UltraVinyl™
No-Weed Sandblast Mask

UltraVinyl Photoresist Film is an advanced film that provides deep etching capability similar to vinyl while offering the quick and easy process of a photo resist. With UltraVinyl, users can achieve finer, better image quality without the hassle of weeding. UltraVinyl Film offers:

- Excellent Resolution achieve finer details and sharper images than vinyl
- No weeding
- Deep etching capability
- Superior durability

UltraVinyl Photoresist Film: *10 mil (250 micron) thickness and is available in roll and sheet formats.*

STORAGE
- Store packaged film in a cool, dry area.
- Do not refrigerate.
- Shelf life is indefinite. IKONICS Imaging warrants this product free from defects for 12 months.
- Processed masks with large open areas may benefit from storage on silicone-treated release paper applied to the front side of the film.

SAFETY CONSIDERATIONS
REFER TO SDS for safety information. Wear eye and hand protection.

MATERIALS NEEDED

Required
Phototool
Exposure Device
UltraVinyl photoresist film/masks
Washout Equipment
Blast Equipment
Substrates

Recommended
Wire Wheel
Smart Jig
Squeegee
Dust-free Cloth
Glass Cleaner

LIGHT SENSITIVE PRODUCT
UltraVinyl Film is a light sensitive product, until fully developed *(after step 3)*. UltraVinyl Film has some tolerance to white light, however, it should be used in yellow or safe light conditions for optimum results. Safe light sources include general purpose gold or yellow fluorescent or incandescent lights, red ortho-safe lights, or yellow *bug lights*. If safe light sources are unavailable, white LED room lights are preferable over white incandescent or fluorescent lighting during processing.
Warning: *Exposure to direct or indirect sunlight will partially or completely expose UltraVinyl Film.*

STEP ONE: CREATE ARTWORK/PHOTOTOOL

Artwork should be created as a dense black image, with crisp, clean line edges. The highest quality and best value phototools are created by inkjet printing artwork onto specially coated inkjet film. AccuBlack® Inkjet film is recommended.

Alternative Technologies for phototool creation:
- Both stat cameras and image setters offer high quality at a premium price.
- Paper positive media like laser-printed vellums or Positive FX Drafting Film can be less expensive, but it offers only marginal performance.

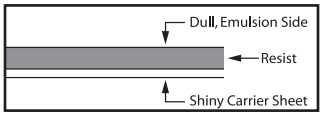
NOTE: UltraVinyl Film uses a photopositive process, meaning the black portions of the phototool will ultimately be engraved. **"Black = Blast"**

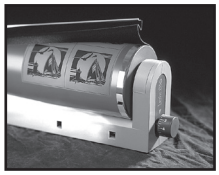
For further information and basic instruction on artwork setup and advanced decorative techniques such as back blasting, stage carving, color-filling, and more, visit us online at ikonicsimaging.com/artwork-s3-faq or scan the code below.

UltraVinyl Film is recommended for use with the color-fill technique or with the stage carve technique.

STEP TWO: EXPOSE

1. Position phototool and UltraVinyl film in exposure unit. Place the printed side of the phototool against the dull emulsion side of the UltraVinyl film in the exposure unit, so that the phototool is between the light source and the UltraVinyl film. ***HINT:*** *UltraVinyl's emulsion side is duller in appearance than its shiny carrier sheet side.*





2. An ultraviolet (UV) exposure unit with a vacuum frame should be used to assure firm contact between the artwork and the UltraVinyl film during exposure. For information on UV Exposure units such as the Quick Image Exposure unit, please contact IKONICS Imaging.

3. Be sure to have a non-reflective black backing opposite your UV light source to avoid possible reflection causing overexposure.

