

ProShield® 5000 offers an EPA-registered technology for inhibiting the growth of a wide array of bacteria, mold, mildew, algae, fungi, and yeast on textile materials. ProShield® 5000 is an aqueous solution of an organosilane active material (3-trimethoxysilylpropyldimethyloctadecyl ammonium chloride). When dried to a film, this reactive silane crosslinks to form an extremely durable coating that will remain effective after multiple launderings.

ProShield® 5000 contains no solvents and is not flammable or corrosive. In addition to antimicrobial protection, ProShield® 5000 also provides durable antistatic properties and lubricity on all types of fibers. ProShield® 5000 can be applied to a broad range of textile products, including bed sheets, bedspreads, mattress pads, blankets, towels, shower curtains, wallpaper, carpets, draperies, upholstery, outerwear, socks, undergarments, uniforms, footwear, nonwovens, and outdoor equipment.

## Physical Properties

Appearance:	Colorless Clear Liquid
pH (undiluted):	3.0 - 5.0
Active:	4.8% - 5.2%
Specific Gravity:	0.97 - 1.01 g/cc
Solubility:	Readily soluble in water
Ionic Character:	Cationic

ProShield® 5000 can be combined with cationic or nonionic additives in the bath. To promote coverage, the bath pH range should be 3.5 – 4.0. Be sure to check compatibility of all ingredients in bath prior to running production.

Optimum application and drying conditions should be determined for each substrate before application. For hydrophobic fibers such as polyester, spandex, nylon, and their blends, pad or spray application typically provides optimal coverage.

**Exhaust Application:** Dissolve 5% - 6% of ProShield® 5000 in warm water and stir until solution is uniform. Add the ProShield® 5000 solution into the final bath. Heat to 120 °F and exhaust for 20 minutes at pH 3.5 – 5. Drop the bath without rinsing.

Unload goods, extract, and dry. Alternatively, add ProShield® 5000 into final bath first and exhaust for 5 – 10 minutes at 120 °F. Then add softeners to the same bath and run for an additional 15 – 20 minutes. Do not rinse. Unload goods, extract, and dry.

**Pad or Spray Application:** Make a 5% - 6% solution of ProShield® 5000 in a drop tank by mixing in water until the

solution is uniform. Apply this 5% - 6% solution to the fabric at 100% wet pick up (this gives the desired dry add-on of 0.25% - 0.3% organosilane actives). If the wet pick up differs from 100%, adjust the bath concentration accordingly.

% ProShield® 5000 required in the bath =  $\frac{[(\text{Activity Wanted}) (100)]}{[(0.05) (\text{Wet Pick Up})]}$ . For example, wet pick up runs in the 65% range; % of ProShield® 5000 in Bath =  $\frac{[0.3 \times 100]}{[0.05 \times 65]} = 9.2\%$  ProShield® 5000 required in the bath.

Drying can be completed at temperatures ranging from 280 °F to 350 °F. Lower temperatures may not cure efficiently enough to pass efficacy after laundering. Higher temperatures may inhibit wicking.

Antibacterial effectiveness can be tested by using standard methods such as ASTM E2149. This test challenges a fabric sample with measured amounts of a bacterial culture and determines reduction in bacteria due to ProShield® 5000. Tests have shown that 0.25% - 0.30% dry add-on of organosilane actives is adequate for bacterial control on most textile fibers. However, for controlling mold, additional ProShield® 5000 may be required due to the resistance of some mold cultures.

## Non Warranty

The suggestions and data in this bulletin are based on information we believe to be reliable. They are offered in good faith but without guarantee, as conditions and methods of use of our products are beyond our control. We recommend that the prospective user determine the suitability of our materials and suggestions on an experimental basis before adopting them on a commercial scale.



ProShield® 5000 offers an EPA-registered technology for inhibiting the growth of a wide array of bacteria, mold, mildew, algae, fungi, and yeast on textile materials. Unlike conventional antibacterial agents that work as poisons and thus leach from the surface and into the environment, ProShield® 5000 produces a durable biostatic finish that inhibits the growth of odor causing bacteria and fungi. In addition, chemical poisons can be quickly exhausted or wear from the surface being protected, thus requiring regular reapplication. What's more, hardier microbes that survive can mutate and flourish, creating resistant super-bugs that are difficult to eliminate. In contrast, because ProShield® 5000 physically ruptures the cell walls of these microbes, antimicrobial action is not exhausted over time, and microbes cannot become resistant.

ProShield® 5000 is an aqueous solution of an organosilane active material. It contains no solvents and is not flammable or corrosive. It is extremely durable and remains effective after multiple launderings. In addition to antimicrobial protection, ProShield® 5000 also provides durable antistatic properties and lubricity on all types of fibers. ProShield® 5000 can be applied to a broad range of textile products, including bed sheets, towels, blankets, socks, bedspreads, carpets, draperies, mattress pads and covers, outerwear, nonwovens, shower curtains, upholstery, wallpaper, undergarments, uniforms, footwear, and outdoor equipment. Optimum application and drying conditions should be determined for each substrate before commercial application.

## Physical Properties

Appearance:	Colorless Clear Liquid
pH (undiluted):	3.0 - 5.0
Active:	5.0%
Specific Gravity:	0.97 - 1.01 g/cc
Solubility:	Readily soluble in water

## Laundry Application

Run a complete wash cycle, including final rinse and extraction. Start a new cycle and fill the machine with hot water (120 °F). Add 6% on weight of goods (6 lbs ProShield® 5000 to 100 lbs of laundry). Run for 20 minutes at 120 °F to exhaust the ProShield® 5000. Drop the bath without rinsing, extract, unload goods, and dry as usual.

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