



Understanding the Two Types of Ghosting in Screen Printing

In screen printing, the term "ghost image" can refer to two distinct but related phenomena, often leading to confusion.

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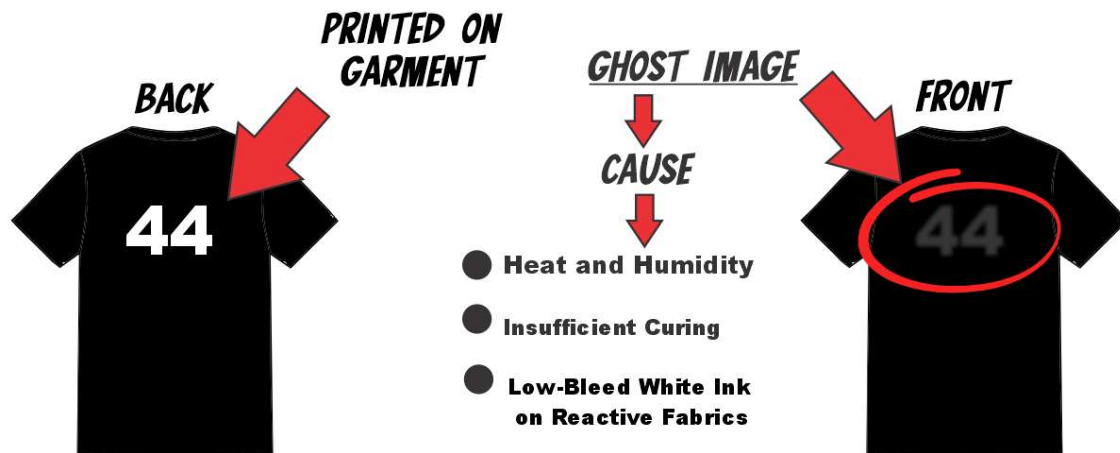
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This article aims to clarify the differences between ghost images on garments and ghost images on screens, exploring their causes, problems, and prevention.

Ghost Images on Garments: The Case of Dye Migration

This type of ghosting manifests as a faint silhouette of a previous print on the garment itself. Imagine printing a large white design on a coloured shirt. Weeks later, a faint outline of that white design mysteriously appears on the

back or bottom of the garment. That's garment ghosting in action. Dye migration is the primary issue here. This happens when certain inks, especially low-bleed white inks meant to avoid these problems, react with specific dyes in the fabric.



Key factors contributing to garment ghosting:

- **Low-Bleed White Ink on Reactive Fabrics:** The chemical composition of some low-bleed inks can trigger an unwanted oxidation/reduction reaction with dyes in certain fabrics, especially 50/50 cotton blends.
- **Heat and Humidity:** These factors accelerate the chemical reaction between the ink and dye, exacerbating migration.
- **Insufficient Curing:** If the ink isn't fully cured, residues can remain on the garment, increasing the likelihood of interaction with the dye.

Consequences of Garment Ghosting:

- **Reduced Print Quality:** The ghost image detracts from the overall appearance of the print, making it look faded or discoloured.
- **Customer Dissatisfaction:** Ghosting is a clear sign of a printing defect, potentially leading to customer complaints and returns.

Preventing Garment Ghosting:

- **Choose Inks Carefully:** Use low-bleed inks only when necessary, and opt for cotton whites on 100% cotton garments. Consider inks specifically formulated to resist ghosting on both cotton and blends.
- **Ensure Proper Curing:** Allow sufficient drying time and use appropriate dryer settings to ensure complete ink curing. Avoid stacking hot garments, as this can trap moisture and hinder curing.
- **Control Environmental Factors:** Minimize humidity levels in the printing environment to reduce the risk of dye migration. Use fans or air conditioning to promote moisture evaporation from garments before and after printing.
- **Test for Susceptibility:** Print white ink on a fabric sample, subject it to heat and moisture, and check for discoloration to assess the ink's ghosting potential.

Ghost Images on Screens: When Ink Lingers

Unlike garment ghosting, this type of ghost image appears on the screen mesh itself. Imagine cleaning a screen after printing a dark design, only to find a faint outline of that design still visible on the mesh. That's a ghost image on a screen.

From my understanding and our discussion, the primary cause is ink residue trapped in the mesh. This usually occurs when screens aren't cleaned thoroughly after each print run, allowing ink particles, particularly from dark inks, to settle in the creases of the mesh.

GHOST IMAGES ON SCREENS



PRIMARY CAUSE



**INK RESIDUE TRAPPED
WITHIN THE MESH**



Consequences of Screen Ghosting:

- **Defective Prints:** These ghost images can interfere with ink transfer during subsequent print runs, leading to noticeable defects like:
 - *Pinholes:* Tiny holes in the stencil caused by the ghost image blocking proper [emulsion](#) coating or [exposure](#).
 - *Blemishes in Solids:* Inconsistent colour density and uneven ink deposition within solid print areas.
- **Vulnerability in Certain Printing Techniques:** Ghost images on screens can be particularly problematic in:
 - *Discharge Printing:* The ghost image might not be visible until after the discharge agent reacts with the fabric dye, leaving an unwanted stain within the discharged area.
 - *Process and Simulated Process Printing:* Ghost images can disrupt the fine colour blending and halftone dot reproduction essential for these techniques, compromising the integrity of detailed images.

Preventing Screen Ghosting:

Diligent screen cleaning is crucial to preventing this issue:

- **Clean Immediately:** Remove ink from the screen as soon as possible after each print run, as dried ink is more difficult to remove.
- **Utilize Haze Removers:** For stubborn ink stains, haze removers are essential. Here are 2 known products as example:
 - **Non-Caustic (701):** Generally safer for fresher ink stains, applied for 10-15 minutes before rinsing.
 - **Caustic (700):** More aggressive and requiring caution due to their acidic nature. Handle with care, wearing appropriate protective gear, and limit contact time to 5 minutes to avoid mesh damage.
- **Reconsider Pressure Washing:** While pressure washers are useful for general screen cleaning, they are generally not recommended after applying haze removers. The high pressure can cause the

chemicals to splash back, potentially harming the operator or contaminating other screens.

Additional Preventive Measures:

- **Dry Screens Properly:** Dry screens horizontally in a dust-free environment to prevent dust particles from settling on the mesh and creating pinholes.
- **Store Screens Safely:** Store screens vertically in a clean, dry location to prevent warping and damage, ensuring their longevity.

By adopting these practices, screen printers can effectively combat both types of ghosting, ensuring the production of high-quality prints and maximizing the lifespan of their screens.