

## **S-N-Pf Relationship for Steel Fibre Reinforced Concrete Made with Cement Additives**

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**Abstract :** The present study is a part of the research work on the effect of limestone powder (LP), silica fume (SF) and metakaolin (MK), on the flexural fatigue performance of steel fibre reinforced concrete (SFRC). Corrugated rectangular steel fibres of size 0.6x2.0x35 mm at a constant volume fraction of 1.0% have been incorporated in all mix combinations as the reinforcing material. Three mix combinations were prepared by replacing 30% of ordinary Portland cement (OPC) by weight with these cement additives in binary and ternary fashion to demonstrate their contribution. An experimental programme was conducted to obtain the fatigue lives of all mix combinations at various stress levels. The fatigue life data have been analysed as an attempt to determine the relationship between stress level 'S', number of cycles to failure 'N' and probability of failure 'Pf' for all mix combinations. The experimental coefficients of the fatigue equation have also been obtained from the fatigue data to represent the S-N-Pf curves analytically.

**Keywords :** cement additives, fatigue life, probability of failure, steel fibre reinforced concrete

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