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Evaluation of the Fungal Resistance of Artificial Leather Samples

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ABSTRACT

Micromycetes play a leading role in processes of biodegradation of various leather products exposed to high temperatures and humidity. Considering the limited research on the biodegradation of leather products by micromycetes, this study aimed to evaluate the degree of fungal resistance in artificial leather samples. The study materials included selected seven species of micromycetes (*Aspergillus niger* Tiegh., *Alternaria alternata* (Fr.) Keissl., *Cladosporium herbarum* (Pers.) Link, *Fusarium semitectum* Berk. & Ravenel, *Penicillium casei* W. Staub, *Trichoderma viride* Pers., and *Rhizopus stolonifera* (Ehrenb.) Vuill.), isolated from industrially contaminated soils and used for the preparation of water-spore suspensions, as well as seven samples of artificial leather. The methods used to evaluate the fungal resistance of materials are based on the ASTM destination: G21-15 standards. The degree of microscopic fungal growth on the test samples is assessed on a scale from 0 to 5 points, which serves as the basis for determining the level of fungal resistance of the material. During the fungal resistance tests, the following micromycetes species were identified on the artificial leather samples: *Aspergillus candidus* Link, *A. niger*, *Mortierella longicollis* Dixon-Stew., *Mucor parasiticus* Bainier, *Rhizopus microspores* Tiegh., *R. stolonifer*, and *Trichoderma viride*. Notably, *Mucor parasiticus, Rhizopus microsporus, Aspergillus candidus* and *Mortierella longicollis* were not included in the initial water-spore suspension used for inoculation. In contrast, four species that were included in the water-spore suspension (*Alternaria alternata, Cladosporium herbarum, Fusarium semitectum* and *Penicillium casei*) were not detected in the test materials. It should be noted that one of the seven samples demonstrated strong fungicidal properties, with the fungal growth score being 0. Two samples demonstrated weak fungal activity, and the remaining four did not demonstrate any fungicidal properties. The obtained data can be used to develop methods for improving the fungal resistance of leather products.

Keywords: micromycetes, artificial leather, biodegradation, fungicidal properties, fungal resistance

References:

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