FUJIFILM

AF3-151E

PRODUCT INFORMATION BULLETIN

COLOR NEGATIVE FILMS

NEW

FUJICOLOR SUPERIA X-TRA 400 [CH] (A)

1. FEATURES AND USES

FUJICOLOR SUPERIA X-TRA 400 [CH] is a daylight-type ISO 400 color negative film that incorporates 4th Color Layer and the newly developed Super Fine-Σ (Sigma) Grain Technology to achieve high image quality when printed on FUJICOLOR papers.

Features	Results
• **Excellent Grain Quality**	• Fine grain for a high-speed film, providing no loss of image quality even in large-size enlargements
• **High Speed and Wide Exposure Latitude**	• High sensitivity that allows images to be captured even under insufficient light conditions
• **Vibrant, Natural Color Reproduction**	• Vibrant and dynamic reds, blues, and yellows • Violets and a variety of greens with enhanced fidelity
• **Excellent Skin Color Reproduction**	• Smooth, beautiful and naturally depicted skin tones
• **Excellent Sharpness**	• Extremely sharp depiction of all aspects of the subject, from overall form to textural details
• **Excellent Exposure Suitability even under Fluorescent Lighting**	• Accurate color reproduction even under fluorescent lights
• **Excellent Gray Balance**	• Precisely maintained gray balance throughout, from the brightest highlights to the deepest shadows

It requires no color-compensating filters when used under daylight conditions or with an electronic flash.

2. SPEED

Light Source	Speed	Filter
Daylight	ISO 400/27°	None
Tungsten Lamps (3200K)	ISO 100/21°*	LBB-12** (or Wratten No.80A)

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

3. EXPOSURE GUIDE

Use an exposure meter for exposure determination. If a meter is 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/22	f/16	f/16	f/11	f/8
Shutter Speed (sec.)	1/500		1/250		

NOTES
- The foregoing settings are for 2 hours after sunrise and 2 hours before sunset.
- Provide lens openings 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	Fine Weather Daytime Indoor Scenes	Nighttime Indoor Scenes (under Fluorescent Light)	Evening Scenes	Night Scenes
Lens Aperture	f/2.8 to 4	f/2 to 2.8	f/2.8 to 4	f/2 to 2.8
Shutter Speed (sec.)	1/60	1/30	1/60	1/30

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

4. EXPOSURE UNDER VARIOUS LIGHT CONDITIONS

Daylight

Even when exposed under morning or evening twilight conditions or when color temperatures are low, no special filter use is needed as color balancing can be done during printing.

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.
- If shutter speeds slower than 1/60 second are used, light from non-flash sources, such as room lighting, may cause color imbalances. Make test exposures.
- The use of a flash meter is advisable, but the following formula can also be used to obtain 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 subjects 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 & High-Intensity Discharge Lamps

- For the best results, the following combinations of color compensating filters are recommended. However, for exacting work, test exposures are advisable.

Lamp Type	Fluorescent				High-Intensity Discharge	
	Daylight (D)	Cool White (C.W)	White (W)	Warm White (W.W)	Deluxe White Mercury	Clear Mercury
Color Compensating Filters*	10M +10Y	—	10C	30C +30M	10C	40M +40Y
Exposure Corrections**	+1/3	—	+1/3	+1	+1/3	+1 1/3

* Fuji Color Compensating Filters (or Wratten Color Compensating Filters)

** 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.

- When the fluorescent lamp characteristics are unknown, to obtain generally acceptable results, use a 30M compensating filter and open the lens one stop (+1).

  NOTE Different compensation may be required according to special lamp types and length of use, so test exposures are recommended, whenever possible.

- Shutter speeds of 1/125 second for high-intensity discharge lamps and 1/30 second or larger, for fluorescent lamps, will avoid AC power-induced changes in brightness and color being recorded on the film.

Tungsten Lamps

A Fuji Light Balancing Filter LBB-12 (or Wratten filter No.80A) is recommended along with a 2-stop increase in lens opening, when using 3200 K tungsten lighting. In the case of cameras with TTL metering, there is no need for additional exposure compensation.

5. LIGHTING EQUIPMENT

The condition of umbrellas, reflectors, diffusers and like devices, could influence photographic light quality. Periodically check lighting equipment for deterioration.

