

Germ-Repellent: A Next-Generation Antimicrobial Material Solution

This technology revolutionises hygiene with a "repel-instead-of-kill" approach — an engineered surface that prevents bacterial attachment and biofilm formation. Biocide-free, non-leaching, food-contact safe and long-lasting, it can be processed via masterbatch-based processing or coating, enabling continuous hygienic protection across plastic products and surfaces.

Industry Challenges

- Conventional antimicrobials rely on biocides like silver ions that leach onto surfaces, posing health and environmental risks
- Antibacterial efficacy diminishes over time, potentially promoting superbug development and causing product discolouration
- After routine cleaning and disinfection, surfaces may be re-contaminated through repeated contact, leaving hygiene gaps between cleaning

Major Benefits

- Up to 99% germ-repellent efficacy, inhibiting bacterial attachment and biofilm formation according to ASTM E3371
- Biocide-free, silver-free and non-leaching, helping reduce environmental concerns
- Passed in-vitro skin irritation and food-contact safety tests — Non-toxic, safe to use for intended applications
- Continuous protection for high-touch surfaces between routine cleaning cycles
- "Repel" not "kill" — no superbug risk; preserves original appearance and properties

Application Areas

- Food-contact products and packaging (containers, utensils, bottles, takeaway packaging)
- Public hygiene fixtures (air duct, toilet seats, showerheads, faucets, handrails)
- Maternal, baby and healthcare products (pacifiers, soothers, medical device surfaces)
- Household and kitchenware (cutting boards, utensils, storage)
- Pet articles (bowls, water dispensers, toys, carriers)

Collaborator(s)

Manufacturers of plastics and rubber precision manufacturing, sanitary hardware, household products, and commercial printing & packaging

Award(s)

R&D 100 Awards, Edison Awards,
International Exhibition of Inventions Geneva



ASTRI's Germ-Repellent technology is biocide-free, non-leaching, and offers durable, safe hygienic protection for various industries

