

CHICAGO ALBUMEN WORKS
KENTMERE PHOTOGRAPHIC LIMITED
CENTENNIAL™ DW
GELATINE CHLORIDE PRINTING-OUT-PAPER

DESCRIPTION

The Chicago Albumen Works/Kentmere Photographic Limited CENTENNIAL™ Printing-out Paper (P.O.P.) is a silver chloride, gelatine emulsion coated onto double weight fibre base paper stock (DW). The emulsion surface is glossy, with a very fine lustre. The emulsion contains a slight excess of silver nitrate, and thus will print-out with great intensity. No developer is required; the image is formed directly by the action of the light during exposure. The color of the printed-out image may be variously described as blood-red, rust-red, brick-red or plum-red. The color of the processed image will range from orange-brown for prints which are merely fixed, through a rich chocolate brown for prints which receive a moderate toning, to purple-brown for prints receiving maximum toning.

HISTORY

The introduction of gelatine chloride printing-out paper marked the birth of one of the most long-lived printing products in the history of photography. From its earliest European manufacture by Johann Baptist Obernetter of Munich in 1884 and Raphael Eduard Julius Liesegang of Düsseldorf in 1886, gelatine printing-out paper has been on the market continuously for well over one hundred years.

By the mid-1890's, there were no fewer than eight American and at least as many European firms making gelatine chloride printing-out papers. Known variously as "*papier citrate*," "Solio," and "P.O.P.," it was, for many decades, one of the standard printing papers of the industry, available in both glossy and matte surfaces and in a variety of base tints, including white, pink, and mauve.

1995 celebrated the introduction of CENTENNIAL™ DW printing-out paper, manufactured by Kentmere Photographic Limited, England, a maker of fine photographic papers for nearly a century. CENTENNIAL™ DW possesses the excellent tonality, surface texture,

and processing characteristics required for exhibition printing of both contemporary and historical negatives.

HANDLING

CENTENNIAL™ P.O.P. may be handled in dim incandescent illumination for short periods of time. It is sensitive to blue and ultra-violet light only, and its printing speed is extremely slow. Due to the reactivity of the silver nitrate and the absence of super-coatings this paper fingerprints easily. Handle with clean and absolutely dry fingers, by the edges only.

STORAGE

The shelf life of this paper will be determined by the temperature and humidity of its storage conditions. It is imperative that unprocessed paper, exposed or unexposed, be stored in its original plastic envelope at a temperature of 21° C (70° F) or lower, and at a relative humidity of 50% or lower. Shelf life under these conditions should be at least one year. Some yellowing of the emulsion is normal, and a large percentage of any visible yellowing will be removed during processing. For longer storage, it is highly recommended to seal the plastic envelope and refrigerate or freeze the paper.

EXPOSURE

The printing speed of this paper requires exposures be made by contact under illumination by a strong ultra-violet light source, such as direct sunlight, open sky, mercury vapor lamp, or black light printer. Exposures times with such sources will be measured in minutes. Increased contrast, of more than one printing grade, may be achieved by exposing for extremely long durations (24 hours or more) under fluorescent illumination. A split-back printing frame is customarily used, as the degree of print-out may be inspected without losing registration between the negative and the printing paper. (Be sure to inspect in dim light so as not to fog the image.) Print until the image is somewhat darker than desired in the finished print, for processing lightens the printed-out image. Printing times using daylight will be varied, with the exact time depending on the density of the negative being printed and the quality of light, ie., the sky conditions, the time of day, and the time of year.

While the color of the printed-out image will be a rich red-brown color, its exact shade will vary depending on the temperature during printing, the humidity, the nature of the light source, the characteristics of the negative, and the particular emulsion number in use. However, differences in print-out color have little bearing on the color of the finished print, for toning and fixing are what principally determine the final hue.

PROCESSING

I. Rinse the exposed print in slowly moving water (18°-21°C/65°-70°F) for approximately one minute. (A slight milkiness may appear; this is silver nitrate from the emulsion reacting with chlorine in the water to form insoluble silver chloride.)

II. Tone in one of the following toner formulæ.

A. Ammonium Thiocyanate/Gold Chloride Toner

(Adapted from Kodak, Limited, London, Toner T-53):

STOCK SOLUTION A (2% Amm. Thiocyanate)

Ammonium Thiocyanate 10 grams
Dist. Water (50°C/120°F) 500 ml.

Allow this stock solution to stand overnight.

STOCK SOLUTION B (0.2% Gold Chloride)

Gold Chloride 1 gram
Dist. Water (21°C/70°F) 500 ml.

(If starting with gold chloride in a 1% solution, dilute 100 ml. of 1% solution with 400 ml. distilled water to make 500 ml. Stock B [0.2%])

Both stock solutions will keep indefinitely. 500 ml. each of Stock A and Stock B will make enough working toner solution to tone approximately fifty 8"x10" prints in four printing sessions, assuming one liter volumes of working toner.

FOR USE, MIX IN THESE PROPORTIONS:

Tap Water (21°C/70°F) 900 ml.

Stock Solution A	50 ml.
Stock Solution B	50 ml.

Upon addition of Solution B, toner will turn red momentarily. Working dilution of toner may be used immediately.