6. LONG EXPOSURE COMPENSATION

No exposure or color balance compensation is required for exposures within a 1/4000 to 2 second shutter speed range. However, for exposures of 4 seconds or longer, provide the compensations indicated below.

Exposure Time (sec.)	1/4000 to 2	4	16	64
Exposure Corrections*	Unnecessary	+ 1/3	+ 2/3	+ 1

* A "+" followed by a number indicates the required increase in lens opening.

Except for special effects, the normal intensity ratio for main-to-fill subject lighting should remain within 1:4 limits.

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, turning one's back toward the sun will shade the film.
- Camera-loaded film should be exposed and processed immediately.
- 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 speed, color balance and physical property changes. Store film under the following conditions.
  - ○ Ordinary Storage: Protect from heat.
  - ○ Long-term Storage: Below 0°C (32°F)
- Building materials, finishes used on newly manufactured furniture, paints and bonding agents may produce gases which affect photographic film. Do not store film, lightproof boxes of film, loaded cameras or film holders near these materials.
- Before use, allow films to stand at room-temperature over 1 hour. Opening the package/box while film 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 sleeves and store them in dark, dry, cool and well ventilated locations under the following conditions.

- ○ General 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. SPECIFICATIONS AND PACKAGING

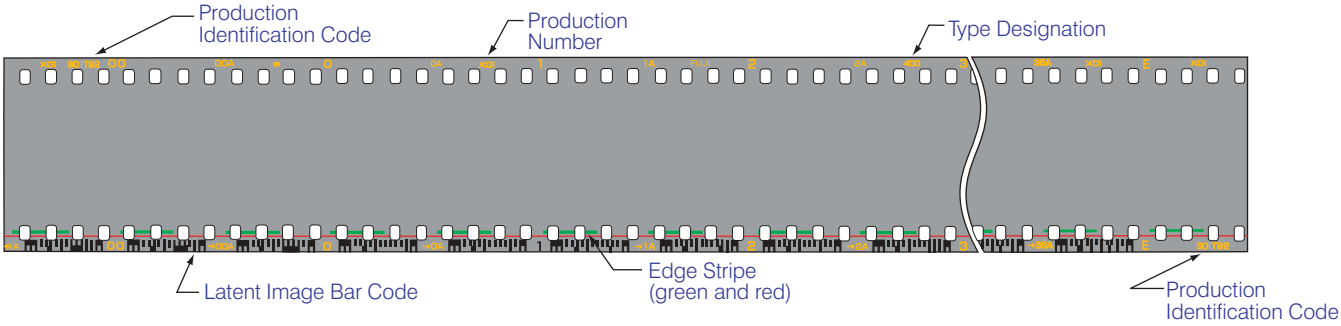
9-1 Specifications

Item	
• Code	CH
• Speed	ISO 400/27°
• Type	Daylight
• Process	CN-16, CN-16Q, CN-16FA, CN-16L, CN-16S or C-41
• Size	135: 12-, 24- and 36-exp.
• Production Number	X01 and above

9-2 Edge Markings

Item	
• Edge Stripe	One red solid line and one green short broken line on one side (changed)
• Type Designation	400
• Latent Image Bar Code	12-8
• FUJIFILM Identification Code	
Negative Carrier : 135B : 135C/D/J/K/S	 0118 280

SUPERIA X-TRA 400



9-3 Packaging

Item	
• Box	New Design SUPERIA X-TRA Identification Color: Blue (unchanged)
• Cartridge (unchanged)	Design SUPERIA X-TRA Identification Color: Blue

9-4 Post-Processing Masking Colors

The new SUPERIA X-TRA 400 has slight reddish tint in comparison with the current SUPERIA X-TRA 400.

10. TECHNOLOGIES INCORPORATED IN NEW SUPERIA X-TRA 400

10-1 Super Fine-Σ (Sigma) Grain Technology

- By incorporating the Super Fine-Σ (Sigma) grain, a further advance over the Fine-Σ (Sigma) grain introduced in SUPERIA X-TRA 800 film, this film realizes very high level of grain quality among ISO 400-class films.
- To achieve the high sensitivity and small volume of the Super Fine-Σ (Sigma) grain, uniform, thin-crystal technology was used to produce crystals with approximately half the thickness of the hexagonal crystals used in the current SUPERIA X-TRA 400. The higher uniformity in size and improved light-collection efficiency of these grains have made possible a film with higher sensitivity than that of the current SUPERIA X-TRA 400 and extremely smooth grain quality, regardless of the film's high speed.

