

## FUJIFLEX CRYSTAL ARCHIVE PRINTING MATERIAL

### 1. FEATURES AND USES

FUJIFLEX CRYSTAL ARCHIVE PRINTING MATERIAL is a PET-based optimized material for the professional color printing of salon and commercial photographs in which excellent smoothness and flatness are of paramount importance.

This printing material provides high quality color contact prints and color enlargements from FUJICOLOR NPS 160 PROFESSIONAL [NPS], FUJICOLOR NPL 160 PROFESSIONAL [NPL], FUJICOLOR INTERNEGATIVE FILM [IT-N] and similar color negative films. It is also suitable for rapid processing.

Features	Results
<ul style="list-style-type: none"> <li>• <b>Vivid Color Reproduction</b></li> </ul>	<ul style="list-style-type: none"> <li>• Detailed reds in abundance, natural greens and especially vivid yellows</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Continuously Smooth and Rich Gradation</b></li> </ul>	<ul style="list-style-type: none"> <li>• Natural well-balanced tonal reproduction, clear highlights and great shadow detail</li> </ul>
<ul style="list-style-type: none"> <li>• <b>High Image Quality</b></li> </ul>	<ul style="list-style-type: none"> <li>• Strong resistance against color image fading, as with all FUJICOLOR papers</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Excellent Reciprocity Characteristics</b></li> </ul>	<ul style="list-style-type: none"> <li>• Consistently high image quality regardless of size, from contact prints to very big enlargements</li> <li>• Minimal size-related filter index and exposure time adjustments for greater production efficiency</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Very Stable Latent Images</b></li> </ul>	<ul style="list-style-type: none"> <li>• Consistently high-quality results due to extremely stable latent images</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Extremely Durable Physical Properties</b></li> </ul>	<ul style="list-style-type: none"> <li>• Strong resistance to printing-related abrasions and pressure-induced marks, allowing greater handling ease</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Remarkable Surface Smoothness and Flatness</b></li> </ul>	<ul style="list-style-type: none"> <li>• Produces prints with superb gloss and great clarity</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Polyester Base</b></li> </ul>	<ul style="list-style-type: none"> <li>• Sheet thickness of approximately 175 <math>\mu</math></li> </ul>
<ul style="list-style-type: none"> <li>• <b>Laser Scanning Suitability</b></li> </ul>	<ul style="list-style-type: none"> <li>• High quality image</li> </ul>

### 2. SAFELIGHT

Handle in total darkness. If safelight use is unavoidable, refer to the following precautions.

- Expose material no longer than 1 minute to a Fuji Safelight filter No. 103A (or Kodak Safelight Filter No. 13) in a 10-watt tungsten lamp fixture located at least 1 meter from the work area.
- Safelight filters fade with extended use and need regular checking. Replace when paper fogging is detected.
- Since exposed material is subject to safelight-induced sensitivity increases in the exposed areas, be sure that handling precautions are observed.

### 3. RAW MATERIAL STORAGE

Raw material sustains little, if any, time-induced degradation if kept away from high temperature and humidity conditions and stored below 10°C (50°F) and 65% RH.

### 4. PRE-EXPOSURE HANDLING

Raw material which has been stored at 10°C (50°F) or below should be kept in its moisture-proof wrap and allowed to equalize to room temperature prior to being opened. If the material is removed from its packaging immediately after being removed from refrigerated storage, condensation will form on the surfaces, resulting in print color changes and easily damaged surfaces. The shortest periods required to return freezer or refrigerator-stored material to room temperature (minimum temperature equalization periods) are as follows.

#### 20°C (68°F) Temperature Equalization Periods

Paper Size	Storage Temperature		
	-20°C (-4°F)	0°C (32°F)	10°C (50°F)
127 cm x 61 m (50 in. x 200 ft.)	6	5	3 1/2
50.8 cm x 61 cm (20 in. x 24 in.)	5	4	2 1/2

- NOTES**
- Do not heat color paper in order to equalize temperatures.
  - Prepare color paper for use the day before.

## 5. POST-EXPOSURE, PRE-PROCESSING HANDLING

This material has enhanced post-exposure latent image stability. However, if the latent image remains unprocessed for extended periods of time under normal room conditions or is subjected to high temperature or humidity, changes can occur in the image and color balance.

- The time between exposure and development should be fixed for purposes of uniform quality. Rather than holding exposed material for processing the next day, initiate processing as soon as possible.

## 6. PROCESSING

Optimum performance is derived with any equipment using processes RA-4 and RA-4RT.

### Processes RA-4 and RA-4RT

Standard processing conditions and replenishment rates for processes RA-4 and RA-4RT are given in the following table.

