

## FUJICHROME PROVIA 400 Professional [RHP]

### 1. FEATURES AND USES

FUJICHROME PROVIA 400 Professional [RHP] is a top performance high speed daylight-type color reversal film with an ISO speed rating of 400. It is ideal for freezing fast action as in capturing sports or car racing events, in reproducing the delicate hues of poorly illuminated scenes such as stage shows, indoor or evening situations, or where the lens must be stopped down for greater depth of field.

PROVIA 400 has excellent properties for making color transparency originals for photomechanical reproduction and photographic duplication as well as projection originals. It also produces high quality direct printing on FUJICHROME PROFESSIONAL PAPER.

Features	Results
<ul style="list-style-type: none"> <li>• <b>Lifelike Color Reproduction and Rich Gradation</b></li> </ul>	<ul style="list-style-type: none"> <li>• Vivid, lifelike colors for an ISO 400 high speed reversal film</li> <li>• Smooth gradation for excellent detail</li> <li>• Remarkable neutrality from highlights to shadows</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Excellent Reciprocity Characteristics</b></li> </ul>	<ul style="list-style-type: none"> <li>• Minimal loss in sensitivity or gradation balance (reciprocity failure) at all shutter speeds, from short exposures using high-speed, electronic flashes, to long exposures under available light or nighttime conditions</li> </ul>
<ul style="list-style-type: none"> <li>• <b>High Suitability for Push-Processing and Artificial Light Exposure</b></li> </ul>	<ul style="list-style-type: none"> <li>• Excellent push-processing results up to EI 1600*.</li> <li>• Minimal color shift in exposures taken at nighttime indoor sports arenas under metal halide and other artificial illumination</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Process CR-56 or E-6 Suitability</b></li> </ul>	<ul style="list-style-type: none"> <li>• Can be processed anywhere in the world as with other FUJICHROME films</li> </ul>

\* EI is the acronym for Exposure Index and exposure meter ISO designation dials should be adjusted to this value.

### 2. SPEED

Light Source	Speed	Filter
Daylight	ISO 400/27°	None
Tungsten Lamps (3200K)	ISO 125/22°*	LBB-12**(or No. 80A***)

\* Indicates the effective speed resulting from designated filter use.

\*\* Fuji Light Balancing Filter

\*\*\* Kodak Filter

- Included in each of the sheet film boxes are speed and color compensating filter values. Use these values in exposure determination.

### 3. FILM SIZES, EMULSION NUMBER, BASE MATERIAL AND THICKNESS

Sizes		Emulsion Number
Rolls	<ul style="list-style-type: none"> <li>• 135 ..... 36-exp.</li> <li>• 120</li> <li>• 35 mm x 30.5 m (100 ft)</li> </ul>	#211~

Base Material ..... Cellulose Triacetate

Base Thickness ..... 135; 127 μm  
120; 105 μm

### 4. EXPOSURE GUIDE AND EXPOSURE UNDER VARIOUS LIGHT CONDITIONS

Use a meter for exposure determination. If not available refer to the following table.

Daylight Exposure Guide Table:

Light Conditions	Seashore or Snow Scenes under Bright Sun	Bright Sunlight	Hazy Sunlight	Cloudy Bright	Cloudy Day or Open Shade
Lens Aperture	f/16	f/11	f/11	f/11	f/8
Exposure Time (sec.)	1/1000	1/1000	1/500	1/250	1/250

#### NOTES

- The foregoing settings are for 2 hours after sunrise and 2 hours before sunset.
- Provide lens opening 1/2 stop smaller during the summer and 1/2 stop larger during the winter.
- Excessively bright (or dark) or backlighted subjects may require plus or minus 1 stop lens opening adjustments.

**Low Light Exposure Guide Table:**

Light Conditions	Bright Daylight Indoor Scenes (in Fine Weather Conditions)	Indoor Scenes (under Fluorescent Light)	Stage or Show Scenes	Evening or Night Game Scenes	Night Scenes
Lens Aperture	f/2.8 to 4	f/2.8 to 4	f/2.8 to 4	f/2.8 to 4	f/2.8 to 4
Exposure Time (sec.)	1/60	1/30	1/30	1/60	1/30

**NOTES** Since light intensities for indoor or night scenes vary widely from location to location, the data above should be used only as a guide.

