

The use of different minerals for the improvement of home composting process of food waste

*Margaritis M. *, Thanos A.G. *, Gkazeli E. *, Legakis M. **

**School of Chemical Engineering, National Technical University of Athens, 9Iroon Polytechniou Str., Zographou Campus, GR-15773 Athens, Greece.*

This paper introduces the use of different additives (i.e. woodchips, perlite, vermiculite and zeolite) in a prototype home-scale composting system, with a special focus on process improvement, through the experimental study of the process. The interventions with different bulking agents were realized through composting cycles using substrates with 10% additives in specific mixtures of kitchen waste materials. In order to achieve an initial C/N ratio equal to 30, the pre-selected proportion of the mixtures examined was 3:1:1 in cellulosic: proteins: carbohydrates. The initial properties of the examined substrates were controlled, with the aim of the consequent improvement of the final products (compost) properties. The results indicated that composting process was enhanced with the use of additives and especially the case of zeolite and perlite provided the best results, in terms of efficient temperature evolution (>55 C for 4 consecutive days). Carbon to nitrogen ratios for the reactors where minerals were added decreased by 40% from the initial values, while a slight reduction was detected for the bioreactor tested with woodchips, showing slowest degradation rate. Moisture content of produced compost varied within the range of 55–64% d.m., while nutrient content (K, Na, Ca, Mg) was in accordance with the limit values reported in literature. Conclusively, the composts obtained, exhibited a satisfactory degree of maturity, fulfilling the criterion related to the absence of phytotoxic compounds.