

## Effect of Steel Slag on Cold Bituminous Emulsion Mix

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**Abstract :** Cold bituminous emulsion mixes (CBEM) are preferred due to their low cost for the construction of low volume roads in India. Due to the low strength of CBEM's, the strength is generally increased by the addition of Ordinary Portland Cement (OPC) and hydrated lime. To improve the performance of CBEM's, the use of industrial waste material is also an alternative. Steel slag is by product of steel industry which is sustainable construction material. Due to limited modes of practice of utilization steel slag, huge amount of steel slag dumped in yards of each steel industry and engaging of important agricultural land and gave pollution to whole environment. The effective use of steel slag as additives in CBEM's has ultimate benefits such improvement in strength of CBEM's, waste disposal steel slag, saving natural aggregate and lowering cost of roadways. Studies carried out in the past have shown a significant improvement in the strength of CBEM's prepared with the replacement of natural aggregate with industrial waste materials such as fly ash and ground granulated blast furnace slag. In this study, effect of modified mix which is mixes prepared with steel slag compared with the control mix and the mixes prepared with OPC. Experimental work was carried out on the sample of control mix, OPC mix, and modified mix. For modified mix, aggregate was replaced with steel slag by 10%, 20%, 30% and 40% of weight of aggregate of same size as of steel slag in aggregate gradation. For OPC mix, filler was replaced by 1%, 2% and 3% of weight of total aggregate with OPC. Optimum emulsion content of each mix obtained by using Marshall stability test and comparison of stability values were carried out. Marshall stability, indirect tensile strength test, and retained stability tests are performed on control mixes, OPC mixes and modified mixes. Significant improvement in Marshall stability retained stability and indirect tensile strength of modified mix compared to control mix and OPC mix.

**Keywords :** CBEM, indirect tensile strength test, Marshall stability test, OPC, optimum emulsion content, retained stability test, steel slag

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