**Daylight**

Under daylight conditions color balancing filters are not necessary, but the following exposure conditions may require the indicated filters.

Subject Conditions	Filter	Exposure Correction
Fair weather open shade and shaded landscapes.	UV Filter (Fuji SC-40 or 41 or No. 2B*)	None
Bright distant scenes, snow landscapes, seaside scenes, aerial scenes and open landscapes.		
Close-ups of plants and subjects having bright colors.		

Excessively high or low subject color temperatures may require the following filter additions and exposure corrections.

Subject Conditions	Filter	Exposure Correction
High Color Temperature: Cloudy weather landscapes or portraits and clear weather open shade.	LBA-2** (No. 81A)*	+1/3 stop***
Low Color Temperature: Morning and evening twilight scenes and portraits.	LBB-2** or LBB-4** (No. 82A or No. 82C)*	+1/3 to +2/3 stop***

\* Kodak Filters  
 \*\* Fuji Light Balancing Filters  
 \*\*\* "+" = Lens opening

**Electronic Flash**

- Since electronic flash characteristics are similar to daylight, no filters are required. Effective light output and color balance will differ with equipment type, age and other factors, requiring thereby initial exposure tests.
- Adjust lens openings for electronic flash according to following formula.

$$\frac{\text{Lens Aperture (f-number)}}{\text{Electronic Flash-to-Subject Distance (meters or feet)}} = \frac{\text{ISO 400 Electronic Flash Guide Number}}{\text{Electronic Flash-to-Subject Distance (meters or feet)}}$$

- Set the film speed at ISO 400. Since the amount of light reflected onto the subject from surrounding surfaces will differ with the conditions, refer to flash unit instructions.

**Photo-Reflector Lamps (Daylight Photoflood Lamps)**

- Daylight photoflood lamps tend to result in under-exposure, so it is sometimes essential to increase exposure light output beyond that indicated by an exposure meter.
- Color balance and light output will differ with lamp configuration, use duration and applied voltage. It is essential that exposure conditions be determined in relation to the particular lighting equipment employed.

**Fluorescent Lamps**

- Color balance corrections should be made using the filter combinations suggested below because effective light intensity and color balance varies with lamp make and age.
- For exacting work, test exposures are recommended.

(Exposure Time: 1/15 second)

Fluorescent Lamp Type	White (W)	Daylight (D)	Cool White (CW)	Warm White (W.W)
Color Compensating Filters*	40M + 10B	40R + 5M	30M + 10R	LBB-8 + 20M (No. 80C + 20M)
Exposure Corrections**	+1 1/3 stops	+1 1/3 stops	+1 1/3 stops	+2 stops

\* Fuji Color Compensating Filters (or Kodak CC Filters) recommended.  
 \*\* Exposure correction values include filter exposure factors. These values are added to unfiltered exposure meter readings. "+" = Lens opening.

- NOTES**
- Use 1/30th or slower shutter speeds.
  - For shutter speeds longer than 4 seconds, exposure adjustments will be necessary to compensate for reciprocity.

### **Tungsten Lamps**

- A Fuji Light Balancing Filter LBB-12 (or Kodak Filter No. 80A) is recommended with photoflood lamps. A  $1\frac{2}{3}$  stop larger lens opening is also recommended.
- With household tungsten Lamps, a Fuji Light Balancing Filter LBB-2 (or Kodak Filter No. 82A) will compensate for inherent color temperatures lower than photoflood lamps. A 2 stop larger lens opening is recommended.

### **Mixed Light Sources**

Under mixed light conditions, derive the basic filter configuration for the main light source.

## **5. LONG EXPOSURE COMPENSATION**

No exposure or color balance compensation is required for exposures within a 1/10000 to 4 second shutter speed range. However for exposures of 16 seconds or longer, reciprocity-related color balance and exposure compensations are required.

