



King Plastic Corporation

King MediGrade® FAQ

What is King MediGrade®?

King MediGrade® is a super tough, high-density polyethylene building sheet with an advanced antimicrobial technology for protecting the product surface against stain and odor causing bacteria, algae and fungi. Unlike surface antimicrobials, King Plastic's advanced antimicrobial technology protects against bacterial degradation for the lifetime of the product. It is the product of a proprietary process called K-Stran™, the most advanced manufacturing process for superior flatness and consistency. King MediGrade® has a matte gloss finish on both sides of the sheet. It is environmentally stabilized to withstand the harshest outdoor conditions. King MediGrade® will not rust, delaminate or rot when exposed to UV, humidity or water. Healthcare facilities, medical equipment and case goods made with King MediGrade® will stay cleaner and fresher between cleanings. Studies have shown that surfaces with the antimicrobial technology can inhibit the amount of certain product-damaging bacteria by 99.99%* compared to an untreated surface. The polymer sheet never needs painting or refinishing, works like wood and is easy to fabricate using common woodworking tools and techniques.

*For bacteriostatic, fungistatic, & algistatic properties. This product is exempt from registration under 40 CFR 152.25(a). King MediGrade® effectiveness verified by ISO and ASTM standards. This product does not protect users or others from disease-causing bacteria. Always clean this product thoroughly after use. 99.99% effective inhibition rate has been achieved using standardized test methods of microorganism growth versus untreated controls in lab testing.

Disclaimer: Antimicrobial additive may affect color.

What is the antimicrobial additive?

It is a zinc-based antimicrobial additive that is integrated into the polymer sheet during the extrusion process. It was developed in response to a market demand from the healthcare industry to improve indoor environmental surfaces and protect the surfaces from microbial stains and odor between cleanings. The surface inhibits stain/odor causing microbes from growing on the surface.



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What type of finish?

Matte gloss finish on both sides of the sheet.

What colors are available?

King MediGrade® is made in 4 standard colors: Dolphin Gray, Sanshade, Seafoam, and White/White. It is available in 6 additional colors: Black, Mocha Brown, Nutmeg, Indigo, Charcoal Gray, and Slate Gray.

Contact Customer Service for availability and minimums.

Can you custom color match?

Yes. Please call Customer Service at 941.493.5502.

What is required for custom orders?

Please call Customer Service at 941.493.5502.

What sizes are available?

King MediGrade® standard sheet size is 48" x 96". Standard gauges are 1/4", 1/2" and 3/4". Custom sheet sizes and gauges available upon request. Please call Customer Service at 941.493.5502.

Is King MediGrade® available with a flame retardant?

Please call Customer Service at 941.493.5502.

How to sell against competing antimicrobials i.e Silver, Triclosan?

Silver and Triclosan both leach a toxin into the environment. They must leach their active ingredient and the microbe must metabolize (ingest) the "poison" to be effective. This mode of action can lead to environmental contamination, and resistant and adaptive organisms. By contrast, King Plastic's advanced antimicrobial technology is non-leaching and non-migrating. The advanced antimicrobial technology disrupts the cell wall of a microbe, and is not depleted over time. It is an environmentally preferable solution to inhibiting the growth of microbes. (SEE CHART).



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	King Advanced Antimicrobial Technology Zinc	Silver-Based	Triclosan-Based Microban
Mode of Action	Physically ruptures the cell membrane	Releases ionic free radicals that react with cell DNA and disrupt the critical life processes in the cell	Releases toxic bischlorinated phenol (PBC) for consumption or cellular absorption, causing lethal mutations in the cell
Leaching: Bleeding onto the user, into the water, and into the environment	No leaching	Leaches for its mode of action Must leach to work	Leaches for its mode of action Must leach to work
Durability	Permanent	Service life 1-3 years	Service life 1-3 years
Cost	Economical	The cost of silver is high	Intermediate
Effectiveness	Bacteria, fungi and algae that cause stains and odors	Action variable based on concentration and test or use conditions	Action variable based on concentration and test or use conditions
Log Reduction(1-6, 1 being the lowest, 6 being the highest)	4 on 24 hour test & 2 hour test	1-2 on a 24 hour test	2 on a 24 hour test
Distribution	World wide	Varies by company	Not accepted or available in certain areas of the world

Is King MediGrade® registered with the EPA?

King MediGrade® is exempt from EPA registration under 40 CFR 152.25(a) (commonly known as the “treated article exemption”). The active ingredient in King MediGrade® is EPA registered and accepted for use in polymers and plastics.

Has King MediGrade® been tested for antimicrobial efficacy?

King MediGrade® has been tested at third party microbiology labs using ASTM E2149 and JIS Z2801 to verify its effectiveness against representative gram positive and gram negative bacteria.

