TECH OFFER

Anti-Pathogen Stainless Steel with Long-Term Inherent Antimicrobial Properties

KEY INFORMATION

TECHNOLOGY CATEGORY:
Materials - Metals & Alloys
Healthcare - Medical Devices

TECHNOLOGY READINESS LEVEL (TRL): TRL8
COUNTRY: HONG KONG
ID NUMBER: TO174915

OVERVIEW

Worldwide, infectious diseases not only affect the health of millions annually but also incur an immeasurable economic cost. The transmission of pathogenic viruses in public areas has been a long-standing issue. Stainless steel (SS) is one of the most extensively used materials in public areas and hygiene facilities, such as door handles, elevator buttons, handrails, countertops, etc. However, SS lacks inherent properties to combat pathogen microbes on its surfaces, posting a high risk of disease transmission among people via surface touching. Additionally, certain pathogens, like SARS-CoV-2, exhibit strong stability on SS surfaces, with viable viruses detected even after three days.

To address this challenge, the technology owner has developed anti-pathogen stainless steel, which is a significant breakthrough in the field of anti-microbial SS. It stands as the world's first SS capable of combating the severe acute respiratory syndrome coronavirus 2 (SARS-Cov-2) on its surface. Furthermore, its antimicrobial properties are broad-spectrum and can inactivate many other pathogen microbes, such as the H1N1 influenza A virus (H1N1) and Escherichia coli (E. coli).

Unlike surface coatings that may wear off over time, the antimicrobial precipitates are permanently embedded in the whole SS matrix, providing long-term inherent antimicrobial properties. Thus, this anti-pathogen SS can effectively and chronically inactivate pathogen microbes even though its surface is continuously damaged.

The technology owner is keen to do R&D collaboration and licensing to application developers intending to implement anti-pathogen SS in various industries.

TECHNOLOGY FEATURES & SPECIFICATIONS

This anti-pathogen stainless steel has the following technical features:

- Excellent antiviral rate >99.999% (according to ISO 21702-2019 standard)
- Broad-spectrum antimicrobial properties, effective against H1N1, E. coli, Staphylococcus aureus, etc.
- Wear-resistant antimicrobial properties at any depth from the surface
- Long-term antimicrobial properties and wear resistance (without surface coating)
- Compatible with traditional precision casting process
- Can be fabricated in various shapes and sizes for different applications

POTENTIAL APPLICATIONS

The anti-pathogen and anti-COVID-19 SS can be customised for various products and applications, particularly those with high hygiene requirements. The potential applications include but are not limited to:

- **Public Areas:** frequently touched items such as lift buttons, door handles, handrails, ticket counters, etc.
- **Medical and Healthcare Facilities:** surgical instruments like tweezers and knives, hospital trays, bed rails, etc.
- **Childcare and Elderly Care:** appliances in schools and nursing homes, such as toys, walkers, toilet handles, etc.
- **Food Industries:** food preparation surfaces, kitchen appliances, kitchenwares, cold-chain storage, etc.
- **Residential and Commercial Buildings:** contact-related products like doorbells, light switches, water taps, etc.

UNIQUE VALUE PROPOSITION

The breakthrough technology offers the following unique features:

- The first stainless steel capable of combating both bacteria and viruses, including COVID-19 and SARS-Cov-2 virus
- Excellent broad-spectrum antimicrobial properties with an antiviral rate >99.99%
- Inherent antimicrobial properties without any additional treatment
- Enable cost-effective mass production using existing precision casting process and powder metallurgy technology

The technology owner is keen to do R&D collaboration and licensing to application developers intending to implement anti-pathogen SS in various industries.