

## Liquid Light Instructions

*This is a silver-halide emulsion made exclusively for darkroom coating. It is darkroom-safe with no phenol or other organic solvents.*

### HANDLING

Store the emulsion a cool place. It can be refrigerated for maximum shelf life, but do not freeze. *At room temperature, the emulsion is a solid gel.* Before use, plunge the bottle into a container of hot water until the contents turn liquid. This happens around 110°F (43°C) Do not overheat. Do not shake the bottle, as bubbles may form. It is not necessary to melt the entire contents if only a portion is being used.

Use containers of glass, plastic, enamel or stainless steel. Do not use plain steel, brass, copper or aluminum as they may react with the emulsion to form black specks.

**Safelight:** Use a red safelight or medium amber with Liquid Light. The emulsion can tolerate some safelight exposure without fogging.

### SURFACE PREPARATION

#### **Some materials require surface preparation for good adhesion:**

Non-absorbent materials like metals and plastics need an oil-base pre-coat. For a transparent pre-coat, use *semi-gloss or glossy* clear polyurethane, such as minwax, (not matte). For an opaque pre-coat, use alkyd (oil-base) house paint or household enamel. These are sold at hardware and paint stores. Do not use acrylics, latex, gesso, lacquer, shellac, artist's tube paints or aerosol coatings, all of which may give poor adhesion.

**Glass and ceramics only:** These can be pre-coated with an oil-based polyurethane varnish as described above, but a better way is the gelatin pre-coat (next page) that literally fuses the emulsion to the ceramic. Use it only with glazed (vitreous) materials like glass, china, glazed ceramics, porcelain and rock; not with *glass-like* materials like Plexiglas, Lucite or plastic, which should receive a polyurethane pre-coat. (An alternative technique is to use Armour Etch which can be applied to the edges to bond the emulsion and prevent water from seeping in. When using the product on glass, the edges will look frosted so it may need to be matted.)

**Paper and fabrics:** These do not require any preparation, and emulsion can be coated directly onto them. Two coats are usually necessary (see coating instructions). Highly absorbent materials like raw plaster, bisque ceramics, cement, wood, bricks, etc. require surface preparation to prevent the processing chemicals from soaking in and causing discoloration or fading. These materials should be pre-coated with an oil-base polyurethane varnish or alkyd paint as described above.

**Artist's canvas:** If primed with acrylic gesso, it should be given a top coat of alkyd paint or glossy polyurethane as described above. If unprimed, or primed with oil-based gesso, the emulsion can be coated directly over.

**Acetates:** There is a type of film called Dura-Lar wet media, available at art supply stores, which the emulsion will stick to without further prep. Otherwise, use oil based polyurethane as an intermediate coat.

**Gelatin pre-coat (subbing)** for glass and glazed ceramics: You will need some powdered laundry detergent and some unflavored gelatin such as the Knox brand. These items are sold at larger grocery stores.

Scrub the glass or ceramic with hot water and powdered detergent until the rinse water does not bead up but leaves a uniform film when drained off. At this stage, the glass is chemically-clean.

Sprinkle 1 level teaspoon (5 grams) of unflavored gelatin onto the surface of one cup (250 cc) of cold water. Allow it to swell for 5 minutes or more, then heat to melt the gelatin. Pour some of the hot solution over the chemically-cleaned glass. Drain completely and dry thoroughly before coating with emulsion.

## COATING AND EXPOSING

**Small areas:** The easiest way to coat is to pour on a surplus of emulsion, spread it to the edges with a fingertip and pour the surplus emulsion back in the bottle, leaving enough to make an opaque white coat. Lay the material on a flat surface until the emulsion sets up or becomes sticky. (Cool air will shorten setup time.) It can then be stood on end and dried with an electric fan.

**Large areas:** Keep the emulsion in a container of hot water so that it stays liquid. On absorbent surfaces like paper, use a soft brush or other means of spreading it. Let stand a few minutes until it absorbs the emulsion, then give a second coat at right angles to the first.

