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# NEWS RELEASE

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## **GELEST SHOWCASES BIOSAFE® ANTIMICROBIAL TECHNOLOGY, ADVANCED SILANES AND FUNCTIONAL SILICONE FLUIDS**

MORRISVILLE, Pa. (March 23, 2015) – At NPE 2015, Gelest, Inc. is highlighting its silicon-based BIOSAFE® antimicrobials for long-lasting surface protection, dipodal silanes to improve substrate bonding, cyclic azasilanes for treating fillers in nanocomposites, and functional and inert silicone fluids for polymer synthesis, internal lubricants and flow control.

BIOSAFE antimicrobial imparts bacteriostatic, fungistatic, and algistatic properties to substrates, including plastics, to prevent deterioration and discoloration caused by fungi, to prevent algae growth, and to inhibit the growth of odor-causing bacteria. Available as a powder, solvent or aqueous solution, it is durable, leach resistant, and non-migrating. It does not create the conditions that promotes the development of resistant microorganism.

With proper integration, BIOSAFE products have high antimicrobial performance in ISO and ASTM testing. The active ingredient in the BIOSAFE antimicrobial was developed and registered with the U.S. EPA in the mid-1970s, and has since been widely used in

numerous applications. BIOSAFE has expanded the breadth of applications and manufacturing processes by removing the VOC's and making it available in a new polymeric powder. Unlike its predecessors, the powder can be compounded with polymer resins.

### Advanced Silanes

Gelest's dipodal silanes are a new series of adhesion promoters. They have intrinsic hydrolytic stabilities up to ~10,000 times greater than conventional silanes, extending lifetimes of composites in marine, potable water and outdoor applications. They have achieved commercial success in applications such as multilayer printed circuit boards and as adhesive primers for ferrous and nonferrous metals.

The silane coupling agent resists deterioration by the intrusion of water between the polymer and the substrate. In addition to providing water resistance, dipodal silane coupling agents may increase the strength of composite systems.

Cyclic azasilanes react rapidly with all surface hydroxyl groups, for efficient surface modification. Volatile cyclic azasilanes afford high functional density monolayers on inorganic surfaces such as nanoparticles used in advanced composites. Furthermore, surface modification using cyclic azasilanes eliminate byproducts such as alcohol, HCl, and cage-like condensation products typical with the use of conventional silane coupling agents. This recent class of silane coupling agents affords a smooth monolayer and reduces the overall waste stream as there are no longer any hazardous byproducts.

## Functional Silicone Fluids

Gelest produces specialty silicones and silicon-containing polymers used as additives to enhance the mechanical properties of plastics and composites. These materials can impart a wide range of properties associated with silicones, including hydrophobicity, thermal stress relief, lubricity, release, improved adhesion, and dielectric properties. Silicones with reactive groups such as methacrylate, epoxy, hydroxyl or amine can be used to directly react into the resin matrix of various systems including epoxy, acrylate and urethanes. Inert silicones can be used as processing aids and internal lubricants for thermoplastics. For example, alkyl fluids improve plastic on plastic lubrication and have greater compatibility during processing and molding.

Monofunctional and monodisperse silicones can be used as macromonomers (or macromers) with traditional monomers offering a route to polymers that are usually associated with grafting. Siloxane macromers afford a mechanism for introducing a variety of desirable properties without disrupting the main chain integrity of an organic resin.

To obtain a copy of Gelest's technical guide, "Biosafe® Organosilane Antimicrobials," its "Silane Coupling Agents: Connecting Across Boundaries" or "Reactive Silicones: Forging New Polymer Links" brochures or to explore solutions for your new product development initiatives, please contact: Gabrielle Lockwood, Sales & Marketing Associate, at 215-547-1015 or [glockwood@gelest.com](mailto:glockwood@gelest.com).

### **About Gelest**

Gelest, Inc., headquartered in Morrisville, Pennsylvania, is recognized worldwide as an innovator, manufacturer and supplier of commercial and research quantities of

organosilicon compounds, metal-organic compounds and silicones. Gelest serves advanced technology markets through a materials science-driven approach. The company provides focused technical development and application support for semiconductors, optical materials, pharmaceutical synthesis, diagnostics and separation science, and specialty polymeric materials: “Gelest – Enabling Your Technology.”

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**Gelest, Inc.**

*Enabling your Technology*

*Manufacturers of Silanes, Silicones & Metal-Organics*

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