

THE EFFECT OF THE ADDITION OF ZIRCON MATERIAL ON COMPRESSIVE STRENGTH AND TENSILE STRENGTH OF THE CONCRETE SIDES

PENGARUH PENAMBAHAN MATERIAL SIRKON TERHADAP KUAT TEKAN DAN KUAT TARIK BELAH BETON

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ABSTRACT

The addition of material zircon (zirconium silicate) as a substitute for fine aggregate in the concrete mix to make use local gold mine waste so it can be used as an alternative building material. This study aimed to determine the effect of material zircon (zirconium silicate) addition of 0%, 25%, 50%, 75% and 100% of the total weight of fine aggregate of compressive strength and tensile strength of the concrete sides. The benefits derived from this research is to develop knowledge about concrete technology especially zircon as an added or alternative, so that people can take advantage of zircon as concrete material in making buildings.

In this study, the concrete is made from sand, crushed stone, cement PCC and zircon added material obtained from the public gold mining waste in village ponds Banama Tingang subdistrict, Pulang Pisau. Test specimens used in this study is a cylindrical with a height of 30 centimeters and a diameter of 15 centimeters. The test specimen is made of 10 in each concrete mixture ratio, each of 3 pieces for age 14-day compressive strength, compressive strength for 28 days also 3 specimens, while for tensile strength the age of 14 and 28 days 2 pieces. Total test specimens used in this study is 50 pieces.

The results showed that the effect of the addition of zircon material of 0%, 25%, 50%, 75% and 100% of the compressive strength and split tensile strength of concrete at the age of 14 and 28 days, showed a percentage increase in the compressive strength and tensile sides. Compressive strength of concrete cylinders age of 14 days, 0% (0%), 25% (8.38%), 50% (14.41%), 75% (26.48%) and 100% (22.79%). Concrete cylinder compressive strength of 28 days is 0% (0%), 25% (7.35%), 50% (28.50%), 75% (19.51%) and 100% (7.54%). Horizontal split tensile strength age of 14 days, 0% (0%), 25% (5.97%), 50% (6.92%), 75% (16.35%) and 100% (15.41%). Horizontal split tensile strength of concrete cylinders at the age of 28 days, 0% (0%), 25% (8.63%), 50% (22.56%), 75% (14.20%) and 100% (11, 70%). The highest percentage increase in each test is compressive strength at 14 days there in 75% (26.48%), aged 28 days 50% (28.50%) and for horizontal split tensile strength at 14 days there in 75% (16.35%), aged 28 days 50% (22.56%). Thus zircon material can be used as concrete material.

Key words: Zircon, compressive strength, split tensile strength

PENDAHULUAN

Pembangunan merupakan upaya yang dilakukan secara terus-menerus yang diarahkan pada peningkatan taraf hidup masyarakat dan kesejahteraan secara umum. Dalam pelaksanaannya, perkembangan ilmu pengetahuan dan teknologi memacu adanya pengembangan kreativitas setiap orang sebagai modal agar pembangunan dapat dilaksanakan secara lebih baik. Seiring dengan hal tersebut, peningkatan mutu, efisiensi, dan produktivitas dari setiap kegiatan pembangunan terutama yang terkait dengan sektor fisik mutlak harus dilakukan, seperti halnya sektor bangunan infrastruktur yang saat ini terus mengalami peningkatan.

Seiring dengan perkembangan jaman, peningkatan pembangunan sarana dan prasarana yang dibutuhkan oleh masyarakat semakin meningkat misalnya pembangunan perumahan, perkantoran maupun untuk pendidikan. Oleh karena itu, diperlukan suatu kreativitas dalam menciptakan kreasi di bidang konstruksi

