

Processing recommendations

Reflection Holograms

It is generally considered that for display purposes an ideal colour for single colour reflection holograms is a yellow/gold. This means that for holograms exposed with a HeNe at 632 nm the reconstruction wavelength should be around 580nm.

Processing holographic film with the following chemistry gives a playback frequency shift that matches this characteristic, 50nm shift in playback frequency from 633nm to 583nm and with a reconstruction bandwidth of 25nm FWHM.



Wavelength shift as measured with Tungsten illumination @45 degrees.

Processing with TJ1 and FE III EDTA bleach

Stage	Chemical bath	Recommended conditions
Development	TJ1	45 sec @ 72F (
Stop Bath	Ilford IN-1	30 sec
Bleach	Ferric Sodium EDTA	4 - 6 minutes (bleach till clear plus 1/2 total time)
Wash	Running H ₂ O	2 minutes
Iodide bath	optional	2 minutes
Final rinse	Photo-Flo ILFOTOL distilled H ₂ O	2 drops to de-ionised or
Drying	room temperature or warm forced air	not above 40C

TJ 1 developer
Mixing instructions

Part A

500ml H₂O
6 gm Metol
H₂O to 1 liter
40g Ascorbic acid dissolve first then add to solution

Part B

500ml H₂O
100g Sodium Carbonate Anhydrous
30g Sodium Hydroxide
H₂O to 1 liter

Mix and store as separate vol.s

Use:

Mix equal amounts of A & B just prior to development, Use the floating dish method to minimize the amount of oxygen absorbed by the developer over it's use period.

Typical development times should be 30- 45 sec.

Combined the two parts are light tan in color, developer darkens with time and oxygen absorption. When dark brown or black disgard.

Part B is very caustic, Latex gloves, Eye Safety glasses and rubber apron are required.

Mixing Instructions

Ferric Sodium EDTA Bleach

(Jeff Blyth Formulation)

working solution:

500ml H₂O
40 gm Ethylenediaminetetraacetic acid Iron (Ferric EDTA)
60 gm Potassium Bromide
70 ml acetic acid
Top up to 1 liter H₂O

Pyrogallol Developer

Pyrogallol based developers have also been used. Currently these have shown a lesser amount of collapse than the TJ1 FEIII EDTA bleach combination

Transmission Holograms

Currently transmission hologram processing has been utilizing the TJ1 developer and FE III EDTA bleach combination. Results are very low scatter, and very high diffraction efficiencies with exposure to develop densities of greater than 2.7 as measured on a transmission densitometer.