ANTIMICROBIAL SOLUTIONS FOR PLASTICS & FIBERS

ANTIMICROBIAL TRENDS

Consumers are desiring enhanced cleanliness, hygiene, and freshness in many plastic products that we use daily. This has resulted in demand for products with built-in antimicrobial protection for:

- Odor Control
- Stain Resistance
- Freshness Appeal
- Enhanced Product Quality

AMERICHEM nShield® ANTIMICROBIALS

For nearly 20 years, Americhem has been offering EPA and BPR antimicrobial solutions in the form of masterbatches and compounds in a variety of polymers to the fibers and plastics industry. Americhem's nShield® Antimicrobials include a wide range of organic, silver, copper and zinc-based additives.

nShield® Antimicrobials enhance your product's protection against bacteria, fungus, algae, and more. Additional benefits include superior processability for plastic applications and excellent spinning performance in synthetic fibers. Based upon customer needs, Americhem custom develops solutions that are application and polymer specific. Products can be customized, depending on the application, to provide optimum performance and cost.

APPLICATIONS & INDUSTRIES

nShield® antimicrobial solutions enhance the freshness of an article by inhibiting foul odors and staining. Below are only some applications and industries that benefit from built-in antimicrobial additives, but the possibilities are endless.

Potential Applications:

- Performance apparel
- Nonwoven fabrics
- Textiles
- Extruded & molded parts
- Office equipment
- High touch surfaces
- Sanitary applications
- Gym equipment
- Food preparation
- Toothbrushes
- Automotive interiors
- Appliances

Industries Served:

- Fibers
- Healthcare
- Automotive
- Building & Construction
- Packaging
- Filtration

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POLYESTER & TPE EFFICACY TESTING

Representative test results for bacteria (polyester textiles) and fungi (TPE) substrates are shown below.

Sample Identification	Test Culture	Number of Bacteria per sample (CFU Sample)		Percentage Reduction of Microorganisms (R)
		Inoculated Sample at 0 hours (B)	Inoculated Sample at 24 hours (A)	
Semidull Polymer (100%)	Staph.aureus	1.96×10^5	11.3×10^5	0
	K.pneumonise	2.00×10^5	15.2×10^5	0
Antimicrobial LDR (3%)	Staph.aureus	1.92×10^5	0.001×10^5	99.94
	K.pneumonise	1.90×10^5	0.0012×10^5	99.94
Antimicrobial LDR (4%)	Staph.aureus	1.90×10^5	0.0002×10^5	99.98
	K.pneumonise	2.04×10^5	0.0004×10^5	99.98
Antimicrobial LDR (5%)	Staph.aureus	1.90×10^5	Less than 10	99.99
	K.pneumonise	2.04×10^5	Less than 10	99.99

Table 1: Antimicrobial efficacy of polyester hose samples compared with untreated sample (JIS L 1902)

Figure 1: Fungal resistance test (ASTM G21:2015) results of molded TPE samples containing Americhem antifungal additive compared with untreated sample. The results clearly demonstrate effectiveness in a four-week incubation test.

Untreated

Treated with Americhem nShield®

ANTIMICROBIAL EFFICACY TESTING

For applications with synthetic fibers and textiles that are subjected to dyeing and multiple washings, Americhem products offer durable solutions that withstand multiple washings. Americhem nShield® technologies are designed to meet and/or exceed the common industry efficacy standards for synthetic fibers and plastics below:

- American Association of Textile Chemists and Colorists – AATCC 100
- American Society for Testing and Materials ASTM G21 and ASTM E2180
- Japanese Industrial Standards – JIS L 1902 and JIS 2801
- International Organization for Standardization – ISO 22196 and 20703

For more information on antimicrobial solutions, as well as other functional additives such as softness, UV protection, antistatic, and multifunctional masterbatches with color, please contact your Americhem representative or submit a Contact Us form on the Americhem website.

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