

Product Data Sheet



ANTIMICROBIALS REDUCE HOSPITAL INFECTIONS

According to a survey by the Center for Disease Control (CDC), 3.2% of inpatients in U.S. acute care hospitals contract at least one health care associated infection (Center for Disease Control, 2018). Device associated infections accounted for one in every four infections. Indwelling devices, such as central venous catheters, are particularly susceptible to bacteria colonization which can enter the blood stream. Increasingly, medical device companies are evaluating antimicrobial additives for plastics to kill harmful bacteria on the surface of device components.

Inorganic additives, such as ionic silver, are highly successful at killing bacteria and preventing colonization. Combat master batches use high loadings of Sciescent Agion® ionic silver-based antimicrobial technology in a universal polymer matrix. These are dry blended with unmodified polymers at letdown percentages from 2-10%, depending on the polymer and application. These include thermoplastic polyurethane (TPU) used for indwelling catheters, and acrylonitrile styrene butadiene (ABS) and polycarbonate (PC) used for device handles, bedrails and diagnostic equipment housings.

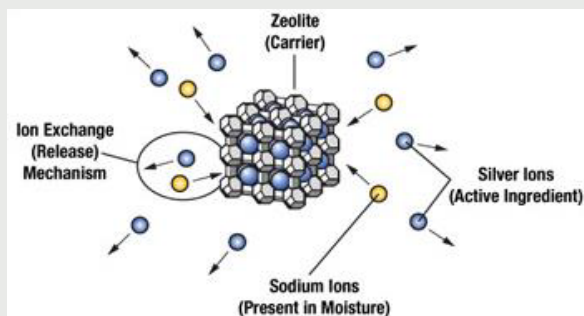
COMBAT™ ANTIMICROBIAL MASTER BATCHES

Combat AD master batch is designed using Agion AD antimicrobial additive: a fine particle zeolite ($< 4 \mu\text{m}$) and high proportioned ionic silver (20-24%). The master batch consists of 40% Agion AD and 60% ethylene vinyl acetate (EVA) based universal polymer alloy carrier. Combat AD is commonly used in TPU and silicones for indwelling devices such as central venous (CV) catheters.

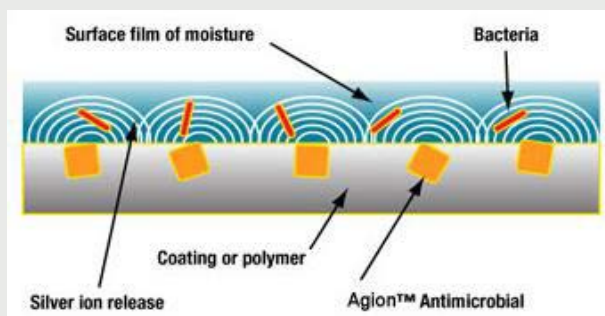
Combat AK master batch is designed using Agion AK antimicrobial additive: a large particle zeolite ($> 6 \mu\text{m}$) and a low proportioned ionic silver (4-6%). The master batch consists of 40% Agion AK and 60% ethylene vinyl acetate (EVA) based universal polymer alloy carrier. Combat AK is commonly used in PC and ABS polymers for high-touch surface components and devices. These include bedrails, diagnostic equipment housings and instrument handles.

AGION® TECHNOLOGY

Silver ions are bonded to inert zeolite. The unique properties of zeolite provide selective ion exchange, absorption, separation and catalysis. The silver ions attack multiple targets in the microbe to prevent it from growing to a destructive population. This tri-modal action fights cell growth by preventing respiration (inhibit transport functions in the cell wall), inhibiting cell division (reproduction), and disrupting cell metabolism.



