FUJIFILM

AF3-066E

DATA SHEET

COLOR REVERSAL FILMS

FUJICHROME PROVIA 400F Professional [RHPⅢ]

1. FEATURES AND USES

FUJICHROME PROVIA 400F Professional [RHP Ⅲ] is a new-generation, high-image quality, daylight ISO 400 color reversal film which boasts extremely fine grain – the best among films of its class – while providing the brilliant and faithful color reproduction and well-controlled gradation balance of ISO 100-class films. These qualities make this film an excellent choice for exacting professional use such as news, sports, model, fashion, landscape and product photography.

Features

• **Ultra-fine Grain / High Resolution**	• Refined images ideal for large-size enlargements and other high-magnification applications, thanks to the finest grain among ISO 400 color reversal films
• **Faithful and Brilliant Color Reproduction**	• ISO-100 film-level performance giving more faithful color reproduction and higher color saturation than any previous high-speed film
• **Rich Tone Reproduction**	• Smooth and continuous gradation linearity from the highlights to the shadows assuring delicate texture and rich tone reproduction
• **Superior Reciprocity Characteristics**	• Minimal long-exposure-related loss in film speed and changes in color as a result of improved silver halide emulsion
• **Excellent Push-/ Pull-processing Performance**	• Push-/Pull-processing from – 1/2 stop (EI 280) up to + 3 stops (EI 3200) with minimal changes in color and gradation, and even up to + 3 1/2 stops (EI 4800), depending on the subject
• **E-6/ CR-56*/C6R* Processing**	• As with other FUJICHROME film, worldwide processing available using E-6/CR-56/C6R

* CR-56 (Fujifilm) and C6R (Fuji/Hunt) are equivalent to E-6 processing.

2. SPEED

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

* Indicates the effective speed resulting from designated filter use.
** Wratten Filter
*** Fuji Light Balancing Filter

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

	Sizes *	Emulsion Number
Rolls	135 ..... 36-exp. 35 mm × 30.5 m (100 ft) 120 ..... 12-exp. ..... 12-exp.(5-roll pack)	#201 –

* Some sizes are not available in certain markets.

Base Material ..... Cellulose Triacetate
Base Thickness ..... Rolls 135 : 127 μm
120 : 98 μm

4. EXPOSURE GUIDE FOR VARIOUS LIGHT CONDITIONS

Use a meter for exposure determination. If a meter is not available, refer to the following 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
Shutter Speed (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 a lens opening 1/2-stop smaller during the summer and 1/2-stop larger during the winter (except for snow scenes).
- Excessively bright (or dark) or backlighted subjects may require plus (or minus) 1-stop lens opening adjustments.

Daylight

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

Subject Conditions	Filter	Exposure Correction
Open shade in fair weather and shaded landscapes.	UV Filter No.2C* (SC-39 or SC-40)**	None
Bright distant views, snow scenes, seaside locations, aerial shots and open landscapes.		
Close-ups of plants and subjects having bright colors.		

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

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

* Wratten Filters
** Fuji Sharp-cut Filter
*** Fuji Light Balancing Filter
**** A "+" followed by a number indicates the required increase in lens opening.

Electronic Flash

- Electronic flash produces light similar to daylight, so filters are not needed. However, the possibility of undesirable effects on color balance, due to various factors (differences in equipment, amount of use, etc.) should be taken into consideration. Test exposures are recommended.
- The use of a flash meter is advisable, but the following formula can also be used to obtain a satisfactory lens opening.

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

- 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 the flash unit instructions.

Daylight Photoflood / Photo-Reflector Lamps

- Daylight-type photoflood or photo-reflector lamp output may be lower than that indicated by an exposure meter, so it is advisable to compensate for this by increasing exposure time or the lens opening. Whenever possible, test exposures are recommended.
- Other factors requiring consideration when determining the exposure time are lamp configuration, use duration and line voltage, as they may affect lamp output and color balance.

Fluorescent Lamps

- The use of the following combinations of color compensating filters is advisable when photographing under fluorescent lighting.
- For exacting work, however, test exposures are recommended because lamp brand and age may affect light output and color balance.

Fluorescent Lamp Type	White (W)	Daylight (D)	Cool White (CW)	Warm White (WW)
Color Compensating Filters*	25M	30R+10M	30M	No.80B+ 10M + 10R
Exposure Corrections**	+2/3	+1 1/3	+1	+2

(Exposure time: 1/2 second)

* Wratten Color Compensating Filters (or Fuji Color Compensating Filters) are recommended.
** Exposure correction values include filter exposure factors. These values are added to unfiltered exposure meter readings. A "+" followed by a number indicates the required increase in lens opening.

