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BIOLOGICAL AIR TREATMENT EFFICIENCY OF A STRAW BIO-CHARGE

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Abstract

Experimental research evaluated the possibilities of air treatment efficiency of a cylindrically shaped bio-charge, namely straw, to remove volatile organic compounds from the air. As determined during experiments, the air treatment efficiency of the straw bio-charge for acetone removal reached 97.3%, while for butanol removal the efficiency was 86.0%. It has been determined that, with volatile organic compound concentrations increasing biological air treatment efficiency is decreasing as higher concentrations of organic compounds reduce the activity of microorganisms, i.e. their reproduction, respiratory and pollutant oxidation capacities. A higher efficiency of a biological air treatment device is achieved by reducing the velocity of the airflow passed through the bio-filter. With airflow velocity decreasing the duration of pollutant contact with the charge is increasing, which raises the biological air treatment efficiency by 1.3 times.

Key words: bio-charge, biodegradation, bio-filter, microorganisms, odorants, volatile organic compounds

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