**Exposing:** The emulsion can be exposed and processed while still damp, or when dried. A suggested *trial* exposure time at full aperture is 10 seconds for an 8x10 inch print. Determine exposure with a test strip consisting of a few drops of emulsion spread on a file card. Differently dated batches may exhibit different sensitivity.

**Using a projector:** For large prints like wall murals, artist's canvas and other oversized surfaces when an enlarger does not give enough light, a slide projector can be used. To sharpen the image, tape a doughnut of black paper having an approximately 3/8 inch hole over the front of the projector lens, or use a polarizing filter.

## PROCESSING

Develop coated side down with Kodak Dektol diluted 1 part to 2 parts of water, or other paper developer. *Do not use film developer.* For lower contrast, use Kodak Selectol-Soft. Develop in a tray at 65°-70°F for 1-2 minutes. If the print is large, use a sponge or soft brush that is soaked in developer, or a refillable spray dispenser. (Note: A temporary "tray" to hold processing solutions can be made out of a large-size stretched canvas.)

After development, *do not rinse with water or use an acid shortstop*, either of which will soften the emulsion. Instead, set aside a portion of fixer for use as a shortstop to neutralize the developer. Immerse the print a few seconds in this solution and drain before placing in the main body of fixer. (Used fixer can be used for this step.)

Fix with a hardening fixer. For best results, use Kodak Fixer or other hypo-based hardening fixer rather than a rapid fixer, which can fade the image. Fix until all the chalky white areas become transparent— from 10 to 15 minutes. The function of the fixer is to wash away unused silver compounds, so it should be used generously and with frequent agitation. Fix until the emulsion becomes leathery to the touch. (Fixing will turn the emulsion transparent, which may be mistaken for fogging if the emulsion is coated on a dark surface.)

Wash at least 10-15 minutes in lukewarm running water. Blot and dry. Vented warm air for an hour speeds up the drying, after which a fan is sufficient. After drying, a wrinkled print can be flattened by pressing with a household iron or dry-mount press on low-heat setting.

**Adding Color:** The color and texture of the material underneath are visible through the highlights of an emulsion print. For added color, prints can be toned or tinted like conventional black & white prints. They can be hand-colored with watercolors, oil paints, acrylics, or virtually any other type of paint.

Protect the surface if it will be displayed outdoors. For best protection, coat the dried print thinly with a water-based polyurethane finish. Any other type of lacquer or solvent-based coating can be used, for example Krylon Crystal Clear. For display indoors, no protective coating is needed but can be used for ease of handling.

**Cleanup:** Emulsion that has not been hardened by fixing can be removed with hot water. Hardened emulsion can be dissolved with dilute household bleach.

## TROUBLESHOOTING

**Fogged emulsion:** To test for fogging, spread a few drops of emulsion on a file card and develop one minute without exposing. The emulsion should stay white. Then expose to room light and it should turn black.

**Weak blacks:** Absorbent materials like paper or cloth may soak up the first coat of emulsion, requiring an extra coat after the first has been absorbed.

**Not enough contrast:** Contrast can be increased by super-sensitizing: Before coating, add exactly one part of working Dektol solution (diluted 1 to 2) to 15 parts of emulsion. Use this mix the same day. Sensitivity will also increase, so use a test strip.

**Specks on paper:** Some papers have impurities that can contaminate the emulsion if it stays on them overnight or longer. Remedy: coat and process the same day.

**Uneven development:** If dried for future use, for uniform development the emulsion should be dried completely with warm circulating air, not in a closed box.

**Stains or fading:** Not long enough fixing or washing to penetrate the emulsion.

**Emulsion is a liquid at room temperature:** Normally, emulsion is a solid gel at room temperature (around 70°F). If in a liquid state, it indicates prolonged freezing and will not give good adhesion.