Tone prints until desired color change has occurred (2-10 minutes). At about one minute into the toning, the entire image will take on a yellow-orange appearance. Soon thereafter, the shadows will begin to re-intensify, and the highlights will begin to appear light gray in color. For a mid-range (purple-brown) hue in the finished, dry print, tone until the highlights take on a faint cool (bluish-gray) tone compared to the mid- and shadow tones. Less toning produces warmer toned prints; more toning produces colder toned prints. In judging the degree of toning, observe the degree of color change, rather than the actual color.

Replenish toner with approximately 6 ml. each of Stock Solutions A and B for every 8"x10" print toned. If the toning time becomes progressively shorter, reduce the amounts of replenishment; conversely, prints with large black borders may require a slightly higher replenishment rate.

In order to achieve greater session-to-session uniformity, and greater consistency of toning within a printing session, one may substitute exhausted toner (saved from the previous printing session) for half of the water used to dilute Stock Solutions A and B for use, ie.:

Old toner	450 ml.
Tap Water (21°C/70°F)	450 ml.
Stock Solution A	50 ml.
Stock Solution B	50 ml.

B. Borax/Gold Toner

Tap Water (21°C/70°F)	970 ml.
Borax (Sodium Tetraborate)	4 grams

After the Borax is dissolved, add:

Stock Solution B	30 ml.
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In about 5 minutes the toning solution will lose its pale yellow color, at which time it is ready to use.

Tone and replenish as per above. Used borax/gold toner does not keep and should NOT be used to make up new toner batches.

III. Fix 10 minutes in plain hypo (21°C/70°F).

Sodium Thiosulfate (hypo) 150 grams
Tap water (30°C/85°F) to make 1000 ml.

Do not rinse the print between toning and fixing.

The use of two successive fixing baths (5 minutes in each) is strongly recommended. Discard the first fixing bath when fifteen 8x10" prints (or equivalent) per liter have been fixed. Rotate the second bath to the first position and make a fresh second bath. Do not repeat this cycle more than five times before starting with both baths fresh. Prints will undergo significant color changes during the first minutes of fixing. Do not judge image tone or depth until the print is completely dry.

Should the use of a hardening fixer be preferred, add 70 ml. Kodak Liquid Hardener to the above formula, or use Kodak Fixer, which contains hardener, mixed according to instructions on the packet.

The use of any fixer formulæ other than plain sodium thiosulfate (with or without hardener), or a packaged sodium thiosulfate hardening fixer such as Kodak Fixer, is not recommended. Rapid fix products contain ammonium thiosulfate, which will bleach the image excessively. While rapid fix products will fix P.O.P. prints perfectly adequately, they are likely to produce less than optimal colors in the finished print.

IV. Wash in running water (21°C/70°F) for at least 60 minutes for double weight paper (the use of a hypo clearing agent will significantly reduce wash time and conserve water).

V. Dry the print, emulsion up, on clean blotters or screens. Flatten dry prints in a heated mounting press (80°-295°C/180°-200°F).

PROOFS: Stable proof prints may be produced by merely fixing and washing the exposed P.O.P. paper. There is no control of color, and the final hue will be an orange-brown color. For un-toned proofs, print even darker than for normally processed prints. Pre-rinse the print and place it directly into the hypo without toning. A slight improvement in color will be seen if a higher concentration of hypo is used (300 grams/1000ml.), and if it is "aged" with a few scrap prints before use.

NOTE: Do not leave negatives in contact with unprocessed P.O.P. longer than necessary, as the excess silver nitrate in the paper can transfer to the negative, causing indelible stains. It is a good precaution to place a very thin (0.025mm/0.001" or thinner) sheet of clear polyester (i.e. Mylar®) between the negative and the printing paper during exposure. Use of a very thin polyester protective sheet will result in negligible softening of the image, especially in conjunction with a narrow or collimated light source.

ORIGINAL CAMERA NEGATIVES FOR PRINTING ON P.O.P.: Ordinary photographic negatives with today's printing characteristics may not have sufficient density range to produce vigorous prints on Printing-out Paper. Negatives made with most pictorial films likely will require added development time to produce the requisite density range. However, the resulting higher mid-tone contrast may be objectionable. The approximate density range required to produce vigorous shadows and clean highlights is 1.80. The following films are especially recommended, as they each exhibit an exceptionally long tonal scale, with uniform contrast throughout the entire density range.

Panchromatic:

Efke PL25

Ilford FP4+

Ilford Delta 100

Kodak T-Max 100 (developed in T-Max developer only)

Orthochromatic:

Ilford Ortho +

For an orthochromatic (blue-green) response using a panchromatic film place a Kodak Wratten #44A (or equivalent) filter over the lens and use the appropriate exposure factor.

CENTENNIAL™ gelatine-chloride printing-out paper is available in the following sizes:

DESCRIPTION\ /SIZE	8"X10"	11"X14"	20"X24"
CENTENNIAL™ DW	√	√	√

Other sizes, including rolls of up to 40" width, may be special ordered. Please contact your CENTENNIAL™ dealer for ordering details.

For further information, including sources of chemicals, printing frames and other related products, please contact:

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