

Water Sensitivity Test

During printing, water is transferred to the paper's surface before the ink. This is true in both the image and nonimage areas since:

In the **image area** a thin film of water is carried on the outside of the printing dots which transfers ahead of the ink.

In the **nonimage area** a thin film of water is printed onto the sheet from the blanket.

If the paper surface become soft when in contact with the fountain solution on press, it can "wet pick" onto the blanket.

The surface of coated paper must have the capability to accept the water, allow it to penetrate, and immediately accept the ink film. Different combinations of adhesives and pigments (along with several additives) have a dramatic effect on the water receptivity of the coated paper surface, and also the tendency for wet pick. In the lab, we characterize papers in three levels of printability:

High water receptivity: In some coated papers, the surface coating accepts the fountain solution too quickly. As it does, the coating materials break down and actually break loose from the paper's surface, pile onto the blankets, and can contaminate the fountain solution on press.

Good water receptivity: The majority of papers fall into this category. These sheets allow the water to penetrate, and then simultaneously accept ink films resulting in sharp printed dots.

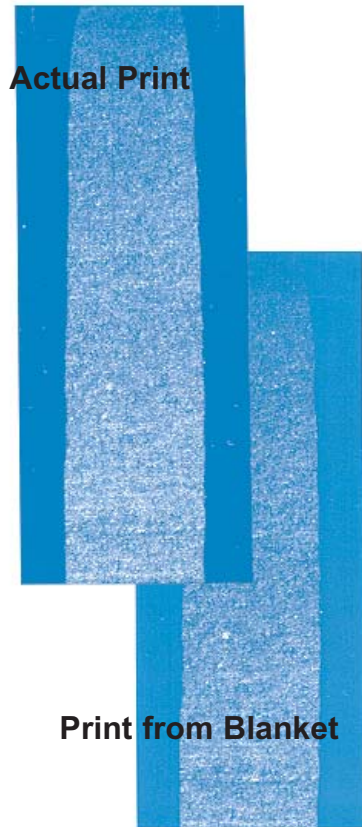
Poor water receptivity: The surface of some coated papers is so "tight" that the sheet does not allow any water to penetrate. A very thin film of water is held up on the surface and prevents the ink from transferring. We have found that this low penetration rate is independent of the paper's absorption to ink solvent.

In the lab we can test the paper's ability to accept ink in the presence of fountain solution. During this test we introduce both the ink and the fountain solution used on the job to the paper using our test proofing press. By using this test, we can predict what will occur on press. This work is used in stock selection, as well as formulation of paper coatings for offset printing.

The **Water Sensitivity Test** enables us to determine how well the paper will absorb fountain solution at the printing surface. In this test, ink and fountain solution are simultaneously applied to the paper, and using a densitometer, the difference in the "dry" versus the "wet" print are measured and compared. The values reported are "% Transfer" which is the level of ink that can be printed in the wet area, compared to how much can be transferred in the absence of the fountain solution. Another key

value is the % “Wet Pick”. If the paper’s surface is solubilized with the fountain solution then it will pick off onto the blanket in the wet areas.

Ideal values for this test are MORE than 60% transfer, and LESS than 25% wet pick.



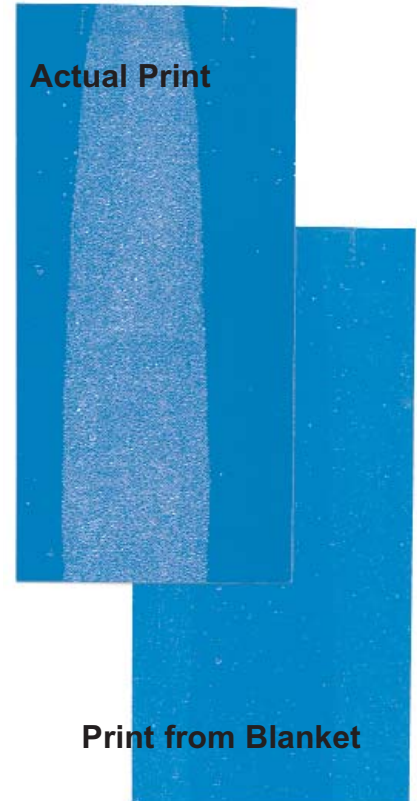
High water receptivity:

Rapid penetration of the fountain solution causing wet pick on the blanket



Good water receptivity:

Rapid penetration of the fountain solution yielding good transfer and with no wet pick.



Poor water receptivity:

No penetration of the fountain solution causing poor transfer but no wet pick.