

Thesis Title	Influences of Palm Oil Fuel Ash From Upper Southern Part of Thailand on Properties of Mortar Portland Cement
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Abstract

Palm Oil Fuel Ash (POFA) is one of the pozzolanic materials. It is a by-product from palm oil industry being produced from combustion of palm fibers and nutshells in the steam boiler. However, POFA obtained from each factory may have different properties since each factory uses different temperatures and mixture palm fibers and nutshells in combustion. In this research, the chemical and physical properties of POFA as well as the effects of POFA on the compressive strength of mortars under uniaxial compression were investigated. POFA used in this study was the ground fly ash and mixed of ground and bottom ashes, obtained from four different factories and replaced Portland cement in the percentages of 10 20 30 40 and 50 by weight. The cement to sand ratio of 1 : 2.75 was used for all mixture. The studies of the chemical and physical properties showed that, there was variation in properties from factory to factory. Ground POFA particles from two factories have round shapes and smooth surfaces. As a result, for constant flow of 105-115, the mortar mixed with the small amounts of these POFA required less water than the standard mortar. According to the uniaxial compressive test results, the proper amount of POFA as Portland cement replacement varied from factory to factory. The compressive strengths of the mortars that contain 10 percent of palm oil fly ash were in the range of 466 to 488 Ksc, which are higher than those of the standard mortars. Some of these fly ashes can be used up to 20 percent and without causing strength reduction in mortar.

Keywords: Palm Oil Fuel Ash/ Pozzolanic Material/ Portland Cement/ Compressive Strength