

100 THE METALPHOTO FAMILY**101 INTRODUCTION**

The Metalphoto family of photosensitive, anodized aluminum products is part of a total and unique imaging system that offers these distinct advantages:

- Photographic flexibility - anything that can be photographed in line or halftone can be reproduced with total fidelity.
- Direct imaging - process directly from production film to imaged plate, no intermediate plates or screens are required.
- Durability - the image is sealed within the anodized layer making it impervious to acids, fungus, salt spray, moisture, weathering, temperature extremes, and most corrosive atmospheres.
- Ease of fabrication - a fully processed and sealed plate can be fabricated into a finished product using normal fabricating equipment and techniques.

This versatile family of products and coloring systems consists of:

- Metalphoto plates - black images on a silver background or silver images on a black background.
- Pre-Dyed Metalphoto Plus plates - black images on colored background or colored images on black background.
- Pre-Dyed UltraColor plates - colored images on a silver background or silver images on a colored background.
- Clear UltraColor plates - the same imaging options as Pre-Dyed UltraColor plates but extended range of colors available.
- PolyColor plates - adds multiple colors on a silver background.
- Background coloring - adds an overall color to the silver portion of a Metalphoto plate.
- Selective coloring - adds color to selected areas of the silver portion of a Metalphoto plate.

102 PURPOSE OF THIS SECTION

The intent of this section is to present, in a non-technical fashion, how the qualities of each product are achieved both in manufacturing and processing. This knowledge will aid in the selection of the proper combination of products for a specific project.

110 THE BASIC INGREDIENT - ANODIZED ALUMINUM

The branches of the Metalphoto family tree have the common root of a precise and consistent pore structure in a transparent, anodic layer on a base of premium-finish aluminum. (*Fig. 110.1*)

The various imaging characteristics of the Metalphoto family of products are determined by what we do with these microscopic pores.

111 METALPHOTO PLATES

We manufacture a Metalphoto plate by filling each pore with silver salts, transforming the inert sheet of anodized aluminum into a photosensitive material that reacts to light much like photographic paper. (*Fig. 111.1*)

When a standard litho or rapid access film negative (or positive) is placed in contact with this photosensitive surface and then exposed to a light source, developed and fixed, the silver salts exposed to the light source through the clear areas of the film are converted to metallic silver which is black in color. The unexposed silver salts, blocked from the light source by the dark areas of the film, are washed away. The now empty pores in the clear anodic layer permit the aluminum to show through, resulting in a black image on an aluminum field. (*Fig. 111.2*).

The final step in processing a Metalphoto plate consists of immersing the exposed and fixed plate in a boiling sealing solution. This causes the walls of each pore containing the black metallic silver to swell shut at the sur-

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face, sealing the black image within the anodic layer. The empty pores swell shut, become transparent and disappear. The surface of the Metalphoto plate is now as hard as sapphire and as clear as glass, with the black image suspended in the anodic layer contrasting vividly with the aluminum base metal. (Fig. 111.3)

112 PRE-DYED METALPHOTO PLUS PLATES

Metalphoto plates with their anodized pores containing silver salts, plus a dye added to the pores, makes Metalphoto Plus. We also take the standard black and silver images, plus a mirror-like gloss finish to produce another special appearance. (Fig. 112.1)

The Pre-Dyed Metalphoto Plus plate is exposed, developed, and fixed exactly like the Metalphoto plate except that when the unexposed silver salts, blocked from the light source by the film, are washed away, the dye remaining in these pores colors the background resulting in a black image on a colored field. (Fig. 112.2)

The sealing process now traps both the black metallic silver and the dye within each pore resulting in the same hard as sapphire, clear as glass surface obtained with the Metalphoto plate. (Fig. 112.3)

113 PRE-DYED ULTRACOLOR PLATES

We manufacture Pre-Dyed UltraColor plates by filling each pore with a dye and then covering the entire anodic layer with a light sensitive material called a photo-resist. (Fig. 113.1)

When a standard litho or rapid access film negative (or positive) is placed in contact with the photo-resist surface and then exposed to an ultraviolet light source and developed, the photo-resist that is exposed to light through the clear areas of the film,

**CROSS SECTION
THE BASIC INGREDIENT-ANODIZED ALUMINUM**

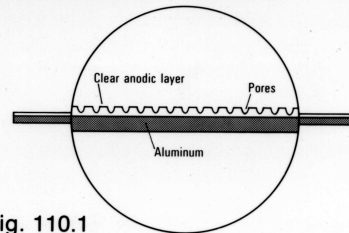


Fig. 110.1

**CROSS SECTIONS
METALPHOTO PLATE**

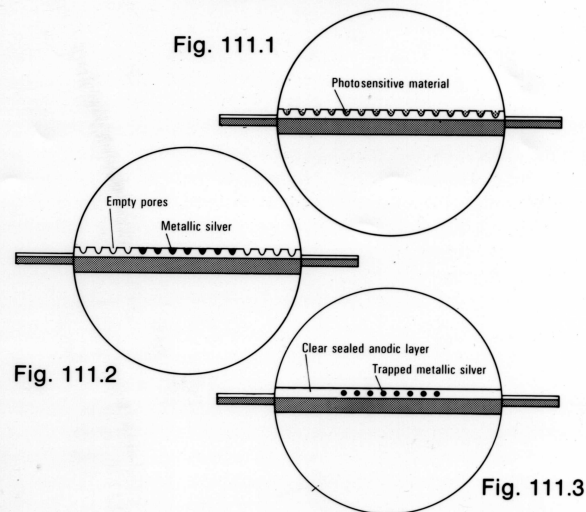


Fig. 111.1

Fig. 111.2

Fig. 111.3

hardens and protects the colored image formed by the dye in the pores. The unexposed (un-hardened) photo-resist, blocked from the light source by the dark areas of the film, is softened in the development process and removed by the rinse following development. The dye remaining in these unprotected areas is now removed through a bleaching process. (Fig. 113.2)

