

POTENTIAL USE OF PAPER SLUDGE AND PAPER SLUDGE ASH IN CONSTRUCTION SECTOR

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CELCYCLE
Discarded potentials of biomass

Purpose of research:

The possibilities of using paper sludge and paper sludge ash (waste from the paper industry) in different construction products.

OUR WORK:

- *Two types of paper sludge and paper sludge ash were characterized to determine the chemical and mineralogical composition and selected physical properties.*
- *Research of potential use of paper sludge and paper sludge ash in clay based sector.*
- *Research of potential use of paper sludge ash as additive in asphalt mixtures.*
- *Research of potential use of paper sludge ash as additive or filler in mortars/concrete.*



Conclusions of research:

- **Paper sludge addition (10 %) to brickmaking clay:** reducing shrinkage after firing and lowering the thermal conductivity, while **addition of paper sludge ash** did not exhibit any positive effect on the brickmaking clay.
- **Paper sludge ash as additive or filler (5, 10, 20 %) in mortars:** Cement replacement with ash K5 resulted in prolonged setting time, reduced compressive strength, sulfate resistance and resistance to carbonation when comparing it to ash K4 addition. On the other hand, capillary coefficient of K5 was lower and frost resistance was enhanced. Bond strength of mortars with ash was improved with respect to the pure cement.
- **Paper sludge ash as additive to asphalt mixture:** properties of the mixture with the addition of ash K5 were slightly lower than those achieved on the reference asphalt mixture, but still all the test results were within the limits of the permitted in standards and technical specifications for asphalt.