Antimicrobial Compounds Help Designers Enhance Safety of Healthcare Applications

MDT Staff

According to a 2011 report by the World Health Organization, in 2002 in the United States alone approximately 99,000 deaths were linked to healthcare associated infections (HCAIs). Here at MD&M West (booth #1701), SABIC's Innovative Plastics business today introduced powerful new tools to help medical device manufacturers reduce HCAIs among patients and clinicians. SABIC's nine new antimicrobial compounds featuring silver technology have been tested for log reduction values – the level of microbes eliminated from a surface – according to the ISO 22196-2007 protocol. They comprise one of the broadest antimicrobial portfolios in the industry and offer distinct advantages over off-the-shelf antimicrobial concentrates combined with third-party resins.

Because SABIC scientists possess compounding expertise and a deep understanding of base resin and antimicrobial additive chemistries, they can optimize properties and performance to meet specific requirements. This new portfolio demonstrates SABIC's expertise and continued investment in developing healthcare materials that can empower customers globally to meet the ongoing challenges of infection prevention.

"We are proud of our vertically integrated approach, which delivers turnkey antimicrobial compounds containing low or high concentrations of silver and based on the four SABIC resins most commonly used in medical devices," said David Wildgoose, general manager, Engineering Resins, Innovative Plastics. "Our solutions

are backed by a robust healthcare product policy that provides a ‘formula lock’ and management of change provision to help OEMs avoid requalification delays of up to 24 months. Our comprehensive solution delivers multiple benefits to customers – consistency, cost-out, choice and proven performance according ISO methodology. We are confident these materials will make it easier for customers to create next-generation healthcare products while staying ahead of regulatory requirements.”

Wide Selection of Antimicrobial Compounds

SABIC’s portfolio comprises nine different antimicrobial grades across four product families: LEXAN™ EXL copolymer, LEXAN polycarbonate (PC) resin, XENOY™ PC/polybutylene terephthalate (PBT) resin and polypropylene (PP) resins with and without fiberglass reinforcement. Five grades have a high antimicrobial effect (log reduction value above 4, representing a 99.99+ percent reduction in pathogens) and four grades have a low antimicrobial effect (log reduction value below 4, representing a 99.0-99.99 percent reduction in pathogens). These options allow customers to select the appropriate formulation depending on whether the end product is a high- or low-touch application.

These compounds leverage silver-based antimicrobial technology because silver is a proven performer, well suited to diverse applications and widely accepted as a broad-spectrum antimicrobial, with activity against many pathogens including gram-positive and gram-negative bacteria, mold and fungus. Because they are formulated to be effective at the lowest concentration of silver, SABIC resins may also be more cost-effective than competitive products.

Healthcare Product Policy for Added Confidence

SABIC’s antimicrobial compounds are supported by its healthcare product policy, which gives customers confidence that these materials meet global standards for safety, are available in a consistently formulated supply and have been pre-assessed for biocompatibility.

The SABIC Healthcare Product Policy provides:

- Easily identifiable product nomenclature (“H” or “PCG” series resins)
- Biocompatibility assessment according to ISO 10993 or USP Class VI
- Food contact compliance for most healthcare products
- FDA Drug Master File and/or Device Master File listing (letter of authorization provided as needed)
- A formula lock and stringent management of change process

Compounding Surpasses Concentrates

Instead of mixing a third-party base resin with off-the-shelf concentrates, which can lead to inconsistent performance, SABIC performs its own compounding using proven, high-performance resins and additive chemistries. The benefits of SABIC compounding over concentrates include uniform distribution of the additive for better performance and less manufacturing waste.

By leveraging multiple material characteristics – such as impact resistance,

chemical resistance, custom colors and processability – and their interactions with the additive while controlling the compounding process, SABIC can deliver highly specialized performance properties, such as the duration and strength of the antimicrobial. Of particular importance is SABIC's expertise in color and effects, which allows precise control over clarity, a property that can be impacted by antimicrobials.

Potential applications include fluid and drug delivery applications, surgical instruments, monitoring and imaging devices and durable medical equipment such as hospital beds and operating tables. Other potential applications outside of healthcare include consumer electronics, automobile interiors, business equipment such as copiers or ATMs, or any other surface where there is a desire to reduce the potential transference of pathogens.

SABIC's new antimicrobial compounds are manufactured in the United States.

For more information, visit www.sabic-ip.com [1].

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