the flow and bulk density compared with the original mix. It also increases the flexibility properties of the mix and this appears from reducing the permanent deformation at test temperature (60C), the reduction percent is about (30 to 70) %.

The study shows that adding the Rubber-Silicone to asphalt binder has the following effects on the performance of asphalt mixture:

- 1- Increasing the Marshal stability, air voids, and reducing the flow and bulk density compared with the original mix.
- 2- Increasing the flexibility properties of the mix and this appears from reducing the permanent deformation at test temperature (60C), the reduction percentage is about(30% to 70%) compared with the original mix without adding Rubber-Silicone.
- 3- Study the effect of Rubber-Silicone on the performance of asphalt mixture at low temperature.

## Keywords

[asphalt mixture](#), [modification](#), [additives](#), [rubber-silicone](#), [performance](#)