NOTES
- Use a shutter speed slower than 1/30 second.
- For shutter speeds of 64 seconds or more, exposure adjustments will be necessary to compensate for reciprocity-related failure.

Tungsten Lamps

- A Wratten Filter No.80A (or Fuji Light Balancing Filter LBB-12) is required when using 3200K tungsten lighting. A 1 2/3-stop larger lens opening is also required.
- If household tungsten lighting (room lamps. etc.) constitutes the main source of illumination, in addition to the above filter a Wratten filter No. 82A (or Fuji Light Balancing Filter LBB-2) is required, plus an aperture increase of 1/3 stop (total 2 stops).

Mixed Light Sources

Under mixed light conditions, the basic filter configuration should suit the main light source. In the case of cameras with TTL metering, there is no need for additional exposure compensation for any CC filter(s) used.

5. LONG EXPOSURE COMPENSATION

No exposure correction or color balance compensation is required for exposures within a shutter speed range of 1/4000 second to 32 seconds. However, for exposures of one minute or longer, reciprocity-failure related color balance and exposure compensations are required.

Exposure Time	1/4000 – 32 sec.	1 min.	2 – 4 min.	8 min.
Color Compensating Filter	None	5G	7.5G	Not recommended
Exposure Corrections*		+2/3	+1	

* Exposure correction values include filter exposure factors. These values are added to unfiltered exposure meter readings. A "+" followed by a number indicates the required increase in lens opening.

6. EXPOSURE PRECAUTIONS

With artificial light, such as electronic flash, photoflood, fluorescent, tungsten, mercury vapor, etc., the lamp output and color temperature may be affected by such factors as brand, age of equipment and line voltage. Reflectors and diffusers can also influence light intensity and color temperature.

7. FILM HANDLING

- Expose film before the expiration date indicated on the film package and process as soon as possible after exposure.
- When loading and unloading roll film, avoid direct sunlight. If there is no shade, shield the film from the sun with your body.
- Unprocessed film should be kept away from X-rays used to inspect checked-in baggage, etc. at airport terminals. Strong X-rays can cause fogging of unprocessed film. It is recommended such film be placed in your carry-on baggage whenever possible. (Consult with airport personnel for details.)
- Film fogging may occur near X-ray equipment used in hospitals, factories, laboratories and other locations. Always keep film away from possible sources of radiation.

8. FILM STORAGE

Unprocessed Film

- Storing exposed or unexposed film under hot and humid conditions may adversely affect the speed, color balance and physical properties of the film. Store film under the following conditions.
  - ○ Short-to-medium-term storage :
    Below 15°C (59°F) ..... (Refrigerator)
  - ○ Long-term storage :
    Below 0°C (32°F) ..... (Freezer)
- Building materials, finishes used on newly manufactured furniture, paints and bonding agents may produce gases which could affect photographic film. Do not store film, lightproof boxes of film, loaded cameras or film holders near these materials.
- Before use, films taken from cold storage should be allowed to stand at room-temperature for over 3 hours for refrigerated film, and over 6 hours for frozen film. Long rolls such as 100 feet (30.5 m) will require additional time. Opening a package/box of film that is cold may cause harmful condensation.

Processed Film

Exposure to light, high temperature and humid conditions can cause color changes in processed films. Therefore, place such films in mounts or sleeves and store them in a dark, dry, cool and well ventilated location under the following conditions.

- ○ Medium-term storage:
  Below 25°C (77°F) at 30% to 60% RH
- ○ Long-term storage :
  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 designed for processing by Kodak E-6, Fujifilm Process CR-56, or Fuji/Hunt C6R, etc.

10. LIGHT SOURCES FOR VIEWING

Use a standard viewer. Visual responses will differ with light source quality and brightness. Therefore, employ a viewer which meets the ISO/ANSI standard.

* The ISO standard (ISO/DP3664-2) specifies an illuminated viewer surface with a color temperature derived from a CIE illuminant D_{50} (D:Daylight) with a reciprocal color temperature of 5000K, an average brightness of 1400cd/m^2 ± 300cd/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. PRINTS AND DUPLICATES

Processed transparencies can be made into prints directly on FUJICHROME papers, thus greatly increasing RHP Ⅲ's versatility. High-quality duplicates can be made on FUJICHROME DUPLICATING FILM CDU TYPE Ⅱ (CDU Ⅱ).

