KIMS develops a functional antibacterial/antiviral additive

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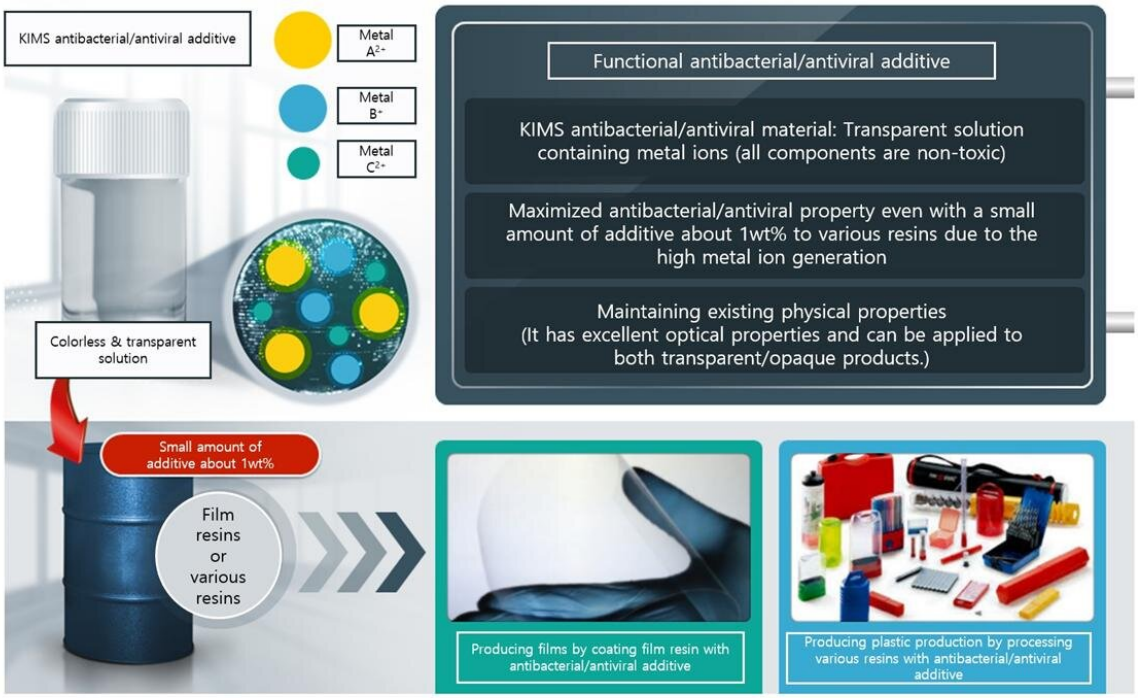


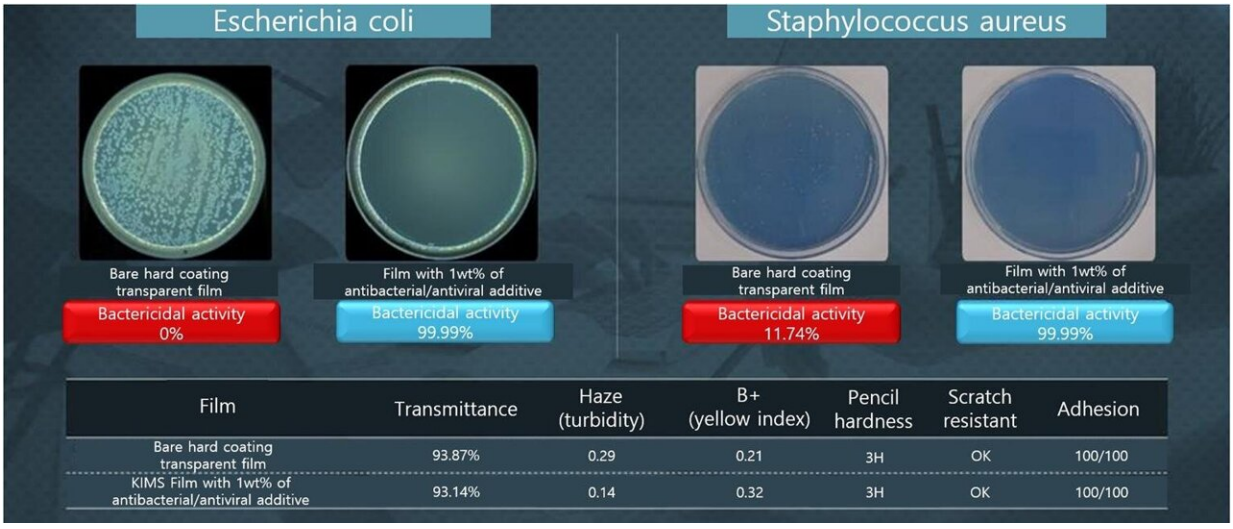
The antibacterial/antiviral additive developed by KIMS. Credit: Korea Institute of Materials Science (KIMS)

A research team led by Dr. Chang Su Kim at the Department of Nano-Bio Convergence of the Korea Institute of Materials Science (KIMS) developed a material that gives antibacterial/antiviral properties without changing the physical properties of products that are commonly used.

KIMS is a government-funded research institute under the Ministry of Science and ICT.

Currently, antibacterial films and antibacterial coating products are widely used for elevator buttons, door handles, and touch screens. However, it is difficult to maintain the long-term antibacterial durability of the material because of the low transparency and it can be easily damaged due to frequent use. In addition, it requires an additional process of attaching or producing a film to an existing product.

The research team at KIMS developed an antibacterial/antiviral additive that generates high metal ions. By simply adding a small amount of additive about 1-2 weight percent (wt%) to various resins, the antibacterial properties are increased to 99.99%, and the antiviral properties are more than 10 times in 2 hours without changing optical/mechanical/thermal properties of existing products. Because this material is used as an additive, it is possible to carry out ultraviolet (UV) and heat curing process without additional processing on existing products. In addition, the antibacterial/antiviral additive is composed of non-toxic substances without organic antibacterial agents and nano compounds.



Film	Transmittance	Haze (turbidity)	B+ (yellow index)	Pencil hardness	Scratch resistant	Adhesion
Bare hard coating transparent film	93.87%	0.29	0.21	3H	OK	100/100
KIMS Film with 1wt% of antibacterial/antiviral additive	93.14%	0.14	0.32	3H	OK	100/100

High antibacterial properties and maintenance of optical/mechanical properties by adding antibacterial/antiviral material. Credit: Korea Institute of Materials Science (KIMS)

Dr. Chang Su Kim, the lead researcher of the team, said, "This technology can be widely applied to display films, functional textiles, home appliances/furniture films, window films, interior and exterior materials for automobiles, kitchen/bathroom/sanitary products, and medical supplies. We are conducting mass-production tests together with some companies who would use the material. We will spare no effort to tackle new infectious diseases for the post-COVID-19 era when people's interest in personal hygiene will greatly increase."

The research team is currently working on commercializing the technology by promoting the establishment of a research institute spin-off company.

Provided by National Research Council of Science & Technology

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