



Kodak Approval Digital Color Imaging System Techniques for Flexible Substrates

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Overview

The **Kodak Approval** Digital Color Imaging System produces proofs that are capable of being transferred onto thousands of substrates used in packaging and flexible applications. This capability enables a **Kodak Approval** System proof to transfer onto substrates ranging from folding carton to tissue, white poly to shrink-wrap, metal to metallic board. However, one of the most challenging substrates is shrink wrap, due to the heat characteristics of the material. This document describes common techniques in handling substrates such as shrink wrap or other flexible substrates.

Getting Started

To successfully transfer onto flexible substrates, you will need these materials:

- **Kodak Approval** Digital Intermediate Layer/I01/1834
- **Kodak Approval** Prelaminate/P02/2101
- Possibly **Kodak Approval** Precoat/PC01
- Top and bottom carrier sheets made from spent (used) Prelaminate

Factors in successful transfer to a flexible substrate

1. Surface energy of the substrate is compatible with Prelaminate (higher than 38 dynes/cm).
2. Use of Prelaminate and possibly Precoat.
3. Creation and use of carrier sheets.
4. Correct temperature and speed setting on the **Kodak** 800XL Laminator.

Step 1: Creating Carrier Sheets

In order to protect the flexible substrate from the heat of the Laminator, carrier sheets need to be created. For most flexible substrates, both top and bottom carrier sheets are needed for a successful lamination.

To create a carrier sheet, laminate two used pieces of Prelaminate emulsion to emulsion through the Laminator. Using two additional sheets of used Prelaminate, repeat the process to create additional carrier sheets.

This first step will give you the top and bottom carrier sheets to be used in the prelaminate and transfer processes in steps 2 and 3.

Note: These carrier sheets can be used repeatedly. Please use judgment in determining when new sheets need to be created when wear and tear are observed.



Step 2: Preparing a Flexible Substrate

For the Prelaminate to transfer successfully, the flexible substrate must have a surface energy higher than 38 dynes/cm.

- In general, if the surface energy is lower than 38 dynes/cm, Precoat must be applied as a first step. After Precoat is applied to the flexible substrate, Prelaminate must also be applied. Precoat should always be used as a complement and not as a replacement for Prelaminate.
- Usually, if the surface energy is higher than 38 dynes/cm, only Prelaminate needs to be applied to the flexible substrate.

Applying Precoat as a first step:

1. Place a bottom carrier sheet created in step 1 on the Laminator table.
2. Place the flexible substrate on top of the carrier sheet.
3. Place Precoat on top of the flexible substrate (emulsion side down).
4. Place a top carrier sheet created in step 1 on top of the Precoat.
5. Send the combined pack (bottom carrier sheet, substrate, Precoat, and top carrier sheet) through the Laminator using the default speed dial setting of 40-50 and high temperature settings.
6. Remove the top carrier sheet and place to the side.
7. Remove the support layer of the Precoat.

Note: Temperature and speed settings may need to be adjusted for proper transfer of the Precoat.

Applying Prelaminate:

1. Place a bottom carrier sheet created in step 1 on the Laminator table.
2. Place the flexible substrate on top of the bottom carrier sheet.
3. Place a sheet of Prelaminate just inside the area of the flexible substrate.
4. If Precoat has been applied in the previous step, place a sheet of Prelaminate just inside the area of the applied Precoat.
5. Place a top carrier sheet on top of Prelaminate sheet.
6. Send the combined pack (bottom carrier sheet, substrate, Prelaminate, and top carrier sheet) through Laminator using standard speed and temperature settings.
7. Remove the top sheet of carrier and place to the side.
8. Remove the support layer from Prelaminate.
9. Check for proper lamination.

Note: Temperature and speed settings may need to be adjusted for proper transfer of the Prelaminate.



Step 3: Transferring the Image from the Intermediate Layer

Once the laminated pack from step 2 exits the Laminator, place back on Laminator table.

1. Place the imaged Intermediate Layer (image side down) on top of the Prelaminate.
2. Place the top carrier sheet back on top of the Intermediate Layer.
3. Send pack (bottom carrier sheet, substrate, Prelaminate, imaged Intermediate Layer and top carrier sheet) through the Laminator using standard speed and temperature settings.
4. Once the laminated pack exits the Laminator, place back on Laminator table.
5. Remove top carrier sheet.
6. Remove the support layer of the Intermediate Layer.
7. Remove proof from bottom carrier.
8. A finished **Kodak Approval** System proof is now complete.

Note: When using materials such as shrink wrap, image placement needs to be aligned with direction of shrink wrap during the heating process.

Temperature and speed settings may need to be adjusted for proper transfer of the Intermediate Layer.

Points to Remember

Accuracy of dyne pens

The accuracy of dyne pens may vary among dyne pen sets. A typical dyne pen will have a shelf life of 6 months. Typical sets are available in groups of 8 pens from 30 to 44 dynes/cm (30, 32, 34, 36, 38, 40, 42, 44) and from 46 to 60 dynes/cm (46, 48, 50, 52, 54, 56, 58, 60). It is important to properly use and store dyne pens to prevent contamination.

How to tell if the Prelaminate transfers successfully

The Prelaminate transfer layer is extremely thin. With some substrates, it can be difficult to determine whether or not transfer actually occurred under given conditions. One simple test for Prelaminate transfer is to “mark” a small corner of the Prelaminate sheet surface on the transfer side using a permanent fine-line marker (such as a Sharpie pen) or other writing instrument. Then laminate the substrate with the marked Prelaminate. When successful transfer occurs, the mark will be visible on the substrate with no mark on the spent or used Prelaminate support material. Otherwise, the mark, or some portion of it, will remain on the Prelaminate.

How to tell if the Intermediate Layer transfers successfully.

If the Prelaminate has successfully transferred to the flexible substrate, then Intermediate should transfer successfully. All image area will be removed from the Intermediate support backing.