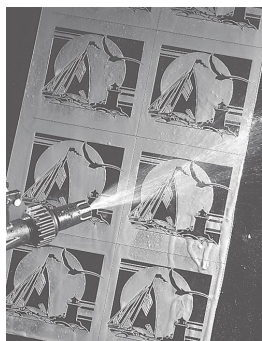




R3™, R4™, & R5™ SELF-ADHESIVE PHOTO RESIST

FILMS OFFER:

- Easy handling — not tacky until after washout
- Repositionable
- Dries fast
- Easy carrier release
- Easy clean-up
- Excellent imaging
- Fast exposure
- Superior durability



R3 is available in 3 mil thickness, R4 is available in 4 mil thickness, and R5 is available in 5 mil thickness. All can be purchased in rolls and cut sheets.

- 3 mil = 3/1000 of inch = 75 micron
- 4 mil = 4/1000 of inch = 100 micron
- 5 mil = 5/1000 of inch = 125 micron

MATERIALS NEEDED

- Exposure Device
- Washout Equipment
- Blast Equipment
- Substrates

SAFETY CONSIDERATIONS

Refer to MSDS for safety information. Wear eye and hand protection.

LIGHT SENSITIVE PRODUCT

R3, R4 and R5 films are light-sensitive. Although they have some tolerance to white light, for optimum results they should be used in yellow or safe light conditions. General purpose gold or yellow fluorescent or incandescent lights, red ortho-safelights or yellow buglights can also be used.

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.

ARTWORK

1. Generate positive or negative artwork. For best results, artwork should have dense black areas, with crisp, clean line edges. Film or paper positives are acceptable.
 - Acceptable **film positive media** includes AccuArt™ brand water resistant inkjet film, stat camera or image setter. Film positives or negatives are recommended for halftone artwork (35-45 dpi). *Transparencies are not recommended.*
 - Acceptable **paper positive media** includes, vellum or Positive FX Drafting Film output by a laser printer or professional photo copier. Please note that results may vary based on equipment, toner quality, and media.

Front Blast — Positives or negatives should be right-reading emulsion (toner) side up for front blasting.

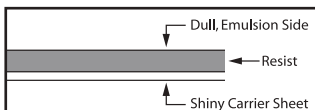
Back Blast — Positives or negatives should be right-reading emulsion (toner) side down for back blasting.

Black = Blast

FILM EXPOSURE

WORK UNDER YELLOW LIGHTS

R3™, R4™, & R5™ films are light-sensitive products. For optimum results they should be used in yellow or safe light conditions.



1. Place the film shiny side down on the black backing. The dull side will face up.
2. Place the emulsion (toner side) of the artwork against the dull side of the film. The emulsion side of the film has a duller appearance compared to the carrier side.
3. A vacuum frame or compression frame should be used to ensure firm contact between the artwork and the film during exposure.
4. Be sure to have a non-reflective black backing opposite your UV light source to avoid possible reflection causing overexposure.
5. Expose using the suggested exposure times listed.



IKONICS Imaging for additional exposure times.

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 type of photopositive used. Contact

Suggested Light Sources and Exposure Times

Light Source	Distance	Exposure Time
5 KW Metal Halide	40 in/100 cm	10-15 units
26- 1KS (1 KW)	18 in/45 cm	10-20 units
Letralite	n/a	40-60 sec

Please note that overexposure can cause image not to washout, and underexposure can cause image to washout prematurely.

Please note that depending on artwork media used, exposure times may need to be adjusted from the recommendations above.

IMAGE DEVELOPMENT

1. Position the exposed film in an upright vertical position with the emulsion (dull) side facing outward, clipping the film to support plate in the washout area.
2. Wash out film with water up to 120°F (49° C). The warmer the water the faster the washout. R3, R4 & R5 can be processed by using the TriggerJet® Washout Nozzle with the brass flat spray attachment at 50-80 psi (3.5-5.5 bar) or a pressure washer between 400-1200 psi (28-83 bar).
3. Using either method, spray in a slow and even motion until the image area develops clear. When using high pressure, do not concentrate on one spot as delamination of emulsion from the carrier sheet may occur. A gentle, steady sweeping motion from about 8-12 inches (20-30 cm) away eliminates this potential. High pressure water is recommended for very fine detail and halftones.
4. The entire surface area of the film must be washed to ensure adequate adhesion.
5. Wash until the blast area is completely clear of emulsion.

Suggested Washout Guidelines

TriggerJet®

1-2 minutes

Pressure Washer

A pressure washer will reduce washout time to under 1 minute in most cases.

NOTE: Washout times by either method will be influenced by the amount of detail in the artwork (longer), amount of film being developed, water temperature and amount of water pressure used.

Do not wash R3, R4 or R5 film under running water from a faucet.

DRYING OF MASK

1. Remove excess water from mask to accelerate drying times.
2. Dry the mask for 30-60 minutes at room temperature; *film should be uniform in color*. High humidity will extend the drying time. At



A dryer, such as the PB 500 (shown) with heated circulating air will significantly reduce drying time.

100°F (39°C), drying will take approximately 20-30 minutes. For best results, return to room temperature before applying.

When storing processed R3, R4 or R5 masks for later use, apply to Silicon Release Paper. Masks may be stored for up to one month.

IMAGE TRANSFER

- R3, R4 and R5 are repositionable. Simply apply the mask to the substrate by lightly pressing down on the mask. If repositioning is required remove the mask and realign.
- Once the mask is positioned properly, apply firm pressure to the back of the mask using a plastic burnisher to ensure firm contact of the mask to the substrate.



- Avoid wrinkles or large air pockets. Air pockets under the mask may cause lack of adhesion resulting in blow-offs during blasting.
- A good transfer may still result in very small bubbles on the mask surface which will **not** interfere with either the transfer or the blasting.
- Remove the carrier sheet from the mask by flicking a corner with your fingernail or an X-ACTO® knife. Once removed, press down on the image area with your thumb to assure firm contact, paying special attention to fine details and small lettering.

BLAST

1. Hold the blast gun 6-8 inches (15-20 cm) away from the object and perpendicular to its surface.
2. Recommended **maximum** pressure for a pressure-pot sandblast system is 40 psi (2.75 bar). A siphon (or suction) sandblast system should not exceed 80 psi (5.5 bar).
3. Grit size should be 150 or finer 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.
5. Stage carving can be accomplished with R3, R4 and R5 by putting separation lines around the area you wish to peel away and reblast.



REMOVE MASK

- Peel the mask from the substrate. Fine pieces of film can be removed by rolling them off with your finger tips. Caution: be careful not to scratch the substrate.
- Or, soak the object in water for 10-15 minutes.

NOTE: Used alone, R3, R4 and R5 films are not suitable films for use with acrylic substrates. The peel after sandblasting is difficult, and becomes more difficult if the film and substrate are soaked in water. Please contact your IKONICS Imaging representative for further details.

COLOR FILLING

Color filling is a popular way to add a unique touch to sandcarved projects. Once the piece has been sandblasted, use pressurized air to remove any loose abrasive from the etched area. The photo resist will protect the area you do not want to color. A thin paint coating is preferable since excess paint will dry over the top of the photo resist, causing the paint to pull away from the etched surface during resist removal. Please contact your IKONICS Imaging™ representative for information on the benefit and use of color filling.