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Authors: Francesca Demichelis, Silvia Fiore, Maurizio

Onofrio

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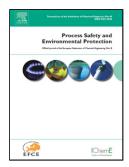
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ACCEPTED MANUSCRIPT

PRE-TREATMENTS AIMED AT INCREASING THE BIODEGRADABILITY OF COSMETIC INDUSTRIAL WASTE

Francesca Demichelis, Silvia Fiore*, Maurizio Onofrio

DIATI (Department of Engineering for Environment, Land and Infrastructures), Politecnico di Torino. Corso Duca degli Abruzzi 24, 10129 Torino, Italy

*Corresponding author: prof Silvia Fiore, DIATI Politecnico di Torino, Corso Duca degli Abruzzi 24 - 10129 Torino, Italy; email: silvia.fiore@polito.it. tel +39 011 0907613

Highlights

- The enhancement of biodegradability of cosmetic industrial waste was investigated
- The performances of different physic-chemical pre-treatments were compared
- The increase of soluble COD was employed as reference parameter
- Best results were achieved from thermo-alkaline pre-treatment
- Methane yield increased of 50% after pre-treatments reaching 0.14 Nm³/kgvs

Abstract

This work investigated physic-chemical pre-treatments aimed at improving anaerobic digestion (AD) of cosmetic industrial waste produced by a plant belonging to L'Oréal Group. A mixture designed according to relative abundances of waste was considered: sludge from internal wastewater treatment plant (54%-wt), residues of shampoo/conditioner (31%-wt), mascara sludge (13%-wt), food waste (2%-wt). The mixture had 80% VS/TS and COD equal to 1240 mg O₂/g_{VS}; soluble fraction of COD was 22%. Investigated pre-treatments were: chemical, thermal, sonication

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