### RA-4 and RA-4RT

Processing Steps	Processing Conditions		RA-4 Basic Replenishment Rates ml/m <sup>2</sup> (ml/ft <sup>2</sup> )	RA-4RT Basic Replenishment Rates ml/m <sup>2</sup> (ml/ft <sup>2</sup> )
	Time (seconds)	Temperature °C(°F)		
Color Developer	45	35.0 ± 0.3 (95.0 ± 0.5)	161 (15.0)	215 (20.0)**
Bleach-Fix	45	30 to 36 (86 to 90)	215 (20.0)	215 (20.0)
Wash*	90	30 to 40 (86 to 104)	–	–
Dry	–	60 to 90 (140 to 194)	–	–

\* For continuous processors only, in place of a water wash, a three tank Super Rinse solution can be used in a 3 → 2, 2 → 1 counter-cascade mode.

\*\* For RA-4RT processing in roller transport processors, if the solution replacement frequency is relatively low, it may be necessary to increase replenishment amounts as needed.

## 7. VIEWING CONDITIONS

When inspecting finished color prints, it is essential that an illumination source be used that has superior spectral characteristics, adequately high color temperature and sufficient brightness. This is because results can appear different, depending on light quality. For precise results, prints should be examined under ISO- designated conditions. As a general guide, the following conditions are recommended.

Color Temperature : 5000 ± 300°K  
Average Illumination : 600 to 1000 Lux  
General Color Rendering Index : Ra 90 or more\*

- \* To attain these values, special fluorescent lamps (e.g. EDL type) for color evaluation purposes should be used.

When inspecting finished prints, be careful to shut out all external light and colored reflected light.

## 8. PRINT HANDLING AND STORAGE

Prints are subject to various influences (heat, humidity, light, air pollution, etc.) relative to the conditions under which they are stored. The general conditions under which prints are stored and related results are outlined below.

### • Ideal Storage Conditions

Generally, storage should limit ambient temperatures to 25°C (77°F) or less and relative humidity to between 30 and 60% under darkened conditions. For long-term storage, temperatures should be limited to 10°C (50°F) or less and relative humidity to between 30 and 50%.

### • Suitable Storage Methods

Generally speaking, good quality photograph albums should be used. Album storage should not to be in enclosed spaces (closed drawers), but rather in locations where air flows (open bookcases).

### • Print Display Conditions

Displayed prints are most easily affected by surrounding conditions (light, temperature, humidity, and air pollution).

### (1) General Household and Public Display Conditions

Under these general conditions (brightness: 500 to 1000 lux, intermittent illumination; display duration: several hours to many years), there are few image degradation problems, but when prints are located near winter-season heating equipment changes are accelerated.

### (2) Extremely Severe Display Conditions

(Example: Show Windows and Outdoor Displays)

Under these conditions, prints are subject to degradation. In order to deal with the inevitable extended duration color fading, original negatives or slides for new print production should be stored under the following conditions.

**Recommended Storage Conditions**

- Temperature: below 25°C (77°F), Humidity: 30 to 60 % RH with good ventilation
- Extended Storage Conditions  
Temperature: below 10°C (50°F), Humidity: 30 to 50 % RH

**NOTE** As with all color dyes, those used in color papers will discolor or fade with time.

**9. RETOUCHING**

It is recommended that certain retouching should be carried out on the negative prior to printing. This is especially true with regard to negative pin holes (microscopic transparent defects), which should be removed by retouching the negative. After printing, if necessary, additional spotting can be done. White spots on prints are normally corrected through spotting which is best done by using lead retouching pencils (black and colored) and various opaque dyes. Since color prints are composed of three dye-containing emulsion layers, black and white print retouching procedures, to reduce densities through the use of an etching knife, cannot be used.

**10. SURFACES AVAILABLE**

Super Glossy.

