

## Carbopol<sup>®</sup> and Pemulen<sup>™</sup> Products are not Conducive to Microbial Growth

Since their introduction, Carbopol<sup>®</sup> and Pemulen<sup>™</sup> polymers have been proven to be exceptional thickeners, suspending agents and stabilizers, utilized in a wide variety of personal care products. Most Carbopol and Pemulen polymers are high molecular weight homo- or copolymers of acrylic acid crosslinked with a polyalkenyl polyether. Used at concentrations lower than 1%, they offer flexibility to develop products with a wide range of flow and rheological properties. Carbopol polymers are available as powders and liquids.

The powdered versions of Carbopol and Pemulen polymers are sold as un-neutralized polyacrylic acids and have a low pH. The pH of a 1% mucilage is approximately pH 3. Water is not used in the manufacture of powdered forms of Carbopol and Pemulen polymers, only inorganic solvents and water content of the powder is typically specified as a maximum of 2%.

Some of the Carbopol polymers have been tested according to the USP Preservative Efficacy (Challenge testing) using USP Method < 51 >: Antimicrobial Effectiveness Testing and have passed this test. Passing results indicate that the polymer provides a minimal level of antibacterial protection.

Most microbes require a pH neutral, high water content environment to proliferate. When Carbopol and Pemulen polymers are used in a formulated system, they do not promote or prevent microbial growth. We recommend normal microbial testing of your finished product.

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