<b>Exposure Time (sec.)</b>	1/10000 to 4	16	64
<b>Color Compensating Filters</b>	None	5M + 2.5R	5M + 5R
<b>Exposure Corrections*</b>		+1 stop	+1 stop

\* Exposure correction values include filter exposure factors. These values are added to unfiltered exposure meter readings. "+" = Lens opening.

## **6. EXPOSURE PRECAUTIONS**

For artificial light sources such as electronic flash, photoflood lamps, fluorescent lamps, tungsten lamps, mercury lamps and the like, effective light output and color temperatures will vary with the type, the applied voltage and the age of the equipment. Also, light intensity or color temperature differences may be caused by variations in auxiliary lighting equipment such as reflectors and diffusers.

## **7. FILM HANDLING**

- Expose film before the expiration date indicated on the film package and process promptly after exposure.

- When loading and unloading roll film avoid direct sunlight. If there is no shade, turning one's back toward the sun will shade the film.
- Camera-loaded film should be exposed and processed promptly.
- Under certain conditions the X-ray equipment used to inspect carry-on baggage at airport terminals will adversely affect photographic film (cause fogging). The adverse effects of this are increased with the strength of the X-rays, the speed of the film, and the cumulative number of inspection exposures. Therefore it is recommended that at each inspection the film be removed from the baggage and that airport security personnel be asked to inspect the film manually.
- Film fogging may occur in hospitals, factories, laboratories and other locations using X-rays and other radiation sources.

## **8. FILM STORAGE**

### **Unprocessed Film Storage**

- Storing exposed or unexposed, unprocessing film under high temperature and humidity conditions will cause adverse speed, color balance and physical property changes. Store film under the following conditions.
  - \* Refrigerated Storage: Below 15°C (59°F)
  - \* Extended Term Storage: Below 0°C (32°F)
- New building materials, newly manufactured furniture, paints and bonding agents may produce noxious vapors. Do not store film, loaded camera or film holders near these substances.
- When refrigerated film is removed for use, allow it to reach room temperatures before opening (at least one hour). Opening while temperatures are still low may cause trouble due to moisture condensation.

### **Processed Film Storage**

Light, high temperatures and humidities cause color changes in processed films. Therefore, place such films in mounts or sleeves and store in dark, dry, cool and well ventilated locations under the following conditions.

- \* General Storage Conditions: Below 25°C (77°F) at 30 to 60% RH
- \* Extended Storage Conditions: Below 10°C (50°F) at 30 to 50% RH

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

**9. PROCESSING**

This film is intended for processing in Fujifilm Process CR-56, or Kodak Process E-6.

**Push-Processing**

For best results, it is recommended that this film be used at a speed of ISO 400. When higher speeds are desired, the film may be exposed under conditions equivalent to ISO 800 or ISO 1600 if push-processing is used. However, since exposure latitude, contrast, color balance and maximum density differ between standard processing and push-processing, it is suggested that test exposures be made.

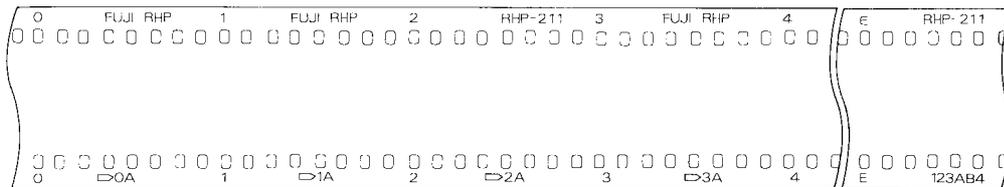
**10. VIEWING LIGHT SOURCES**

A color viewer with an ISO adjusted light source should be used for checking original and duplicate films because the characteristics and brightness levels of the viewer substantially affect discernment accuracy.

\* The ISO standard (ISO/DP3664-2) specifies an illuminated viewer surface with a color temperature derived from a CIE illuminant D50 (D: Daylight) with a reciprocal color temperature of 5000K, an average brightness of  $1400\text{cd/m}^2 \pm 300\text{cd/m}^2$ , a brightness uniformity of more than 75%, a light diffusion level of more than 90% and an average color rendition assessment value of more than Ra90. Transparency viewers should meet these standards.

