

KAJIAN DURABILITAS BETON DENGAN SEMEN PPC PREMIUM DAN SEMEN PPC NON PREMIUM

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ABSTRACT

Concrete structures reinforced with steel formed an important part of recent infrastructure. The combination of high strength properties on concrete and high tensile on steel provide an ideal composite material that offered wide application compare with other material on structural engineering. Today, the rate of use of cement is higher than 40 years ago. An approximation amount of 11 billion metric ton of cement per year has been consumed in the whole world. It shows that concrete still one of the favorite material in construction. The aims of this research are: (1) to obtain the durability value of concrete with PPC Premium Cement and PPC Non-Premium Cement, (2) to obtain the degree of comparison of concrete durability, (3) to obtain the durability parameters. This research based on several ASTM International standards, conduct in 224 days non-stop, to obtain following data: (1) compressive strength, (2) rebound number, (3) pulse velocity, (4) modulus of rupture, and (5) corrosion rate. The test results: (1) PPC Premium cement give a relative good performance than PPC Non Premium cement. This is based on both destructive and non-destructive test, (2) the value of modulus of rupture also giving PPC Premium cement act relatively good than PPC Non Premium cement, (3) on a severe environment, concrete treatment by mean of waterproofing proved to be effective to reduce the rate of steel destruction. This is based on corrosion rate and the percentage of weight loss, (4) on a practical use, cement with a high finess modulus can give a better performance.

Kata Kunci: *concrete beam, durability, severe environment*