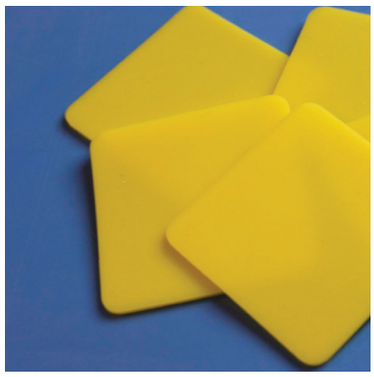
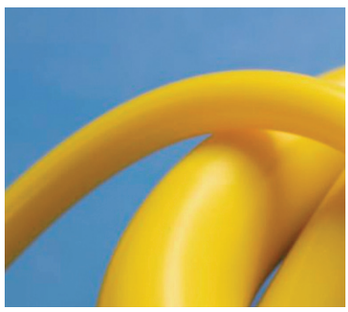
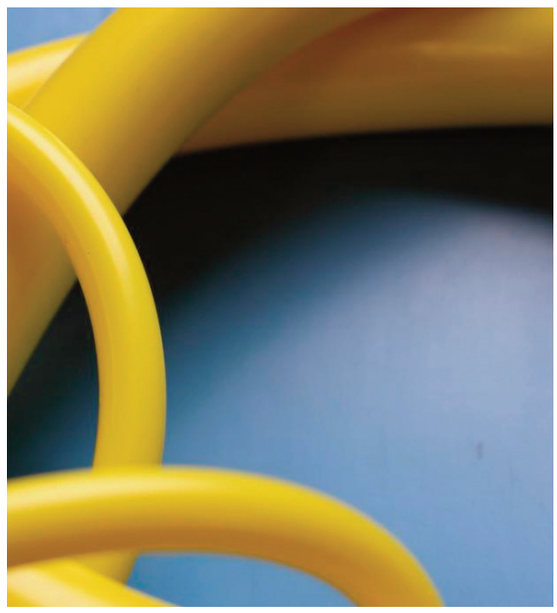
neutraSil™

Antimicrobial **Silicones**









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ANTI-MICROBIAL SILICONE

neutraSil™ is an antimicrobial silicone that is proven to prevent the growth of MRSA, E. Coli and Salmonella.

Introduction

The dangers of the hazards posed by strains of lethal bacteria have in recent years been widely publicised. Silicone Engineering paid particular attention to the MRSA outbreaks that occurred throughout the US and the UK in 2005 and 2006 and put into practice plans to develop a highly effective anti-microbial silicone. The result of our research and development is a new product known as neutraSil™. Its benefits are that it is suitable for use in a range of environments and is safe when exposed to people both in public and industrial environments. The salient qualities of neutraSil™ make it highly suited to uses in industries such as healthcare, food and pharmaceuticals.

A proven silver technology is at the core of our new product's highly efficient inhibition of bacterial growth. neutraSil™ works by releasing a stream of silver ions whose presence inhibits the growth of bacterial cells by disabling their proton pumps, interfering with sulfhydryl proteins required for their functioning and disrupting cell wall synthesis. neutraSil™ is suitable for use in a range of demanding environments and is highly resistant to degradation from chemical and environmental factors.

Physical and environmental properties

neutraSil™ offers microbial protection, is tasteless, odourless, non-toxic, non-leaching and non-corrosive. It has been tested to and comply with the requirements of the U.S. Food and Drug Administration (FDA) regulation 21CFR177.2600 for rubber articles in repeated contact with food, and EC1935/2004 on materials and articles intended to come into contact with food. neutraSil™is resistant to ozone, oxidation, ultraviolet light, corona discharges, cosmic radiation, ionising radiation and general weathering.

How neutraSil™ works

Silver ions present in neutraSil™ absorb bacteria and microbes by breaking down their cell walls and inhibiting development of the micro-organisms. Said silver ions then provide ongoing protection by preventing further contamination and colonisation on the surface of the silicone.

Performance

neutraSil™ has been tested to the Japanese Industrial Standard JIS Z 2801:200 standard (equivalent to ISO 22196:2007) which measures antibacterial activity in hydrophobic materials. neutraSil has been independently proven to inhibit the growth of strains of MRSA, E. Coli and Salmonella and the results of these tests are given on the following page.

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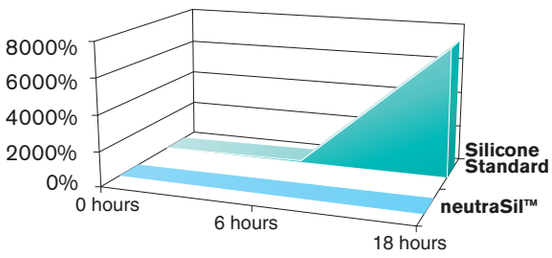
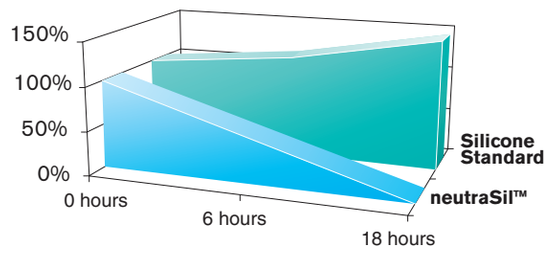
Percentage of bacteria population using neutraSil™ compared to Standard Silicone

Samples (tested at 25˚C)	Organism	% change compared with initial inoculum	
		After 6 hours	After 18 hours
Standard Silicone	E. Coli	218% growth	7400% growth
neutraSil™		**>99.99% reduction**	**>99.99% reduction**
Standard Silicone	Salmonella	820% growth	1300% growth
neutraSil™		**>99.99% reduction**	**>99.99% reduction**
Standard Silicone	MRSA	15% growth	46% growth
neutraSil™		**48% reduction**	**>99.99% reduction**

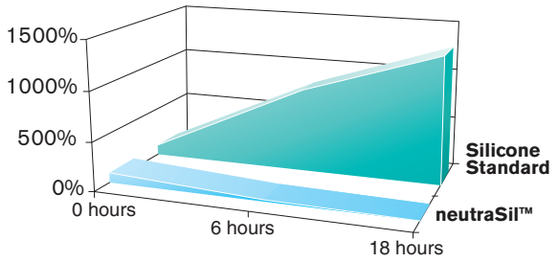
E.Coli



MRSA



Salmonella



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INDUSTRIAL CASE STUDY: Food Production



Problem:

A major confectionery manufacturer was experiencing problems with gaskets in the pipe work of their production-line. Seals were splitting in pipes that carried cocoa powder to specific food mixers; this was causing the cocoa powder to escape and resulted in significant production downtime for the manufacturer.

Solution:

We arranged to visit the client and their chief engineer demonstrated to us the problem firsthand. While on site, we took samples and measurements of the problematic gaskets. We determined neutraSil™ to be the most suitable of our products to address the leaking seal issues faced by our client. The client was particularly impressed that neutraSil™ would additionally offer the benefits of anti-microbial defence.

Prototypes of neutraSil™ gaskets were produced for approval and testing. After a four-week trial of the prototype gaskets, a follow up visit to assess performance was arranged. It was found that no leaks had occurred throughout the duration of the trial. In response to the positive results, the gasket was approved and orders were promptly placed by the client to replace all existing seals on the product lines with new neutraSil™ gaskets.

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