**11. PROCESSED FILM EDGE MARKING**

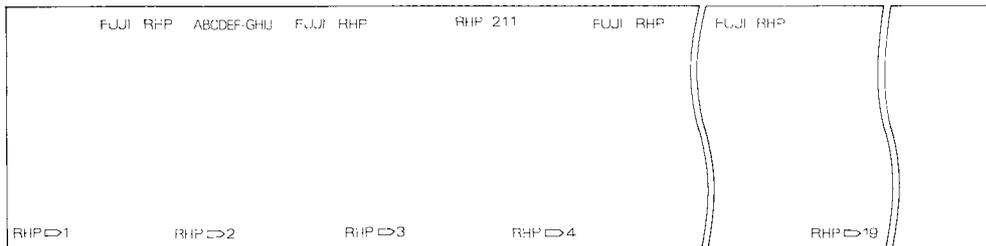
- 135 Size



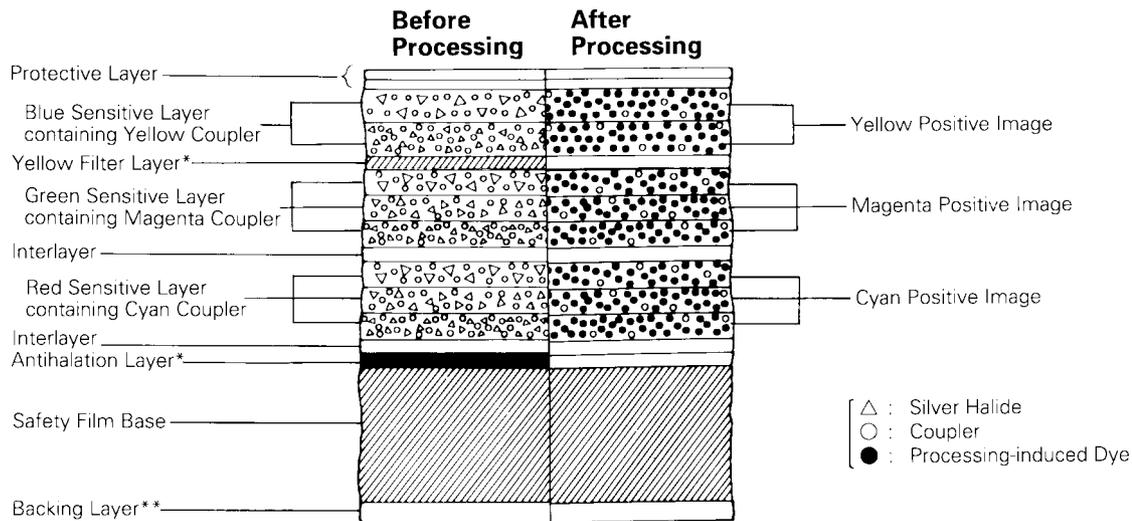
These designations are repeated along the film edge.

- 120 Size

These designations are repeated along the film edge.



**12. FILM STRUCTURE**



\* These layers become colorless and transparent after processing.  
 \*\* The backing layer is not provided with 135 size film.

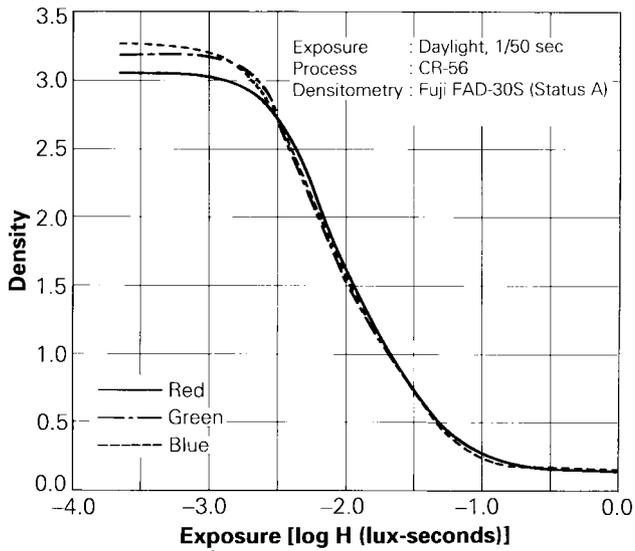
**13. DIFFUSE RMS GRANULARITY VALUE** ..... 15

Micro-Densitometer Measurement Aperture: 48 μm in diameter.  
 Sample Density: 1.0 above minimum density.

