

## Experimental Investigations on Nanoclay (Cloisite-15A) Modified Bitumen

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**Abstract :** This study investigated the influence of Cloisite-15A nanoclay on the physical, performance, and mechanical properties of bitumen binder. Cloisite-15A was blended in the bitumen in variegated percentages from 1% to 9% with increment of 2%. The blended bitumen was characterized using penetration, softening point, and dynamic viscosity using rotational viscometer, and compared with unmodified bitumen equally penetration grade 60/70. The rheological parameters were investigated using Dynamic Shear Rheometer (DSR), and mechanical properties were investigated by using Marshall Stability test. The results indicated an increase in softening point, dynamic viscosity and decrease in binder penetration. Rheological properties of bitumen increase complex modulus, decrease phase angle and improve rutting resistances as well. There was significant improvement in Marshall Stability, rather marginal improvement in flow value. The best improvement in the modified binder was obtained with 5% Cloisite-15A nanoclay.

**Keywords :** Cloisite-15A, complex shear modulus, phase angle, rutting resistance

**Conference Title :** ICATPE 2017 : International Conference on Advanced Traffic and Pavement Engineering

**Conference Location :** Mumbai, India

**Conference Dates :** February 07-08, 2017