



INNOVUS

#### CONTACT

OFFICE: +27 (21) 808 3826

FAX: +27 (21) 808 3913

EMAIL: [info@innovus.co.za](mailto:info@innovus.co.za)

# Antimicrobial Polymer Resin

Innovus Technology Transfer (PTY) Ltd is Stellenbosch University's wholly-owned technology transfer company. Contact Anita Nel, Innovus Chief Executive Officer, on (021) 808 3826 or send an email to [ajnel@sun.ac.za](mailto:ajnel@sun.ac.za) for more information.



A synthetic, permanently antimicrobial polymer resin for use in the textile or medical industry



INNOVUS

## BRIEF DESCRIPTION

Antimicrobial coatings are applied to substrates such as wound dressings, personal hygiene or sanitary products, clothing, packaging, furniture, construction materials, textiles and the like to make them sterile and prevent bacterial growth. Antimicrobial coatings find particular use in wound dressings as the exudate from the wound contained in an absorptive wound dressing typically encourages the growth of bacteria, resulting in infections that compromise wound healing.

## UNIQUE CHARACTERISTICS

Materials and textiles coated with the resin become permanently antimicrobial

- No leaching
- Kills bacteria on contact
- No loss of activity over time

## TARGET MARKET

- Medical and Healthcare sector
- Textile industry

## VALUE PROPOSITION & BENEFITS

Most antimicrobial coatings include antimicrobial agents that are not permanently bonded to the substrate and eventually leach from the coating or are released from it. Such coatings lose their efficacy over time and the microbes may develop resistance against the particular active agents.

Antimicrobial wound dressings, for example, normally include low molar mass biocides or nanosilver that leach from the coating and affects bacterial growth in its immediate environment. Due to the mode of action and activity of biocides and nanosilver, antimicrobial efficacy is lost over time and cannot be regenerated. Moreover, the antimicrobial agents may in some instances have a toxic or harmful effect if concentrations are increased in an attempt to prolong efficacy.

There is thus a need for an antimicrobial coating that may be permanently bonded to a substrate and which has the required antimicrobial activity to protect the substrate and surrounding environment from microbial infection, whilst retaining its antimicrobial activity for extended periods of time.

## TECHNICAL DESCRIPTION

Commercially available poly(styrene-co-maleic anhydride) copolymers are synthetically modified to incorporate quaternary ammonium compounds (QACs) in the backbone of the polymer.

QACs are well known to have antimicrobial activity and in this case act as contact biocides whilst permanently fixed on the surface of materials and textiles. A proof of concept was achieved where a commercial wound dressing was coated and the antimicrobial polymer fixed to the surface.

Antimicrobial assays with gram-positive and gram-negative bacteria indicated complete reduction in the total number of colony forming units (CFUs) in a matter of hours.

## PRINCIPAL RESEARCHERS

Dr William J. Cloete, Innovus, Stellenbosch University

Prof Bert Klumperman, Department of Chemistry and Polymer Science, Stellenbosch University

# A non-leaching contact biocide



## INNOVATION STATUS

United Kingdom, New Patent Application  
Number: 1702804.4