

## DEVELOPERS FOR LOW TEMPERATURE PROCESSING

The principal problem when processing at low temperatures is the loss of activity of the developer, since with most developers the time of development increases two-fold for a drop of 10° to 20°F. It is advisable, therefore, to start with a developer which at normal temperatures is very active. Of the available developers, Kodak Developers D-8, a caustic hydroquinone developer, and a more alkaline variation of the Kodak Developer D-82 with added caustic soda, are especially suitable. Preliminary tests indicated the desirability of an even more active developer, and a caustic solution of two powerful agents, amidol and catechol, was devised.

### (KODAK D-82 + CAUSTIC)

#### High Energy Developer

##### For Low Temperature Processing

Water (125 °F or 52 °C) .....	16 ounces	500.0 ml
Elon .....	200 grains	14.0 grams
Hydroquinone .....	200 grains	14.0 grams
Sodium Sulfite .....	1 ¼ ounces	52.5 grams
Sodium Hydroxide .....	250 grains	17.6 grams
Potassium Bromide .....	125 grains	8.8 grams
Kodak Anti-Fog #1 .....	3 grains	0.2 grams
Add cold water to make .....	32 ounces	1.0 liter

For use down to +30°F: Use above formula undiluted.

For use down to +5°F: Take 3 parts stock solution, 1 part ethylene glycol.

The ethylene glycol should be added prior to storage at low temperatures.

### (KODAK SD-22)

#### Amidol-Catechol Developer

##### For Low Temperature Processing

###### SOLUTION A

Water (125 °F or 52 °C) .....	16 ounces	500.0 ml
Sodium Bisulfite .....	3 oz. 145 grains	100.0 grams
Amidol (2.4 Diaminophenol Hydrochloride) .....	1 oz. 145 grains	40.0 grams
Catechol (Pyrocatechin) .....	1 oz. 145 grains	40.0 grams
Kodak Anti-Fog #1 .....	30 grains	0.2 grams
Add cold water to make .....	32 ounces	1.0 liter

###### SOLUTION B

Cold water .....	16 ounces	500.0 ml
Sodium Hydroxide .....	4 ounces	120.0 grams
Potassium Bromide .....	290 grains	20.0 grams
Potassium Iodide .....	60 grains	4.0 grams
Add cold water to make .....	32 ounces	1.0 liter

For use down to +30°F: Solution A, 1 part; Solution B, 1 part; Water, 2 parts.

For use down to +5°F: Solution A, 1 part; Solution B, 1 part; Water, 1 part; Ethylene Glycol, 1 part.

For use down to -40°F: Solution A, 1 part; Solution B, 1 part; Ethylene Glycol, 2 parts.

The glycol may be divided and added to each of these solutions previous to storage at low temperatures. Combine Solutions A and B only immediately before use, since the mixed developer oxidizes rapidly. Solution A may also deteriorate on keeping, and should be kept well-stoppered and as cool as possible.

The Kodak Developer D-8 is to be preferred over the Kodak Developer D-8 + Caustic

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