When the hardened resist layer is stripped away, the colored image contrasts with the aluminum base metal showing through the empty pores in the clear, anodic layer. (Fig. 113.3)

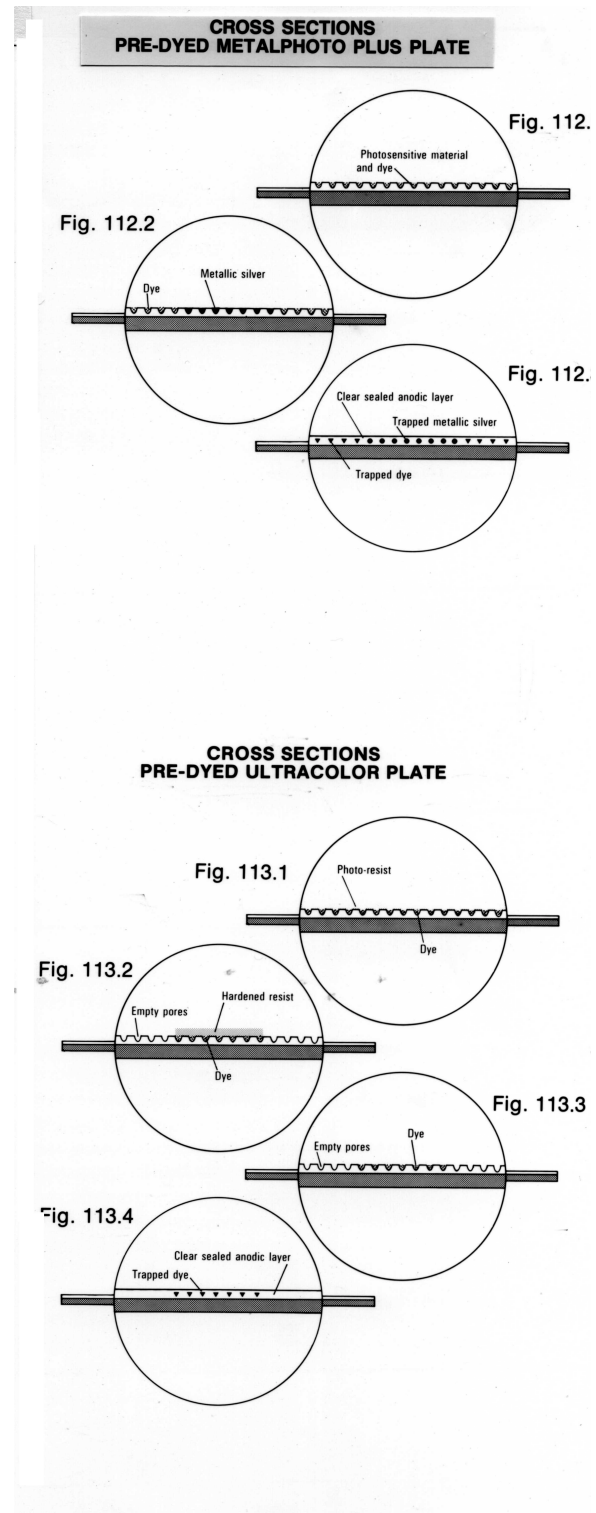
As with the Metalphoto plate, the sealing process traps the colored image within the anodic layer. The empty pores simply swell shut, become transparent and disappear. (Fig. 113.4)

114 CLEAR ULTRACOLOR PLATES

Clear UltraColor plates give the same imaging options as Pre-Dyed UltraColor plates, that is, colored images on a silver background or silver images on a colored background, but extend the range of color options available.

We manufacture Clear UltraColor plates by leaving the pores in the anodic layer empty (undyed) and covering the entire surface of the plate with the same light sensitive photo-resist used for Pre-Dyed UltraColor plates. (Fig. 114.1)

When a standard litho or rapid access film negative (or positive) is placed in contact with the photo-resist surface and then exposed to an ultraviolet light source and developed, the photo-resist that is exposed to light through the clear areas of the film hardens, prohibiting these areas from accepting dye. The soft unexposed portion of the resist is removed by the rinse following development, exposing the empty pores in the anodic layer. (Fig. 114.2) When the plate is im-



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mersed in a solvent dye solution, these empty pores fill with the desired color. (Fig. 114.3) When the hardened resist is stripped away, the empty pores in the anodic layer allow the base aluminum to show through, resulting in a colored image on a silver field. (Fig. 114.4) The sealing process traps the colored image in the same manner as it does for Pre-Dyed UltraColor. (Fig. 114.5)

115 POLYCOLOR PLATES

PolyColor plates can produce images of different colors on a silver background, even with the colors touching each other. (Fig. 114.5)

120 OBJECTIVES OF THIS GUIDE

The sections that follow are intended to aid in achieving a basic understanding of what you need to know to properly process the products described above.

By carefully following the instructions and suggestions presented, consistent, high quality results will be routine.

If at any time you find you need further assistance, information, or clarification, contact your Metalphoto representative or call Customer Service toll-free Hot Line in Cleveland, Ohio:

U.S.A. - dial 800-482-7758
 Canada - dial 800-635-6154

CROSS SECTIONS CLEAR ULTRACOLOR PLATE

