

Nazdar's UV and UV-LED container inks have been formulated to provide excellent inter-coat adhesion; meaning adhesion when one layer of ink is printed over another, between ink layers is excellent. For plastics printing, it is common to flame treat the surface prior to initial printing. This paper takes a look at the effect of flame treating between printing an ink layer over another.

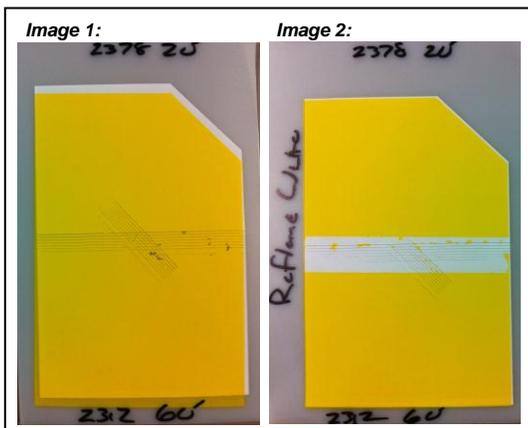
Ink Adhesion to Container Plastic

Adhesion of the ink to the substrate is somewhat dependent on the surface tension or dyne level of the substrate. To achieve good adhesion, the surface of the container should have a dyne level typically around 42-44.

When a container is produced, its dyne level is generally much higher than 44, but over time the dyne level decreases due to plasticizers and oils seeping to the surface. By flame treating the container, these contaminants can be removed thereby increasing the surface tension or dyne level. Generally, container printers have a flame treating system at the beginning of a print run so that the container is exposed to the flame only once and then print the colors.

Image 1 is a substrate flame treated, with a white ink printed and cured. Then a yellow ink was printed over the white and cured. The print was subjected to a cross-hatch and tape test to determine the level of adhesion. In this example, adhesion between the inks was excellent because the yellow ink could not be lifted or scratched off the white underlying ink.

Image 2 is a substrate flame treated, with a white ink printed and cured. Then the print is flame treated again, subjecting the white ink to the flame treatment. The yellow was then printed and cured. The print was subjected to a cross-hatch and tape test to determine the level of adhesion



between the white ink and the yellow ink. In this example, the adhesion between the white and yellow ink failed as seen with the strip of yellow ink removed from the white ink. Flame treating the white printed ink caused a failure of the inter-coat adhesion to the yellow ink.

Image 3 is a flame treated substrate printed with a white ink and then cured 10 times. Next, the yellow ink was printed and cured. The print was subjected to a cross-hatch and tape test to determine the level of adhesion. This example shows that repeated exposures to UV / UV LED light does not affect the inter-coat adhesion; the yellow ink was not removed from the underlying white ink.



Summary

Containers should only be flame treated at the beginning of the printing process, prior to any ink being applied. Flame treating printed ink layers would cause poor inter-coat adhesion with successively printed colors.

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N3100 Series UV screen Ink

4100 Series UV screen ink