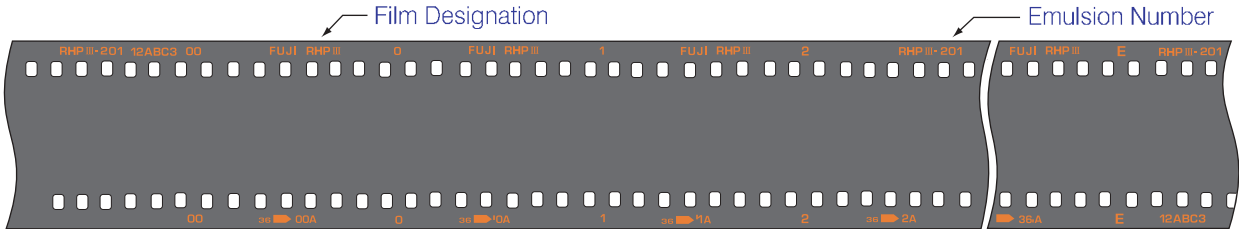
12. APPLICATION TO PRINTED MEDIA AND DIGITAL REPRODUCTION

Like other FUJICHROME films, RHP Ⅲ is ideally suited to the production of high-quality printed matter and superior digital images.

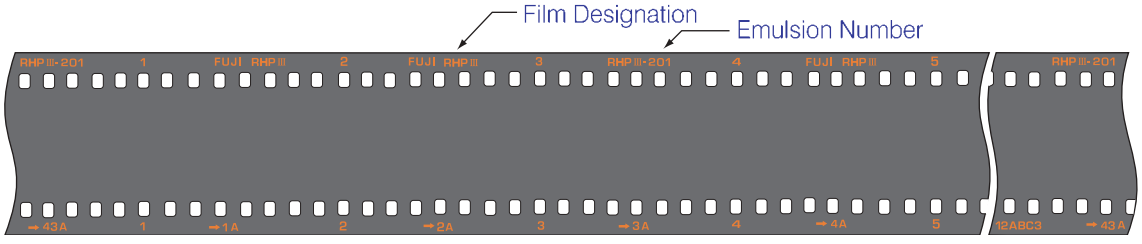
13. PROCESSED FILM EDGE MARKINGS

< Rolls >

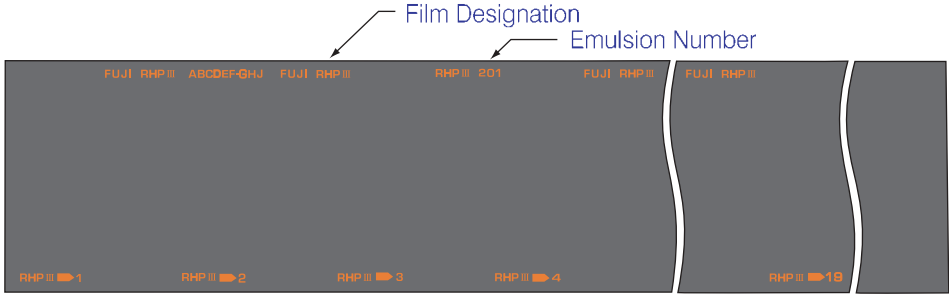
- **135 Size**



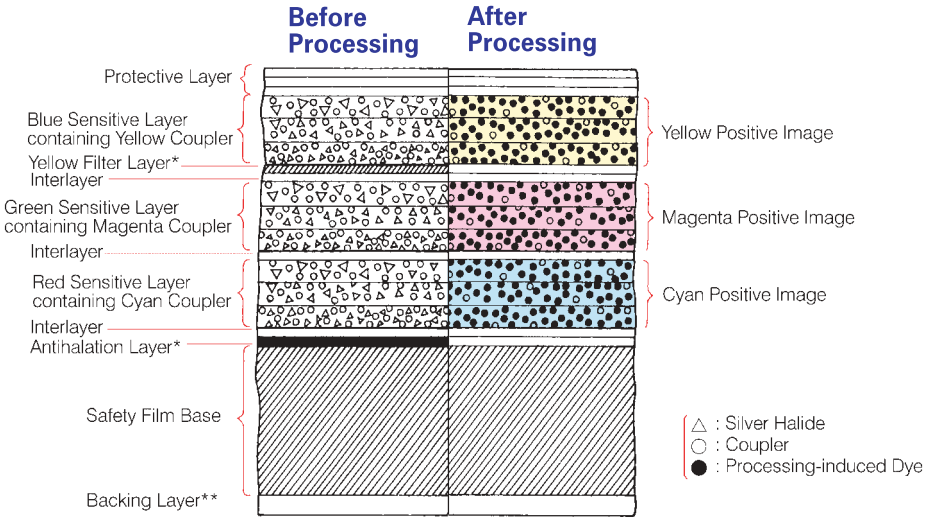
- **35 mm × 30.5 m (100 ft.)**



- **120 Size**



14. FILM STRUCTURE



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

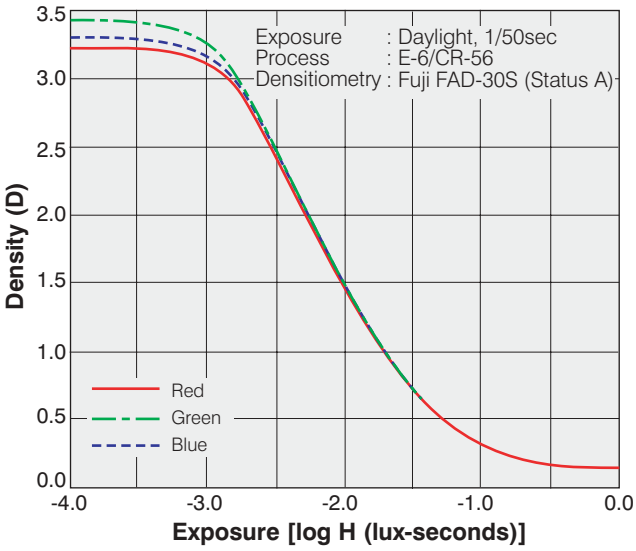
15. DIFFUSE RMS GRANULARITY VALUE 13

