



Sustainable Biodegradation Mechanisms in Varnish Removal Agents

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DESCRIPTION

Paints and varnishes are used for protective and/or decorative purposes and most of their properties depend on their components, *i.e.*, film components. The article is macromolecular organic substances or chemicals that are converted into macromolecular compounds through reactions that form a lacquer layer. These properties determine the use and application of paint coatings. Film ingredients are resins and other auxiliary materials. In order to manufacture coatings and special materials, a combination of resins is often used. The biological degradation of lacquer coatings by microorganisms is often associated with the degradation of their protective and cosmetic properties. The spread of microorganisms in and out of the paint is peeling. Fungal growth also causes discoloration. The most common bacteria belong to the genus *Bacillus* and *Pseudomonas*. The most common fungi are *Penicillium* sp., *Aspergillus* sp. and *Cladosporium* sp. Research on the biological degradation of carbohydrates and their peeling properties shows that some of these microorganisms can be used to destroy old brand coatings on purpose. Studies were also carried out to investigate the biodegradation of the waste produced in the process of removing the bran. The following bacteria were isolated from the samples: *Corynebacterium* sp., *Bacillus* sp., and bacteria from the *Enterobacteriaceae* family. Also found were yeasts: *Rhodotorula lactosa*, *Exophiala jeanselmei*, and fungi: *Aureobasidium* sp., *Penicillium* sp., *Paecilomyces* sp. A study identified bacteria in the waste produced by the lacquer industry. The following bacteria were found to be able to break down the sludge: *Bacillus subtilis*, *Bacillus licheniformis*, *Bacillus cereus*, *Bacillus megaterium* and *Pseudomonas fluorescens*. In addition, the authors of this study determined the production time of the bacteria under growing conditions. It was 44.67 minutes for *Pseudomonas fluorescens*. 45.04 minutes for *Bacillus subtilis*; 35 min for *Bacillus licheniformis*, 18 min for *Bacillus cereus*, 19 min for *Bacillus*

megaterium and 53 min for mixed bacterial cultures. studied the degradation of detergent-dye containing methylene chloride with a concentration of 5000 mg/dm³, phenol with a concentration of 1800 mg/dm³ and some other organic substances, such as paraffin wax, cellulose derivatives, oil they gave Sulfonates and naphthalene in a total concentration of 2200 mg/dm³. Activated sludge was used. This study identified bacteria present in activated sludge and their ability to grow in the presence of phenolic wastewater and sewage. In addition, the researchers investigated whether these materials could act as carbon sources for bacteria. Bacteria such as *Enterobacter* sp., *Klebsiella* sp., *Corynebacterium* sp., *Pseudomonas* sp., *Bacillus* sp., *Acinetobacter* sp. isolates. The bacteria most commonly isolated from sewage are Gram-negative and most belong to the genus *Pseudomonas*. There are fewer than 88 Gram-positive bacteria, represented by the genus *Bacillus*. Studies have shown that most isolated bacteria can break down phenol and pollute wastewater. However, the most important role in this process is the bacteria of the genus *Pseudomonas* and *Bacillus*. investigated the biodegradation of solvents used in nail extracts, focusing on the biodegradation of typical agents of this type. They prepared two types of drugs: One with toluene, acetone and dichloromethane, and the other with dichloromethane, isopropyl alcohol and methanol. Two types of bacteria were used in this study: *Hyphomicrobium* sp. and *Rhodococcus rhodochrous* sp.

This study showed that selected bacterial strains can break down solvents found in paint extracts. In patent US8202424. described the process of biodegradation of paint washing waste containing high levels of organic matter. In their research, two types of bacteria were used: *Pseudomonas fluorescens* and *Bacillus subtilis* and a type of fungus, *Cunningham elegans*. They tested the Chemical Oxygen Demand (COD) changes of sewage samples exposed to microbial activity. This study showed that 47% COD reduction could be achieved using selected bacterial strains.

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