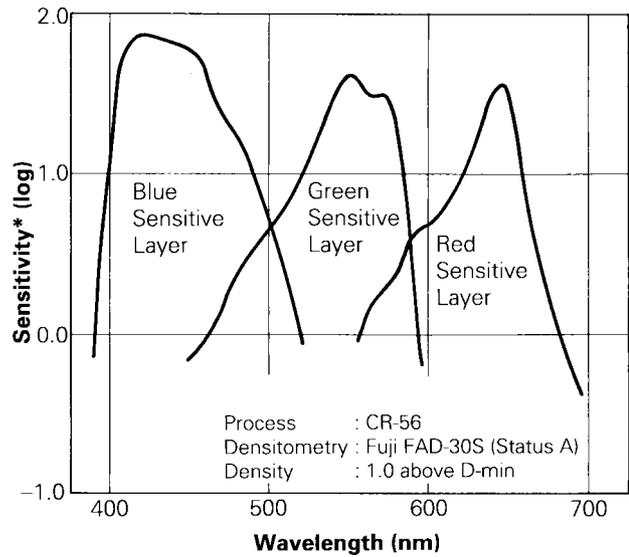
**14. RESOLVING POWER**

Chart Contrast 1.6 : 1 ..... **40** lines/mm  
 Chart Contrast 1000 : 1 ..... **125** lines/mm

**15. CHARACTERISTIC CURVES**

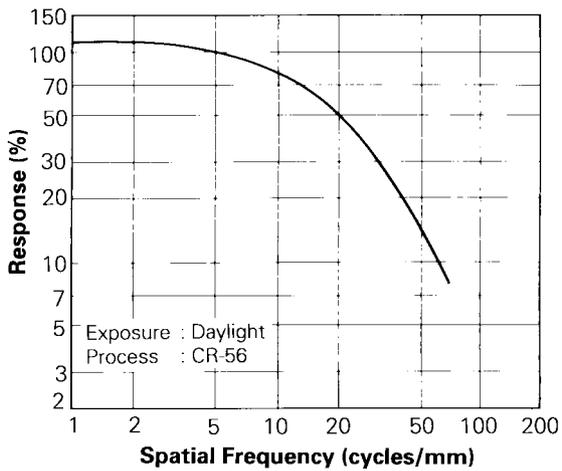


**16. SPECTRAL SENSITIVITY CURVES**

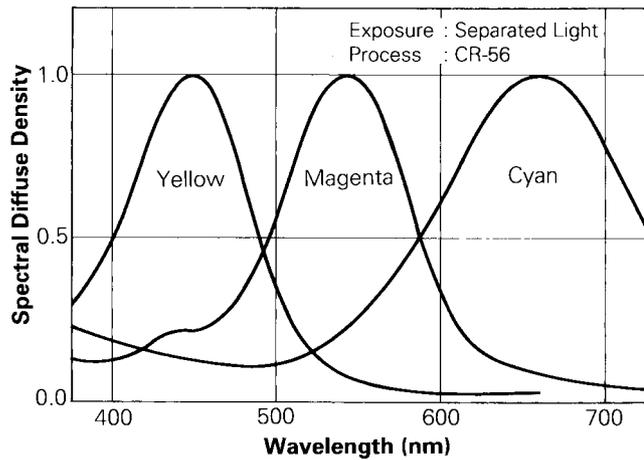


\* Sensitivity equals the reciprocal of the exposure (ergs/cm<sup>2</sup>) required to produce a specified density.

**17. MTF CURVE**



**18. SPECTRAL DYE DENSITY CURVES**



**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.