10-2 Super Efficient Coupler Technology

The use of new couplers has enhanced color development efficiency.

11. PROCESSING

This film is intended for processing by Fujifilm Processes CN-16, CN-16Q, CN-16FA, CN-16L, CN-16S or Process C-41.

11-1 Replenishment Rate

The following table shows the replenishment rates for each type of Fujifilm Processes.

CN-16Q	
Processing Solution	Replenishment Rate*
NQ1-R	43
NQ2-R	20
NQ3-R	30
NQS	30
NQ4-R	20

CN-16FA	
Processing Solution	Replenishment Rate*
N1-R	22
N2-R	5
N3-R	16
NS	34
N4-R	20

CN-16L	
Processing Solution	Replenishment Rate*
N1-R	20
N2-R	5
N3-R	8
NS	17
N4-R	15

CN-16S	
Processing Solution	Replenishment Rate*
N1-R	15
N2-R	5
N3-R	7.5
N4-R	30

*Replenishment Rate ..... Replenisher volume (mL) per single roll (135/24 exp.)

4-2 Processing Solution Control

Use the current 135-size control strips for processing solution control.

4-3 Processing-Photographic Characteristics

Same as those for SUPERIA 400.

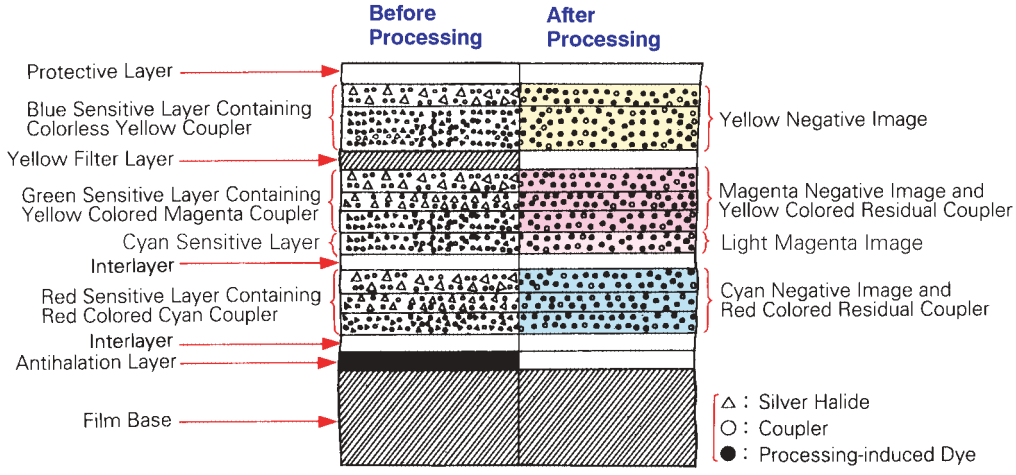
12. PRINTER CONDITIONS

This film can be printed on the same printer setup with results similar to the current film. However, depending on the printer type, a slight blue cast might appear in the overexposed areas. If this occurs, adjustment of printer conditions may be necessary.

13. JUDGING EXPOSURE RESULTS

SUPERIA X-TRA 400 exposure results can be accurately predicted by using an electronic densitometer equipped with Status M filters. An 18% gray card, receiving the same illumination as the subject, when read through the RED filter should render density readings between 0.75 and 0.95 (for exposures under recommended lighting and with optimal film processing).

