

MALTERI I BETONI SA DODATKOM MATERIJALA IZ INDUSTRIJSKOG OTPADA

Sažetak:

U doktorskoj disertaciji predstavljena je mogućnost korištenja lokalno dostupnih materijala iz industrijskog otpada za proizvodnju i korištenje maltera i betona. Crveni mulj, koji je težište doktorske disertacije uzet je iz deponije Dobro selo u blizini Mostara, a mikrosilika je porijeklom iz Jajca. Dodatak crvenog mulja i mikrosilike, u ovom istraživanju odnosi se na djelimičnu supstituciju ovih otpadnih materijala sa cementom. Crveni mulj, mikrosilika i cement smatrani su vezivom. Istraživanje je provedeno na pet mješavina maltera i pet mješavina betona sa dodatkom crvenog mulja od 0%, 5%, 10%, 15% i 20% i stalnim dodatkom mikrosilike od 10%, sve u odnosu na masu cementa. Pored toga, ispitan je crveni mulj i cementna pasta jednakog sastava kao i malteri i betoni. Eksperimentalno istraživanje provedeno je u laboratorijskom prostoru Instituta Građevinskog fakulteta, Univerziteta "Džemal Bijedić" u Mostaru u periodu 2017. – 2019. Ispitane su osobine svježih i očvrsljih maltera i betona, te na osnovu rezultata provedena je statistička analiza.

Ključne riječi: crveni mulj, mikrosilika, malter, beton

MORTARS AND CONCRETE WITH THE ADDITION OF INDUSTRIAL WASTE MATERIALS

Abstract:

The doctoral thesis presents the possibility of using locally available industrial waste materials for the production and application of mortar and concrete. The red mud, which is the focus of the doctoral thesis, was taken from the Dobro selo landfill near Mostar, and the silica fume is from Jajce. The addition of red mud and silica fume in this study refers to the partial substitution of these waste materials with cement. Red mud, silica fume and cement were considered as binder. The research was carried out on five mortar mixtures and five concrete mixtures with the addition of red mud of 0%, 5%, 10%, 15% and 20% and a constant addition of silica fume of 10%, all in relation to the cement mass. In addition, red mud itself and cement paste of the same composition as mortars and concretes were tested. The experimental research was conducted in the laboratory of the Civil Engineering Institute, "Džemal Bijedić" University of Mostar in the period 2017 - 2019. The properties of fresh and hardened mortars and concrete were tested, and based on the results, a statistical analysis was performed.

Keywords: red mud, silica fume, mortar, concrete