

Flexural Behaviour of Polymer Modified Reinforced Concrete Beams

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This research include the study of Structural Behaviour of polymer Modified Reinforced Concrete Beams with Styrene Butadiene Rubber (SBR) polymer. Two series of concrete mixtures were used; the first was with moderate compressive strength (level I) and the other with compressive strength higher than the former (level II). Two reference mixes were made also for comparative purposes.

This study includes compressive and flexural tests for concrete which was used in this research. The results prove that, polymer modified concrete has compressive and flexural strengths more than reference mixes.

Eight beams are moulded of (95X200X1600mm) dimension with different steel reinforcement ratio (ρ). Load-deflection relationships of beams made of polymer modified concretes and references concretes were established. The moment at mid-span with deflection and moment-curvature relationships were established too.

The effects of steel reinforcement ratio (ρ) and (ρ/ρ_{max}) on the displacement ductility of reinforced concrete beams were concluded.

The PMC beams have a stiffer response in terms of structural behaviour, more ductility and lower cracking deflection than those made by reference concretes and that refer to good role of styrene Butadiene Rubber (SBR) polymer on the properties and behaviour of reinforced concrete beams.