PATENTED, MULTI-FACETED ZEOLITE CRYSTAL CARRIER



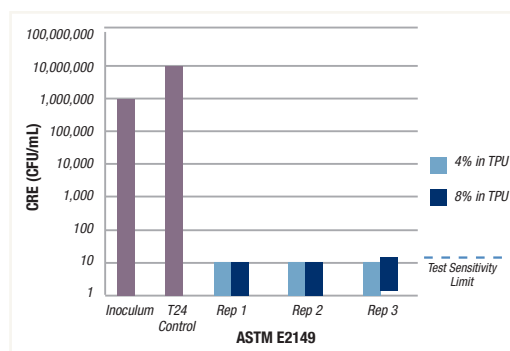
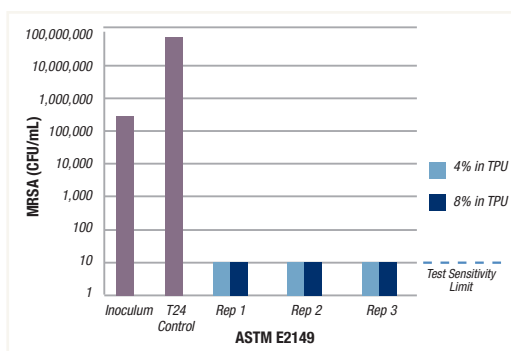
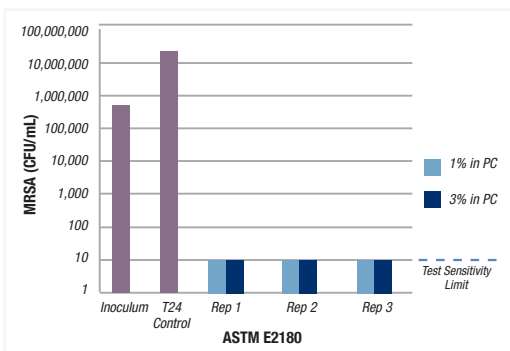
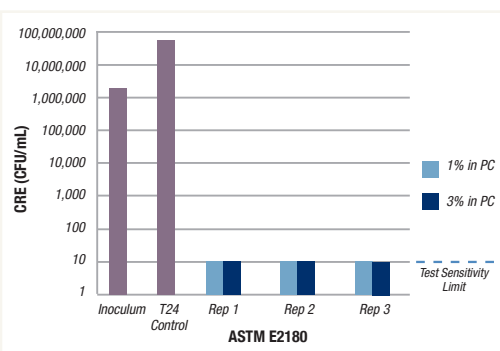
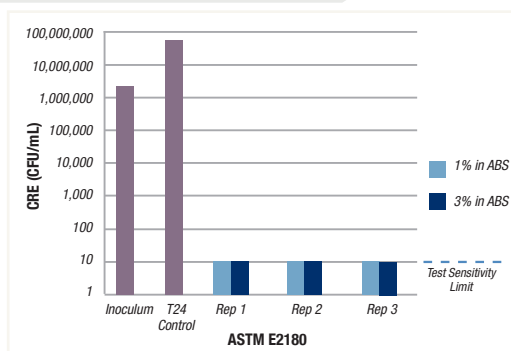
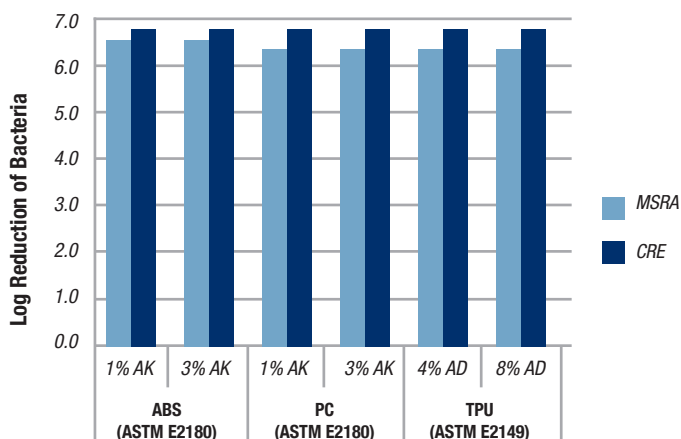
SILVER ION EXCHANGE PROCESS



EFFICACY DATA

Methicillin-resistant *Staphylococcus aureus* (MRSA) and carbapenem-resistant *Enterobacteriaceae* (CRE) are bacterium resistant to most common antibiotics, and are most often present in health care settings. The charts demonstrate how the bacterium are affected by the technology.

The percentage of Agion AD and AK antimicrobial technology represents the final amount in the polymer component, after dry blending the appropriate amount of Combat master batch with the designated polymer and processing.



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