

# Image Area Piling / Tail-edge Pick



**Sappi Printer Technical Service**

877 SappiHelp (727 7443)

## Problem

A lumpy, thick putty-like material builds up on the blanket, primarily on the trailing edge of the image area, and interferes with the complete transfer of ink from plate to blanket to paper.

## Description

Image area piling is the result of poor ink transfer, and is typically composed of ink, paper-related components, and/or spray powder which continue to build-up on the blanket during the course of the press run. This build-up of material shortens the ink which increases the tack and may appear as mottle in screens and solids while progressively losing detail in tones.

Another form of image area piling is tail-edge pick or “snap-outs” which occurs at the trailing edge of solid images. When this piling condition continues unchecked, the increasing tack build can pick the blanket apart or cause paper pick and eventual delamination.

Piling usually suggests a systems incompatibility with any combination of fountain solution, ink, and paper. Lubrication at the point of blanket release in both image and nonimage is critical in minimizing this condition by preventing the blanket from becoming too tacky.

Contrary to what pressmen have previously been taught, it is possible to actually run too dry when running alcohol-free with fountain solutions formulated with alcohol substitutes. Without alcohol, these solutions deliver a thinner film of water to the plate, and although effective in keeping the nonimage visually clean, they may lack lubrication when run too dry. This dry condition can increase the rate of tail-edge piling.

Initial trouble-shooting should begin with an analysis of the piling build-up to determine its primary composition. In addition, single color and progressive prints can be helpful in determining if the problem is rooted in an individual unit of print or carrying over in subsequent units of print.

## Causes

- Cold press start-up and/or cold operating conditions.
- Cold paper.
- Incorrect roller settings.
- Improperly packed blankets.
- Incorrect impression cylinder squeeze, either stressing paper or impeding ink transfer.
- Excessive spray powder from first pass printing.

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- Cold ink increases tack, affecting transfer and increasing the force of blanket release.
- Ink over-emulsifies too easily and becomes too short and tacky; fails to properly transfer.
- Ink film on rollers is too light or too heavy.
- Poor ink/water balance; too wet causing ink over-emulsification or too dry resulting in lack of lubrication.
- Initial or dynamic ink tack is too high or ink sets on the paper too fast.
- Ink pigment easily separates from vehicle; ink grind too coarse; ink too highly pigmented. Any of these conditions can cause the ink to shorten, increase in tack, and impede transfer.
- Blanket and blanket wash incompatibility causing tacky blanket surface.
- Unusually tacky, high-force blanket release.
- Water film interference on paper from subsequent units of print.
- Low surface (pick) strength of paper.

## Options and Solutions

### PRESS CONSIDERATIONS

- Safely idle press to pre-warm for cold start-ups. Pressrooms in colder climates would greatly benefit by full-time climate-control to maintain optimum ambient operating temperature.
- Check roller durometer and nip-point settings. Roller durometer directly affects roller settings. A harder roller will demand more nip pressure to achieve the same width stripe as a softer roller.
- Check for proper blanket height over bearer and consistency from unit to unit.  

A low blanket may require excessive ink/water feed to force ink transfer while an over-packed blanket may initiate high-force blanket release and increase the risk for picking. The typical packing recommendation for quickrelease compressible blankets is .002–.003" over bearer height. Consult with blanket supplier.
- Excessive or light impression cylinder squeeze. Similar to the effects of improper blanket packing, impression squeeze which is too light impedes ink transfer while excessive squeeze initiates high-force blanket release and increases the risk for picking. Impression squeeze should be no greater than necessary to effectively transfer the ink film to the paper.

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- Poor ink/water balance causing either ink over-emulsification if water feed is too heavy or lack of lubrication if water feed is too dry.
- Optimize press speed for job and ink coverage. Depending upon conditions, it is possible to experience both slow and high speed piling.

