

PhotoPrime™ SR Coatings for Silicone Rubber Surfaces
Innovative Surface Technologies, Inc (ISurTec®)
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Permanent Surface Modification For Difficult to Coat Surfaces

Poly(dimethyl siloxane) (PDMS, commonly called silicone rubber) has been widely used in biomedical and non-medical applications because of its excellent flexibility, durability, and bioinertness. However, modification of silicone surfaces is challenging due to its extremely low surface reactivity and surface energy. In addition, modified silicone surfaces often exhibit only a transient modification effect because PDMS usually contains high amounts of low-molecular-weight components having high mobility in the polymer bulk and a high tendency to migrate to the surface (hydrophobic recovery). PhotoPrime™ SR primer is a novel, photoreactive polymer that provides a permanent modification to silicone rubber surfaces.

- PhotoPrime™ SR basecoats provide a durable intermediate surface to which other coatings can adhere.
- PhotoPrime™ SR basecoats are environmentally friendly, easy to process, and convenient to use.

PhotoPrime™ SR basecoats are quickly and efficiently applied to silicone containing substrates prior to further surface treatment.

Properties & Features

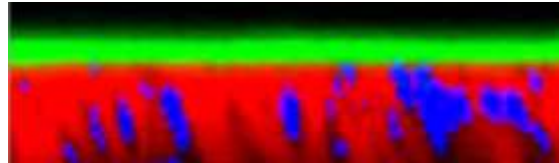
- The PhotoPrime™ SR composition is a polymer with an affinity association for covalent bonding with silicone rubber surfaces such as PDMS and silicone resins.
- Tight binding and high durability is a characteristic of PhotoPrime™ SR chemistry on silicone substrates.
- Additional overcoats on top of a PhotoPrime™ SR basecoat exhibit their inherent properties in a useful and predictable manner.
- PhotoPrime™ SR compositions are soluble in common solvents such as isopropanol and acetone. Other solvent systems can be designed.

Applications

- Various types of PDMS and silicone resin-based electronic materials, medical devices, industrial applications, and silicone surfaces that require further

surface modification are candidates for surface modification by PhotoPrime™ SR compositions.

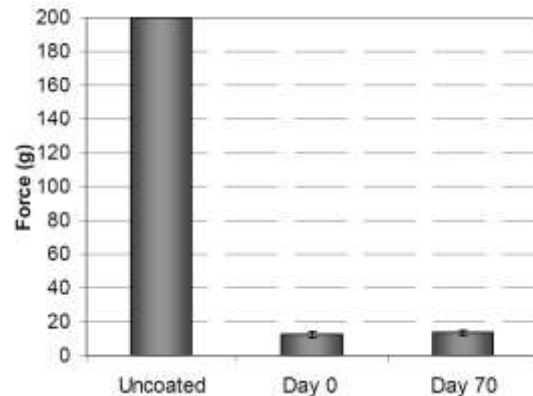
- Specific device categories, where PDMS or silicone resins are often employed, are blood pumps, cardiac pacemaker leads, mammary prostheses, drainage implants, artificial skin, maxillofacial reconstruction, replacement esophagus, contact lenses, oxygenators, medical adhesives, finger joints, cochlear implants, catheters, drug delivery systems, denture liners and microfluidics.



Confocal Raman microscopy reveals a uniform primer coating on the surface of a silicone catheter. (green – primer coating, blue - additive in silicone rubber, and red – silicone).



A uniform hydrophilic coating is shown on a PhotoPrime™ SR catheter. The hydrophilic coating only adhered to the primed region as shown by staining in red



Friction test on silicone catheters coated with a PhotoPrime™ formulation followed by ISurTec® hydrophilic coating shows lubricity lasting at least 70 days.

All described properties are typical characteristics and are not specifications. All suggestions are offered in good faith but without guarantee or warranty as to the conditions and methods of use that are beyond our control. The prospective user must evaluate the appropriateness of our materials prior to adopting them on a commercial scale. The suggested use of ISurTec's® products is not a recommendation to use in violation of ISurTec's® intellectual property position.

ISurTec®

Mission & Team

Surface modification of devices & biomolecules
in health care, bioanalytical, & high value industrial products.
Research, development and business team of scientists - 6 Ph.D., 3 M.S, 4 B.S.
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