



Kodak Approval Digital Color Imaging System Lamination Techniques for Metal

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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.

This document describes common techniques in handling the transfer to actual metals. For transferring to metal board and metallic foils, other technical bulletins should be followed.

Typically metal printing is used for food, beverage, health and beauty, household and industrial products. Types of metal packaging include aluminum cans, aerosol containers, food containers, metal closures, specialty containers, high impact decorations and finishes, and easy open ends both rigid and flexible.

Getting Started

To successfully transfer onto metals, 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
- A flat metal sheet with a surface energy higher than 38 dynes. If the metal used does not have a surface energy higher than 38 dynes a pre-coating process is needed. In this example we recommend Precoat material.

Factors in successful transfer to a metal

1. Surface energy of the metal compatible with Prelaminate (higher than 38 dynes).
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

When transferring to metal, you **MUST** use a top and bottom carrier. Carriers protect the Laminator from the sharp edges of the metal.



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 process 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 is observed.

Step 2: Preparing the Metal

For the Prelaminate to transfer successfully, the metal must have a surface energy higher than 38 dynes.

- In general, if the surface energy is lower than 38 dynes, 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 compliment and not a replacement for Prelaminate.
- Usually, if the surface energy is higher than 38 dynes, 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 metal on top of the carrier sheet.
3. Place Precoat material on top of the metal (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 metal 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

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 exists the Laminator, place back on laminator table.
5. Remove top carrier sheet.
6. Remove the support layer of the Intermediate Layer.
7. Remove metal proof from bottom carrier.
8. A finished metal **Kodak Approval** System proof is now complete.

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

Points to remember:

Accuracy of dyne pens

The accuracy of dyne pens may vary with each dyne pen set. 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.

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