

PINK STAIN

AND VINYL COATED FABRICS

WHAT ARE PINK STAINS?

Pink stain is not actually mildew. Rather it is a by-product of a specific type of bacterial micro-organism. This microorganism produces a by-product, a dye, which is soluble in plasticizer (a primary ingredient in vinyl coated fabrics) and will stain any vinyl coated fabric it comes in contact with. Therefore, even a vinyl coated fabric that is properly protected with an anti-fungal agent will stain if the vinyl coated fabric comes in contact with the pink bacteria by-product.

It follows then that in marine applications care should be taken in the construction of vinyl coated fabric covered items to prevent bacterial and mildew growth. In order for bacteria and mildew to grow, moisture or water vapor is needed. Thus, seams should be water tight, if possible. Seats should be constructed so that the foam cushions do not become saturated with water and will dry out quickly if they do get wet. Foam cushions, padding, wood frames and other components should be formulated or treated with an efficient anti-microbial agent. If bacterial growth proliferates on wet and untreated substructure components, the pink stain by-product will gradually work its way to the surface and stain the vinyl coated fabric, even if the vinyl is well-protected against bacteria and mildew. Once constructed, all vinyl coated fabric cover items should receive "frequent and proper cleaning" - with special attention given to crevices where dirt and water can be trapped.

All Spradling marine quality vinyl coated fabrics contain proven antifungal/antibacterial agents; in sufficient amounts to provide years of mildew-free use. However, the best protection against pink stain is to construct marine and outdoor seating and trim pieces in such a way as to reduce moisture and dirt retention, and to incorporate components that have been properly formulated and/or treated with an efficient anti-microbial agent.

MARINE UPHOLSTERY FABRICATION

The following component attributes are strongly recommended for all marine upholstery, to assure longevity and extended trouble-free service life of exterior marine upholstery.

- **Vinyl** - marine grade quality treated with antifungal and antibacterial additives to retard mildew and bacterial growth and pink mildew by-products.
- **Polyurethane Foam** - treated to inhibit fungal growth, and should pass all standard anti-fungal and anti-bacterial standards such as ASTM G-21 (CFFA - 120), ASTM E1428 and AATCC 147 (CFFA -300).
- **Substructure (Frame/Base)** - plywood, if used, should be marine grade treated to be mildew and rot resistant.
- **Sewing Thread** - polyester recommended 69 (3 ply) or 92 (4 ply).
- **Needle Size** - #20 for 69 (3 ply) thread, or #22 for 92 (4 ply) thread.
- **Polyethylene Film** - not recommended as an encapsulating barrier between the vinyl cover and cushioning polyurethane foam.
- **Venting** - upholstery as well as substructure should be vented to allow any trapped moisture to escape and dissipate.

BOAT OWNER RECOMMENDATIONS

It is wise that boat owners cover their boats when not in use. Allow adequate venting to avoid trapping moisture to assist in reducing the adverse effect of continuous sunlight, which can degrade upholstery components over time and shorten the service life of exterior upholstery.

Boat owners should refrain from stowing wet towels, all-weather gear, swimsuits, etc. inside their boats. Cabinets and lockers should be opened, if possible, to aid in air circulation. Moisture absorbing desiccants will aid in controlling interior moisture.

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TECHNICAL BULLETIN

OCTOBER 8, 2013

Mold and mildew have long been an issue in marine exterior upholstery. The objective is to outline the causes and suggest solutions to minimize the occurrence of mildew and/or pink stain on marine upholstery.

THE CAUSE – MICROORGANISMS

Bacteria and fungi, referred to as microorganisms, enter marine upholstery carried by wind or rain and leave behind mildew spores or seeds in the foam. These same particles attach to the vinyl surface, but can easily be removed by regular cleaning and care. Four elements are required for mold and mildew growth:

1. Spores
2. Food Source
3. Warmth
4. Moisture

If any of these four elements are removed, the problem will be eliminated. Moisture would be considered the easiest to control, but this is difficult to do in a marine environment. When a cushion is constantly exposed to rain and high humidity, which is common in the southeast and Florida, the chances of mildew growth are increased.

A marine cushion is a complex construction which includes vinyl, thread, urethane foam and a substrate. If dirt enters the cushion the biological growth cycle can begin. It is very common for organisms growing in the foam cushioning to produce colored byproducts, which often appear as a pink stain on the vinyl.

THE SOLUTION – CLEANING & CARE

The Chemical Fabrics & Film Association recommends the following solutions:

- Keep your upholstery clean. Frequent cleaning with a mild detergent will remove any organic matter, dirt or debris which can be readily utilized as a food source for microorganisms.

- Any observed mildew contamination can be removed by washing with a diluted solution of household bleach in water. Rinse and dry thoroughly after use.
- Specify and use new materials that have been treated with an effective antimicrobial to inhibit new growth. Here, the boat builders have the greatest power for they can specify the performance requirements to assure long-term protection components such as vinyl, urethane, foam and wood.

In the design of the seat, consideration should be given to the flow or run off of water so that it is not impeded by seams. Vents should be incorporated to allow water or vapor to escape in the event that leakage into the foam has occurred.

If the exposed part of the boat has a tarpaulin or cover, use it when the boat is not in use.

Spradling has created a guide called the Smart Seat™ Book which provides recommended steps in the construction of a marine seat to help reduce the occurrence of pink stain and mildew growth. All Spradling International Marine products carry the maximum level of biocide additives and are regularly tested to ensure the longevity of the biocide under extreme conditions.

SOURCE: CFFA