14. FILM STRUCTURE



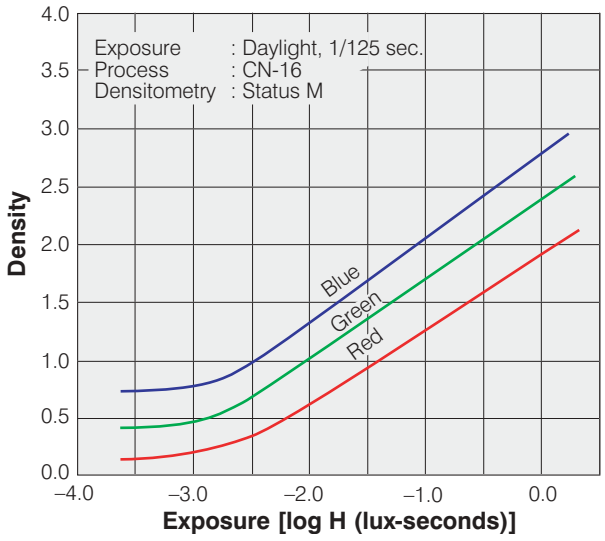
15. DIFFUSE RMS GRANULARITY VALUE 4

Micro-densitometer Measurement Aperture: 48 μm in diameter
Magnification: 12 ×
Sample Density: 1.0 above minimum density

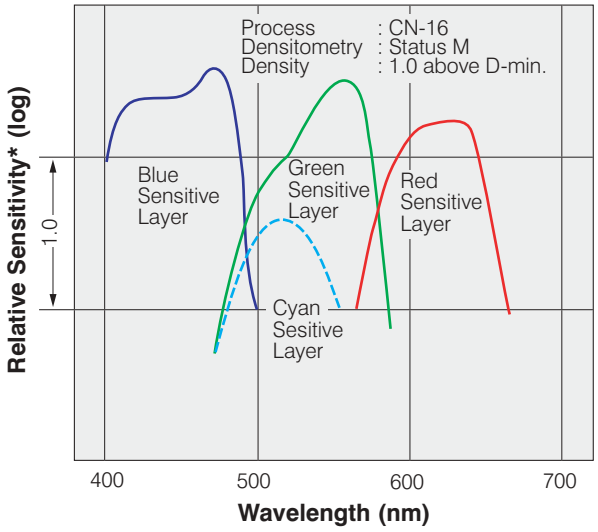
16. RESOLVING POWER

Chart Contrast 1.6 : 1 ..... **50** lines/mm
Chart Contrast 1000 : 1 ..... **125** lines/mm

17. CHARACTERISTIC CURVES

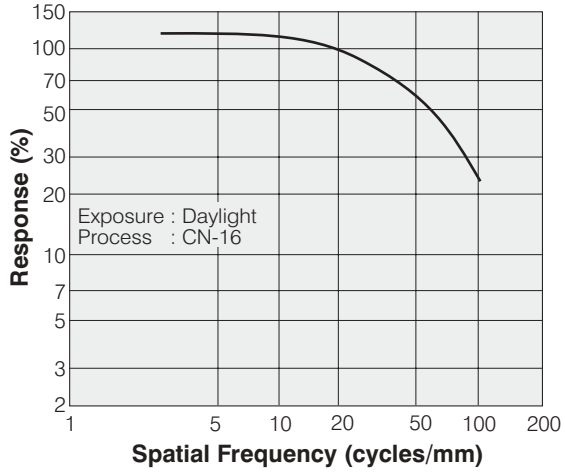


18. SPECTRAL SENSITIVITY CURVES

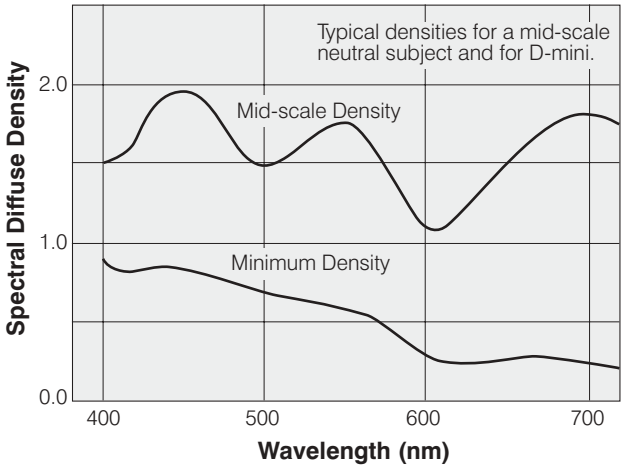


* Sensitivity equals the reciprocal of the exposure (J/cm^2) required to produce a specified density.

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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