Why can't King Plastic say the final products made from King MediGrade® kill 99.99% of bacteria, etc.?

To make these claims extends far beyond what is allowed under the treated article exemption – protection of the article (King MediGrade® polymer sheet) from bacteria, mildew, and/or algae that cause odors and surface stains, thus extending the life of the material. To make these claims, King MediGrade® itself would need to be EPA registered. The EPA reserves those types of kill claims for sanitizers, disinfectants, and sterilants. Per EPA regulation, solid surfaces can contain an antimicrobial, but only for the protection of the product itself. Making 99.99% claims implies a public health



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claim. EPA does not want people thinking that because my cabinets are antimicrobial, for instance, perhaps they don't have to clean them. Standardized cleaning and disinfection are still the best practice to keep healthy indoor environments. King MediGrade® is a durable material that resists bacterial stains and odors between cleanings.

Why doesn't it extend such protection to user?

Extending the claims to public health organisms (E.coli, MRSA, etc.) would require EPA registration. Extending those claims to protection of people (i.e. reducing the spread of a disease), would make the plastic sheet a drug or device subject to FDA requirements. We are not claiming to protect people. We are protecting our surfaces. Claiming to protect a persons' health is in the realm of disinfectants and sanitizers (EPA) and drugs (FDA). Regular cleaning and disinfection is still the best practice for keeping people healthy. King MediGrade® provides a durable surface that is resistant to stain and odor bacterial growth and easy to clean and disinfect, to keep surfaces cleaner between cleanings.

What are the features and benefits of King MediGrade®?

- Environmentally stabilized – UV stabilized and waterproof
- Effective in protecting the product surface from bacterial degradation
- Inhibits the ability of product-damaging microbes from growing and spreading on the surface
- No volatile organic compounds (VOCs)
- Chemical-resistant and easy to clean
- Will not rust, delaminate or rot
- No finishing or painting required
- Works like wood
- Easy to fabricate
- High-impact strength
- Qualifies for LEED points
- Made to last a lifetime



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How can the material be fabricated and finished?

Use standard woodworking tools: table saws, table routers, drills, blades and bits. Carbide router bits with two to four flutes are recommended. For more information, please refer to the fabrication brochures.

How to clean and maintain?

- To clean everyday dirt and stains, use either Mr. Clean Magic Eraser, Soft Scrub® or Simple Green Concentrate at full strength with a nylon scrubby or stiff nylon brush. Scrub lightly; excess force can mar the finish.
- Persistent stains will usually go away if you soak the area with bleach. Do not use 100% chlorine used to treat swimming pools.
- To clean a petroleum stain such as grease or oil; use a citrus cleaner, alcohol or mineral spirits.
- For severe petroleum-based stains, spray with WD40®. Then use toluene or acetone and a white nylon scrub pad (colored pads release staining dyes when combined with acetone).
- Do not use MEK, turpentine or naphtha solvent.
- Furniture polish or products such as Armor-All® can add an attractive luster to the finish and hide small surface blemishes. To prevent slipping, do not use these products on walking surfaces.
- If a mark or stain won't come out, you may lightly sand the area. Be careful to only work on the stained area because sanding will remove the finish.

How to care and store?

- Store the sheets flat on a level surface
- Keep away from teak oil and other products that can stain the finish
- Use china markers or water-based markers to draw patterns
- Pen marks can usually be removed with household cleaners
- Keep away from heat sources that exceed 180°F
- Because there is no grain, parts can be cut from any area of the sheet
- Save the scraps for small parts, shims, spacers and plugs
- Remnants may be eligible for recycling; contact your distributor or King Plastic Corporation for details



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What are common applications?

- Architectural Case Goods and Custom Cabinets
- Clean Rooms
- Dental Facilities
- Hospitals
- Medical Facilities
- Medical Laboratories
- Medical Computer Carts
- Nurses Stations
- Rest Rooms
- Veterinary Facilities

Does King MediGrade® expand and contract?

Yes, at a rate of 6×10^{-5} in./in./°F degrees, changing approximately 1/32 inch for every foot of length or width over a 40°F temperature change. Please refer to thermal expansion/contraction worksheet.

Can I use a CNC machine?

Yes. King MediGrade® is a great material for routing the cabinet face.

Will the material produce dust when fabricating?

No, only small shavings that can be recycled.

Can I use King MediGrade® for a countertop?

It has been used as a countertop in some applications such as labs, but it is not recommended for a countertop.

Can I use glue or paint?

Gluing is not recommended. Because King MediGrade® sheet products are designed to resist water and grime, they cannot be painted and the use of adhesives is not recommended. It is preferable to mechanically fasten or weld. Specialized welding equipment and rods, designed for use with polymer sheets, are available.