4. Expose using the suggested times listed.

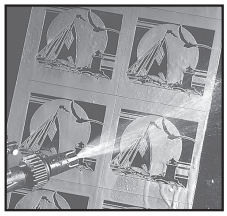
NOTE: *The effects of improper exposure will be seen during image development (step 3). Overexposure prevents the image from washing out completely. Underexposure causes loss of fine details or the entire stencil to wash out prematurely.*

SUGGESTED LIGHT SOURCES & EXPOSURE TIMES

Light Source	Distance	Exposure Time
5 KW Metal Halide	40 in/100cm	25 units
26-1KS (1KW)	18 in/45cm	60 units
Letralite	n/a	3 min
QuickImage	n/a	16-20 sec

NOTE: *Exposure times are suggested only as a guide. All exposure times are approximations and will vary based on type of UV light source used, age of light source, and local voltage ranges. Exposure times can also vary based on the type of phototool used. Contact IKONICS Imaging for additional exposure information.*

STEP THREE: **IMAGE DEVELOPMENT**



1. Position the exposed film in an upright vertical position. Secure the film with a clip so that the emulsion (dull) side can be sprayed without letting the force of the water dislodge the film from its vertical position.

2. Use heated water with pressurized spray. The warmer the water, the faster the washout time, but water temperature should not exceed 120°F (38° C). UltraVinyl Film is often developed with the TriggerJet® Washout Nozzle which works best with heated water and the flat spray attachment (50-80 psi / 3.5-5.5 bar). Unheated water works well with pressure washers that can deliver 400-1200 psi (28-83 bar).

3. Spray with slow, even passes over the entirety of the film until the image area becomes transparent. A gentle, steady sweeping motion from about 8–12 inches (20–30 cm) away is recommended for fine detail. ***Caution:*** *Directing the spray to one isolated spot may delaminate the cured emulsion from the carrier sheet.*

SUGGESTED WASHOUT GUIDELINES

NOTE:
Due to the thickness of UltraVinyl, washout times can vary widely. Washout times shoudl be determined on an individual basis, based on the washout method chosen. Times will be influenced by:

- *amount of detail in the artwork (high detail = longer)*
- *amount of stencil being developed*
- *water temperature and pressure used*

Do not *wash UltraVinyl Film under running water from a faucet, as it may affect stencil integrity.*

STEP FOUR: **DRYING**

1. Use pressurized air or blow dryer to remove excess water from the film to help accelerate drying. Blotting the film with a lint-free rag is suggested to speed the drying process.

2. Let film dry for 45-60 minutes at room temperature.
   - High humidity will extend the drying time to ~90 minutes.
   - When film returns to its original uniform color and is not tacky, it is dry.

If available, a drying chamber with heated circulating air will significantly reduce the drying time. At temperatures of 100-160°F (49°- 71°C), drying will take approximately 20-30 minutes. Drying will vary with humidity and air circulation. Film should return to room temperature before proceeding to the next step.

STEP FIVE: **MASK APPLICATION**

Now that the photoresist film has been transformed into a stencil mask in steps 1-4, it can be applied to the substrate.

1. Remove the carrier by flicking a corner with your fingernail or an X-ACTO® knife, this will reveal the adhesive layer.

2. Position the mask in the desired location and orientation. Apply mask to the substrate.

3. Once the mask is properly positioned, apply firm pressure to the back of the masking material using a roller. This ensures firm contact of the mask to the substrate. Pay special attention when applying to anchor details and small lettering.

NOTE: *Avoid wrinkles or large air pockets. Air pockets under the film may reduce adhesion, resulting in blow-offs during blasting. If unable to remove air bubble, simply pop the bubble with a pin and tape over the pinhole to avoid blast through.*

A good transfer may still result if very small bubbles under the film surface exist. Tiny bubbles typically do not compromise the integrity of the film during blasting.

STEP SIX: **BLASTING**

1. Hold the blast gun 6-8 inches (15–20 cm) away from the object at an angle perpendicular to its surface.

2. Recommended maximum pressure for a pressure-pot sandblast system is 80-100 psi (5-7 bar). A siphon (or suction) sandblast system is not recommended.

3. Grit size should be 60-120 mesh, depending on the image detail. Recommended abrasive media is either pure aluminum oxide or silicon carbide. All manufacturer safety precautions should be closely followed.

4. Recommended blasting temperature is 68°F (20°C) or higher. Blasting in lower temperatures may result in loss of adhesion or blow-offs.

NOTE: *If the color-fill decorative technique is used, it should be completed before mask removal and mask should not be removed until color-fill medium is completely dry.*

STEP SEVEN: **MASK REMOVAL**

Peel the masking material from the substrate. Fine pieces of masking material can be removed by rolling them off with your fingertips.
CAUTION: Be careful not to scratch the substrate.