### **INK CONSIDERATIONS**

- Temperature affects ink viscosity, body, and tack and should be acclimated and controlled to optimum operating temperature. The chill roll temps to the inker should be preset to maintain the ink at a consistent operating temperature to insure proper ink stability. Consult with ink supplier.
- Light ink take-off causes ink to breakdown and lose stability on the rollers. Utilize ink take-off bars to increase fresh ink replacement.
- Tack of ink too high—piling will usually be more evident in same unit of print.
- Ink sets too fast on the paper—piling down the line in subsequent units of print as the ink tack progressively builds (also called carry-over piling).
- Poor ink grind or ink formulation containing a coarse pigment causing ink pigment separation.
- Adjust for optimum ink film thickness on the rolls. Thin ink films run tackier than normal while a heavy ink film may demand more water with risk of over-emulsification.
- High-strength, over-pigmented inks more easily separate, run short, and fail to transfer. High-pigment inks also tend to run thinner, tackier ink films.
- Exceptionally high or low water pickup — ink formulation may be incompatible with fountain solution.
- Consult with ink supplier for any ink reformulation opportunities that might help increase lubrication and improve ink transfer.

### **BLANKET CONSIDERATIONS**

- Aggressive blanket wash or solvent may be causing excessive tack or swelling of the blankets. Check compatibility of blanket compound with blanket wash.
- Quick-set or “fast” inks may demand quick-release blankets.
- Smoother-surfaced gloss coated papers may demand rougher-surfaced blankets to minimize high-force blanket release.
- Blankets are offered in a variety of surface finishes which carry more or less water. Increased moisture will offer additional lubrication at the point of blanket release. Consult with supplier.

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## PLATE CONSIDERATIONS

- Plate must effectively carry and transfer an optimum ink/water balance to the blanket for effective lubrication in both image and nonimage areas.
- Plate needs a water film thick enough to keep ink out of the nonimage grain of the plate.
- Different plate surface grains offer different capabilities of carrying and transferring moisture. Consult with supplier.

## FOUNTAIN SOLUTION CONSIDERATIONS

- Check conductivity for fountain solution which may be overly contaminated by blanket wash, ink, spray powder, and/or paper-related components.
- Water to the plate may be running too dry with lack of lubrication transfer to the blanket.
- Fountain solution and alcohol substitute should have adequate lubrication (glycols) or non-piling additives that will help the blanket carry water and ease the force of blanket release. Consult with supplier for recommended dosage of compatible additives.
- Overly acidic or excessive amounts of fountain solution to the plate can break down critical ink properties and paper or paper coating components.
- Fountain solution too cold or too warm. Alcohol-free fountain solutions do not need to run as cold as alcohol solutions. Recommended temperature at the metering pan during operation ranges from 65–70°F. (15.5–21° C.). Temperature control preset will depend upon ambient conditions. Consult with supplier as recommendations vary.
- Maintaining appropriate and consistent conductivity levels is critical in minimizing piling. A water treatment system specifically designed for the lithographic print process will eliminate conductivity variables at the tap source.

## PAPER CONSIDERATIONS

- Cold paper may be a contributing factor in adversely building ink tack. Recommendations for proper conditioning and control are listed below under Pressroom Environment.
- Low surface (pick) strength of paper surface. If spray powder or surface dust is suspect, try pre-dusting a small quantity of paper for a print comparison.

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- Excessive linting of uncoated paper.
- Surface slope or set rate of the paper (Lodcel) is incompatible with set rate or “speed” of the ink. A highly absorbent paper may demand slower setting inks because the ink is losing its solvent vehicle too quickly.
- Compare side to side performance of the paper along with a competitive sheet of equal grade, basis weight, and surface. If the problem appears to be an isolated issue, try a different grade run of the same paper.

### **PRESSROOM ENVIRONMENT**

- Monitor relative humidity and temperature.
- Ideal climate control is 45% ( $\pm 5\%$ ) Rh @ 72° ( $\pm 5^\circ$ ) F. for North America and 52% ( $\pm 5\%$ ) Rh @ 21° C. for Europe. Maintaining the recommended pressroom environment reduces many operating variables on press.
- Allow paper to acclimate to pressroom environment.
- Paper will acclimate in skid and carton packs. Do not open until going to press.
- Paper acclimation time is relative to environmental extremes and volume of paper.
- Properly conditioned paper runs with a broader operating window on press.