

Use of Laterite Soil And Hydrated Lime as Material of Geopolymer Mortar Based Fly Ash

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Abstract : Carbon dioxide emissions produced by the cement industry were one of the problems in the occurrence of environmental pollution in the air that could cause global warming. To reduce carbon dioxide emissions, geopolymer fly ash which was one of the eco-friendly alternatives used to replace function of cement. However, in the field, fly ash as a mixture of concrete and mortar required oven heat which became the obstacle in making geopolymer. Therefore, another alternative was sought to replace oven heat, one of which is the use of hydrated lime. Besides, mortar research using geopolymer fly ash as a binder, generally used sand as the fine aggregate. In this study used laterite soil which was quite widely available in nature as the fine aggregate material. These alternatives was developed in this study with the aim to determine the strength of laterite mortar fly ash geopolymer and the effect of hydrated lime as a substitute for oven heat. This study used experimental method in the laboratory using alkaline activator Sodium Silicate and Sodium Hydroxide at a ratio of 2.0 with concentration of 12 M NaOH. Used 3 variations in percentage of laterie soil and hydrated lime, 70:30, 80:20 and 90:10 with sample size 5 cm x 5 cm x 5 cm. The results of the study showed that laterite soil and hydrated lime can be used as geopolymer fly ash mortar with strength 19.70 MPa.

Keywords : Geopolymer fly ash, laterite soil, lime, mortar, compressive strength.

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