**11. SIZES AVAILABLE**

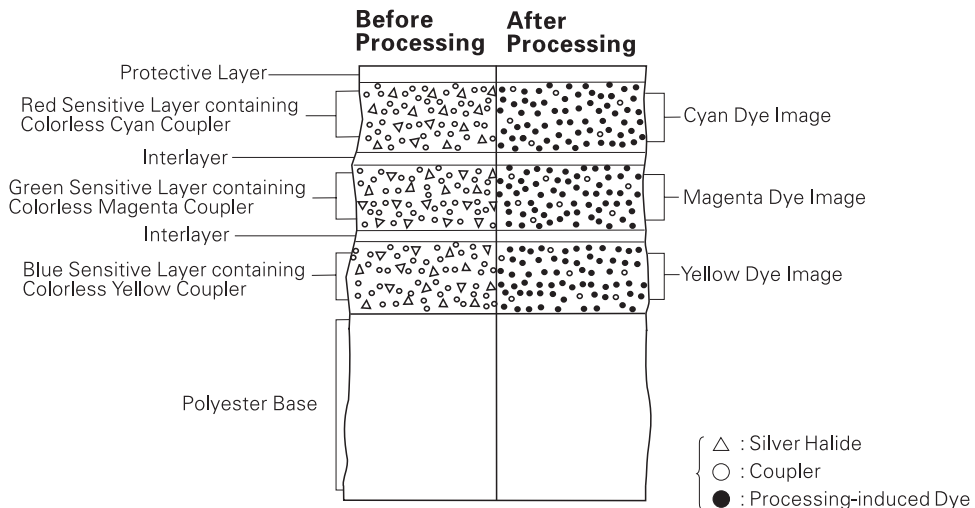
• **Rolls**

Widths \ Lengths	61 m (200 ft.)
8.6 cm (3 1/3 in.)	●
20.3 cm (8 in.)	●
27.9 cm (11 in.)	●
30.5 cm (12 in.)	●
40.6 cm (16 in.)	●
50.8 cm (20 in.)	●
76.2 cm (30 in.)	●
81.3 cm (32 in.)	●
101.6 cm (40 in.)	●
127.0 cm (50 in.)	●

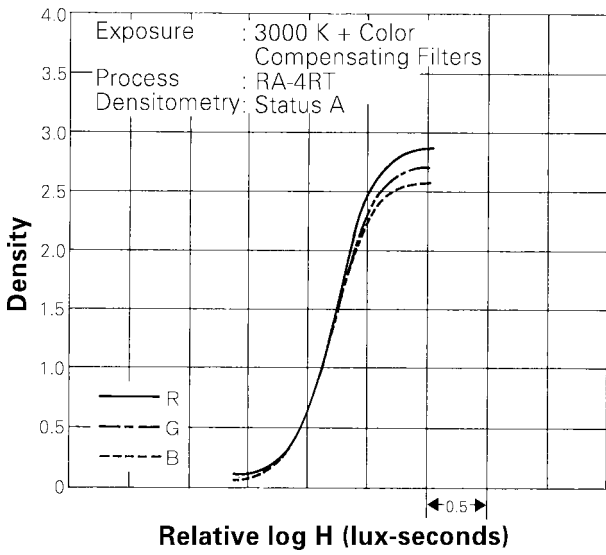
• **Sheets**

Sizes	Sheets/Box		
	20	50	100
21.0 × 29.7 cm (8¼ × 11.7 in.)			●
20.3 × 25.4 cm (8 × 10 in.)			●
25.4 × 30.5 cm (10 × 12 in.)			●
27.9 × 35.6 cm (11 × 14 in.)			●
30.5 × 40.6 cm (12 × 16 in.)			●
40.6 × 50.8 cm (16 × 20 in.)		●	
50.8 × 61.0 cm (20 × 24 in.)		●	
76.2 × 101.6 cm (30 × 40 in.)	●		

