



# Evaluation of Effective Strain of FRP Sheets for Shear Strengthened RC Beams.

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## Abstract:

Shear strengthening of reinforced concrete (RC) beams with fibre reinforced polymer (FRP) composites is a research area, which has gain considerable importance. Existing effective strain models lead sometimes to overly non-conservative results and need to be validated with a sufficient number of experimental tests. The aim of this work is to assess some common design models for the prediction of the effective strain of RC beams strengthened with externally bonded FRP sheets. The effective strain of the FRP composites plays an important role in predicting the shear capacity of FRP strengthened beams. Many existing models predict the effective strain of FRP sheet therefore experimental data of 307 beams collected from previous articles were analyzed to verify the accuracy of the proposed models. The results indicate that the suggested model (Sayed et al. 2013) can calculate the effective strain of FRP sheets for shear strengthened RC beams with higher accuracy than existing models. In order to have a safe design, a normalizing factor needs to be considered as well. In this review, this normalizing factor is determined for various models and it can be seen that Sayed et al. (2013) model has the lowest normalizing factor resulting in an economical design along with higher material efficiency

## Keywords:

Effective Strain; FRP Sheets; Shear Strengthened; RC Beams.

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