



## Effect of partial replacement of simulated desulphurised waste on pore size distribution of cement pastes

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### Vpliv delne uporabe nadomestka odpadkov odžvepljevanja na porazdelitev por v cementnih pastah

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#### Abstract

This paper reports some findings on the porosity and pore size distribution of cement paste containing simulated desulphurised waste (SDW). The SDW was examined due to the large variability in chemical composition of real desulphurised waste. The SDW was made using a combination of fly ash and gypsum. The water to binder ratio was 0.5. The binder consists of cement and SDW. The cement in the paste was replaced with up to 70% SDW by weight. The porosity and pore size distribution of cement pastes at 14 days of curing is reported. Increasing the amount of gypsum does not seem to greatly change the pore volume, however, there is tendency of obtaining coarser pore structure in the presence of gypsum. The compressive strength increases with increasing amounts of gypsum. Also the correlation between strength and pore size distribution is attempted.

**Key words:** Desulphurised waste, FGD waste, porosity, pore size distribution, waste.

#### Povzetek

V članku je so prikazane ugotovitve raziskave glede poroznosti in porazdelitve por v cementni pasti, ki vsebuje nadomestek odpadka odžvepljevanja (NOO). NOO je bil uporabljen v raziskavi zaradi velike spremembe v kemični sestavi realnih odpadkov odžvepljevanja. NOO je bil izdelan iz elektrofilterskega pepela in mavca. Uporabljen je bil vodo-cementni faktor 0,5. Vezivo vsebuje mešanico cementa in NOO. Cement v pasti je bil nadomeščen z do 70 ut.% NOO. V članku je prikazana poroznost in porazdelitev por v cementni pasti po 14 dneh staranja. Naraščajoča količina mavca v pasti pomembno ne vpliva na spremembo pornega volumna, je pa opaziti bolj grobo strukturo por ob prisotnosti mavca. Tlačna trdnost narašča z večjo količino mavca. Prav tako je z razmerjem med trdnostjo in porazdelitvijo por.

**Ključne besede:** odpadki odžvepljevanja, FGD odpadki, poroznost, porazdelitev por, odpadki.