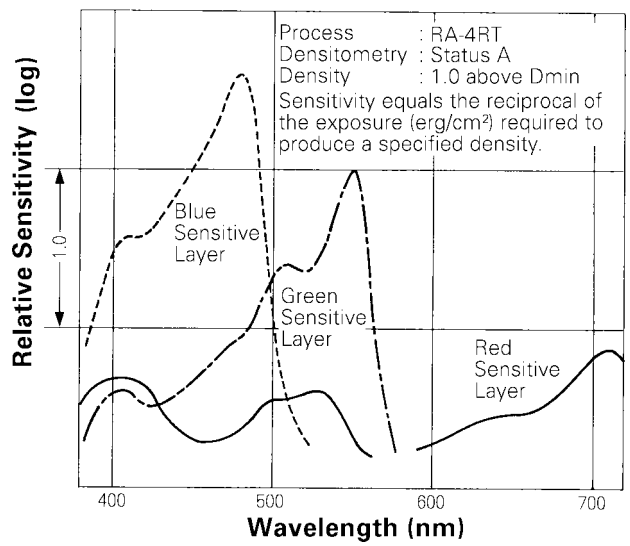
**12. MATERIAL STRUCTURE**



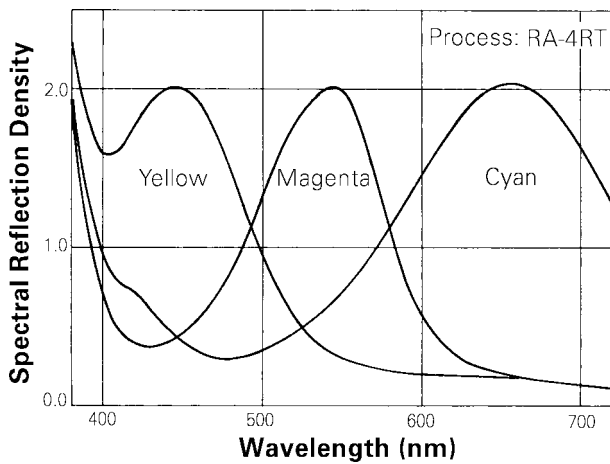
**13. CHARACTERISTIC CURVES**



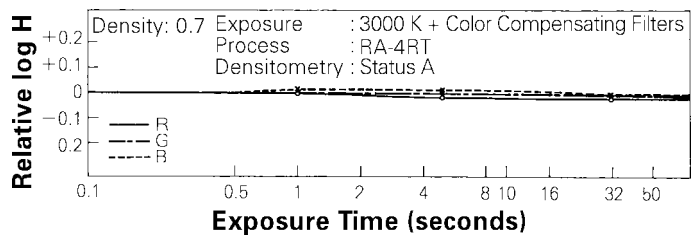
**14. SPECTRAL SENSITIVITY CURVES**



**15. SPECTRAL DYE DENSITY CURVES**

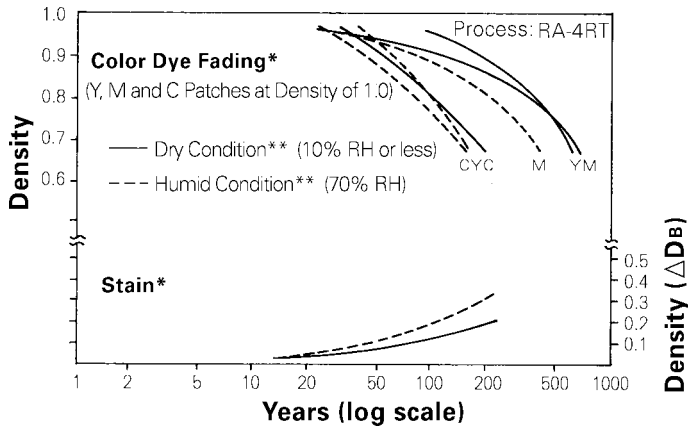


**16. RECIPROCITY CHARACTERISTICS**

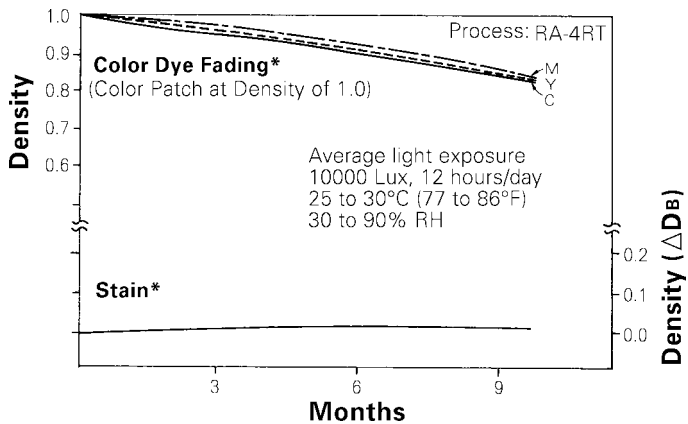


**17. IMAGE STORAGE CHARACTERISTICS**

• **Estimated Dark Storage Stability at 25°C (77°F)**



• **Estimated Dye Stability for 10000 Lux Intermittent Illumination\*\*\***



\* Time-lapse-induced white background staining (yellowing) is as important as dye image fading in affecting image quality. Therefore, dye image fading and yellowing data are also included.

\*\* In regard to color image dark storage stability, since humidity is as important as temperature, the two commonly encountered humidity standards (less than 10 % and 70 % RH) are used. As a result, the appraisal limits are greatly enlarged, allowing for even more highly accurate evaluations.

\*\*\* Outside noontime direct sunlight intensity is about 100,000 Lux. Atmospheric changes will reduce this to about 50,000 Lux. When twilight, impingement mode, incidence angle and attenuation factors are included; intensity is brought to about 10,000 Lux. Permanence factors for natural illumination are thus based on 10,000 Lux intensity levels for periods of 12 hours per day.

**NOTICE** The data herein published were derived from materials taken from general production runs. However, as Fujifilm is constantly upgrading the quality of its products, changes in specifications may occur without notice.