

Delamination



Sappi Printer Technical Service

877 SappiHelp (727 7443)

Problem

At start-up, or during the course of the press run, the paper pulls apart at the point of blanket release coming off impression. The paper may separate and partially stick to the blanket or stay intact with a surface that appears bubbled or lifted.

Definition

Delamination occurs when the internal fiber-bond strength of the paper fails and splits apart during the extreme ink tack forces of blanket release. Although the surface of the paper may appear bubbled or lifted, delamination is not to be confused with blistering, which occurs almost exclusively in the dryer unit of a web press or related exposures to extreme heat.

Causes

- Cold press start-up and/or cold operating conditions.
- Cold paper increases ink tack and the force of blanket release.
- Cold ink increases tack and the force of blanket release.
- High initial ink tack or high ink tack build through rapid solvent drain from paper absorption.
- Tacked ink on rollers due to long make-ready or extended downtime.
- Excessive impression squeeze.
- Excessive starting and stopping causing solvent loss and ink tack gain on rolls and blankets.
- Low internal fiber-bond strength of paper. (Note: As a specific grade increases in basis weight, it typically decreases in fiber-bond strength.)

Options and Solutions

- Properly conditioned paper runs with a broader operating window on press. Paper should be fully acclimated to pressroom temperature while still packaged in original roll, skid, carton, or ream wrap. Industry recommendation is 24–48 hours depending upon temperature differential and volume of paper. Ideal pressroom climate control is 45% (+/-5%) Rh at 72° (+/-5°) F. for North America and 52% (+/-5%) at 21° C. for Europe.
- 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.

Delamination (continued)



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- Cold ink may be unusually high in viscosity, body, and tack. Initial ink temperature should be in acclimation with a properly climate-controlled pressroom and the chill roll presets should maintain a consistent, optimum operating temperature. Consult with ink supplier.
- Reduce initial ink tack. If delamination is occurring in subsequent units of print, the ink is setting into the paper too quickly and building excessive tack. In this case, the ink set rate needs to be slowed down.
- Before each start up, tap or spray ink tack reducer on the rollers to break the tack and improve blanket release. There are industry-recommended solutions specific for this purpose that can be applied by spray bottle.
- Reduce impression cylinder squeeze until print starts to break up and increase squeeze minimally to achieve acceptable print. Impression squeeze should be no greater than necessary to effectively transfer ink onto the paper.
- Wash blankets before each start-up; to further help with start-ups, try misting the blankets with a light film of ink spray tack reducer.
- Aggressive blanket wash or solvent may be causing excessive tack or swelling of the blanket. Check compatibility of blanket compound with blanket wash.
- Change to a quicker release blanket or consider a rougher-surfaced blanket for smoother gloss coated papers.
- Try both sides of paper. The wire side is usually the stronger side and should run with the heavier ink coverage.
- Consider an ink sequence that would minimize ink tack build through subsequent units-of-print so that each successive unit wet-traps fresh ink over the primary image areas. When possible, run light coverage PMS colors first down, and avoid running open units in the middle of the color rotation.
- Fountain solution and alcohol substitutes should have adequate lubrication (glycols) additives that will help the blanket carry water and decrease the force of blanket release.
- Try a different production run of the same grade of paper.