

ANTIMICROBIAL TECHNOLOGY

In general, synthetic polymers are not consumed by microorganisms. This characteristic will result in greater stability of the polymer during service and greater ease of reuse. On the other hand, although conceptually inert, plastic material products can be places for the proliferation of colonies of bacteria, pathogenic viruses and fungi inside or on their surface, depending on the conditions to which they are exposed (temperature, pH, humidity and presence or absence of light). When this occurs, changes in properties such as colour, odour, shine and mechanical performance may occur. Furthermore, contact between microorganisms and the user of the product implies potential risks such as infections, allergic reactions and food contamination.

HOW DO ANTIMICROBIAL ADDITIVES WORK?

Antimicrobial additives have two mechanisms of action: biostatic and biocidal. The biostatic mode inhibits the reproduction of microorganisms; the cells are not eliminated, but their reproduction is inhibited. In biocidal mode, the additive kills microorganisms and significantly reduces their concentration within a given period of action.

Test with additive in polymers

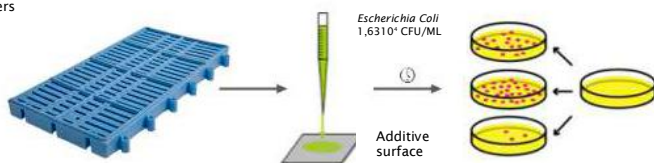


Figure 1: Illustration of bacteria reduction on an additive surface

Both unwanted changes in material properties and risks to users can be inhibited by using products with antimicrobial technology.

Antimicrobial technology refers to methods and materials that inhibit or eliminate pathogenic microorganisms. This technology is used in several areas, such as packaging for contact with food, disinfectants, coatings, among other applications.

To ensure that our products have antimicrobial properties in specific applications, we use an antimicrobial additive in the material formulation, together with the polymeric resin.

WHAT ARE THE MAIN APPLICATIONS OF ANTIMICROBIAL TECHNOLOGY?

Its main applications within Pisani are in pig and poultry products, such as cages and floors. Its use in these products inhibits the proliferation of microorganisms and prevents the migration of bacteria from animal to product, reducing/eliminating cross-contamination.



Figure 2: Plastic Cage 100 and Pig Nursery Floor

Source: RABELLO, Marcelo; DE PAOLI, Marco-Aurelio. Aditivação de Termoplásticos. Volume 3, São Paulo: Editora Artliber, 2013.