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

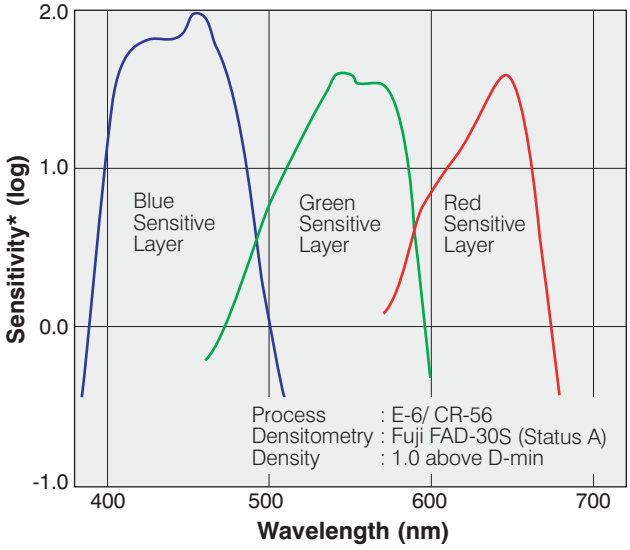
16. RESOLVING POWER

Chart Contrast 1.6 : 1 ..... **55** lines/mm
Chart Contrast 1000 : 1 ..... **135** lines/mm

17. CHARACTERISTIC CURVES

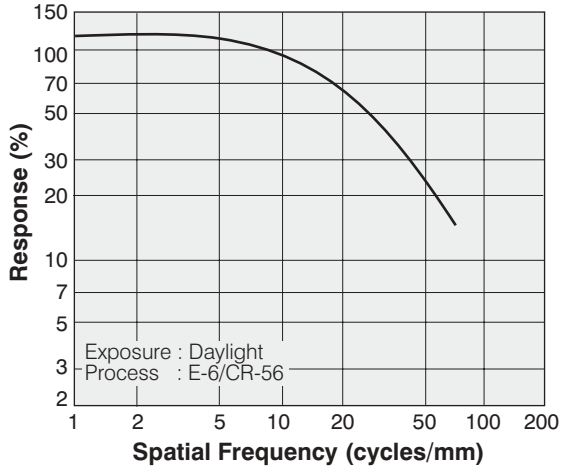


18. SPECTRAL SENSITIVITY CURVES

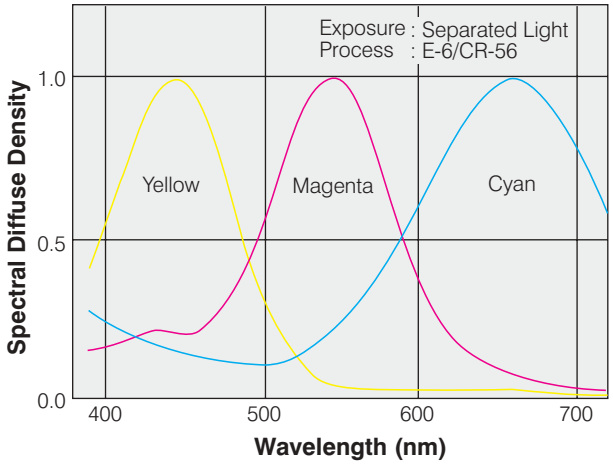


* Sensitivity equals the reciprocal of the exposure (J/cm^2) required to produce a specified density.

19. MTF CURVE



20. 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 prior notice.

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