



Product Description

HandShield Instant Gel Hand Sanitizer is based on the active ingredient Benzalkonium Chloride in a unique non-drying, moisturizing and conditioning, carbomer-free non-comedogenic formulation. HandShield kills 99.99 – 99.999% of most common germs that may cause illness in just 15 seconds.

HandShield system has advantages over carbomer thickened alcohol systems in product physical attributes and skin feel. HandShield is a true shear thinning gel, where most alcohol systems are simply carbomer thickened alcohol that runs through your fingers and down your sleeve, leaving behind a sticky carbomer film that can trap dead skin cells and bacteria.

HandShield Instant Gel Hand Sanitizer is a high viscosity gel that stays put until rubbed out, and does not leave behind a sticky film. The skin conditioners are in HandShield to condition and enhance skin feel, not simply to compensate for irritation caused by the dehydrating effects of alcohol and carbomer pH, for a fresh, non-sticky, silky feel.

HandShield is non-flammable, non-toxic by ingestion and does not lose effectiveness with use as has been documented with thickened alcohol products.

Active Ingredient

HandShield Instant Gel Hand Sanitizer is based on the active ingredient Benzalkonium Chloride.

Benzalkonium chloride is an alcohol-free antimicrobial compound that has been widely used in the health care industry for more than 60 years in formulas for preservatives, surface cleaners, sterilizing agents, and leave-on, FDA Monograph anti-bacterial skin treatment products.

The chemical properties of benzalkonium chloride make it a good candidate for persistent antimicrobial activity in mammalian tissue. It has a long history of bactericidal, virucidal and fungicidal use in OTC Skin and Wound Treatment products, and as a disinfectant active ingredient, it is effective against a wide range of pathogenic bacteria and viruses.

Benzalkonium chloride (alkyl dimethyl benzyl ammonium chloride) is the most common algacidal active ingredient in swimming pool algacides, and has FDA Clearances as no-rinse Food Contact sanitizers for applications as varied as Bar Glass sanitizers, Ice Machine and Food Processing equipment sanitizers.

Benzalkonium chloride has also been used as a preservative in eye drop products, and closely related materials as an anti-septic mouth wash.

Benzalkonium chloride has a long history of stability in use, from Hospital Disinfectants to Swimming Pool Algacides, in a range of concentration.

Benzalkonium chloride-based leave-on Hand Sanitizers have demonstrated efficacy in real-world environments.

When evaluated in Elementary School environments where the importance of proper hygiene practices including hand washing is taught and emphasized, the use of non-alcohol benzalkonium chloride-based leave-on instant hand sanitizers reduced illness absenteeism 30-40% in double-blind, placebo controlled studies versus hand washing alone.



DL Dyer, AL Shinder & FS Shinder (2000). Alcohol-free instant hand sanitizer reduces illness absenteeism. Family Medicine, 32(9), 633-638;
CG White, FS Shinder, AL Shinder & DL Dyer (2001). Reduction of Illness Absenteeism in Elementary Schools Using an Alcohol-free Instant Hand Sanitizer. The Journal of School Nursing, 17(5), 258-265.

Advantages over Alcohol-based Sanitizers

Benzalkonium chloride based Hand Sanitizers have several distinct advantages over alcohol-based hand sanitizers. While both product forms are FDA Monograph for leave-on products, fast acting and allow for use without water or towels.

- Benzalkonium chloride based products are non-flammable, non-damaging to skin, are persistent, and will not stain clothing or flooring.
- In the carbomer thickened alcohol systems, an alkaline pH is required to activate the thickening activity of the carbomer. While one might not consider a pH of 7.2 for thickened alcohol systems all that alkaline, in terms of skin pH for a leave-on product, it is very alkaline. Normal skin pH is in the range of 4.2. to 5.6, which is the pH range of HandShield.

The difference in pH between 5 and 7, being measured on a logarithmic scale, means that the thickened alcohol pH of 7 that remains on the skin is 100 times more alkaline than normal skin pH. Intact skin is a phenomenally effective protective barrier.

- The combination of sebum (oil) and perspiration, referred to as the “acid mantle,” on the skin's surface protects the skin and renders the skin less vulnerable to damage. It also protects from attack by environmental factors such as the sun and wind and leaves it less prone to dehydration.
- For healthy skin, the acid mantle inhibits the growth of foreign bacteria and fungi causing the skin to remain healthier and have fewer blemishes. Acne, allergies and other skin problems become more severe when the skin becomes more alkaline.
- The other thing known about carbomer thickened alcohol products, outside of the inherent flammability and consumption toxicity, is that with continued use they become less effective. The carbomer-based alcohol thickening systems leave behind a polymer/bio-film build-up that traps and feeds surviving bacteria, that supported by an alkaline polymer system leads to decreasing performance with use.

The unique HandShield associative thickening gel system insures that a bacteria feeding film is not left behind.

- Additionally, literature references point to the fast evaporation of the alcohol active ingredient that limits actual effectiveness in-use. The slightly longer dry time associated with water-based benzalkonium chloride insures that the product achieves actual anti-microbial effectiveness in-use. Alcohol-based hand sanitizers stop working the instant they dry.
- The leading manufacturer of alcohol-based hand sanitizers claims that their product kills 99.99% of most common germs that may cause disease in as



little as 15 seconds. Alcohol-based hand sanitizers dry in 8-10 seconds, and fall below the efficacious concentration of alcohol in seconds.

It has been reported that alcohol-based hand sanitizers offer no residual protection and that if your hands feel dry after rubbing them together for 15 seconds, an insufficient volume of alcohol gel was likely applied.⁽¹⁾

- HandShield benzalkonium chloride-based hand sanitizer dries fast, but 10-15 seconds slower than alcohol-based hand sanitizers allowing more than the minimum contact time for complete efficacious coverage, including under fingernails.
- Additionally, benzalkonium chloride-based hand sanitizers deliver 2 to 4 hours of residual protection.
- Published studies report that benzalkonium chloride-based hand sanitizers demonstrated greater sustained antibacterial activity than gelled alcohol-based hand sanitizers that actually became less effective with repeated use and made the skin dirtier, not cleaner due to removal of protective natural skin oils and entrapment of dead skin cells by the polymer thickeners used in the gelled alcohol-based products.
- In the referenced study to simulate repeated usage, alcohol-based and alcohol-free benzalkonium chloride-based hand sanitizers were compared. In the study, subject's hands were repeatedly inoculated with bacteria followed by application of hand sanitizer, then evaluated for antimicrobial effectiveness.

The antimicrobial efficacy of the alcohol-based hand sanitizer showed a markedly decreased antimicrobial efficacy with subsequent contamination and decontamination cycles, whereas the alcohol-free benzalkonium chloride-based hand sanitizer showed a steady increase in antibacterial efficacy.

In addition to these objective results, subjects were asked to subjectively evaluate the condition of their hands after the completion of the test protocol.

47% of the subjects who had completed the test protocol with the alcohol-based hand sanitizer reported palmar pain or discomfort, and tended to indicate some discomfort in palmar surfaces for one to several days after the test.

In contrast, none of the subjects that used the alcohol-free benzalkonium chloride-based formula reported any pain or discomfort of their hands after completing the test protocol.⁽²⁾

(1) Marples, RR, & Towers, AG (1979). A laboratory model for the investigation of contact transfer of microorganisms.

The Journal of Hygiene, 82(2), 237-248.

(2) Dyer, DL, Gerenraich, KB, & Wadhams, PS (1998). Testing a new, alcohol-free sanitizer to combat infection.

Association of Operating Room Nurses Journal, 68(2), 239-251.