FUJICOLOR SUPER HG 1600 CU

FEATURES AND USES

FUJICOLOR SUPER HG 1600 is an ultra-high speed, daylight type color negative film with an ISO speed rating of 1600. Since this film is daylight color-balanced, no filtering is usually required when exposures are made under daylight conditions or with electronic flash.

- With the incorporation of the Sigma Crystal Technology, grain quality has been increased.
- With the contrast increased, a highly modulated gradation has been achieved thereby increasing suitability to low illumination photography while also enhancing brilliant color reproduction.
- Because of its extremely high speed this film is notably appropriate to indoor, wedding, party, stage, morning and evening twilight, and other low illumination photographic situations while retaining also high applicability to stop motion sports and action photography as well as suitability to astronomy and mass communication applications.
- Besides retaining ultra-high speed, this film has a broad exposure latitude that yields quality color prints even when used in outdoor high illumination situations.
- With the provision of an optimum spectral sensitivity balance, quality color prints are derived even from exposures made under such artificial light sources as florescent and tungsten lamps.

This film yields top-notch color prints when printed on FUJICOLOR papers.

FILM SIZE AVAILABLE

135 size: 24 and 36 exposures

SPEEDS

Light Source	Speed	Filter Requirement
Daylight	**ISO 1600/33°**	**None**
Tungsten Lamps (3200 K)	ISO 400/27°*	LBB-12** (or Kodak No. 80A)

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

EXPOSURE GUIDE

- For best results it is essential that appropriate exposures be attained. It is therefore recommended that an exposure meter be used.
- There are two types of exposure meters, the reflection type and the incident type, but for purposes of exposure measurement and illumination ratio determination the incident type is more reliable. With the use of the reflection type, when the surrounding areas are brighter than the main photographic subject, the meter receives excessive light from the surrounding areas resulting in inadequate exposure for the main subject. To avoid this the exposure meter should be pointed slightly downward, or an 18% gray card used to derive adequate exposure readings.

• **Exposure Determination without an Exposure Meter**
When an exposure meter is not available, use the following table as a guide to exposure determination.

Indoor and Night Exposure Guide Table:

Light Conditions	Fine Weather Daytime Indoor Scenes	Nighttime Indoor Scenes	Evening Scenes	Night Scenes
Lens Apertures	f/4 to 5.6	f/4 to 5.6	f/4 to 5.6	f/2.8 to 4
Shutter Speed (sec.)	1/125	1/30	1/125	1/60

NOTES
- For indoor and night scenes, illumination levels differ widely from place to place. It is therefore recommended that an exposure meter be used for exposure determination under such conditions. Use the table as a guide only.
- When this film is exposed at shutter speeds faster than 1/30 of a second under fluorescent light, the flickering peculiar to some fluorescent lamps may result in certain unintended adverse effects*. When used with fluorescent lamps, it is recommended that exposures be made at shutter speeds of 1/30 of a second or slower. Needless to say, with flickerless fluorescent lamps there are no particular shutter speed restrictions.
  * Focal Plane Shutter Cameras — Uneven Image Density
    Lens Shutter Cameras — Underexposed Negatives

Outdoor and Daytime Exposure Guide Table

Light Conditions	Bright Sunlit Seashore or Snow Scenes	Bright Sunlight	Hazy Sunlight	Cloudy Bright	Cloudy Day or Open Shade
Lens Apertures	f/22	f/22	f/16	f/16	f/11
Shutter Speed (sec.)	1/2000	1/1000		1/500	

NOTES
- This table applies for conditions prevailing from between 2 hours after sunrise until 2 hours before sunset.
- When taking cloudy day or open shade pictures, it is recommended that an exposure meter be used for careful exposure determination, since illumination levels differ greatly from moment to moment and location to location.
- Use 1 or 2 stop larger lens openings when taking close-ups of backlighted subjects.
- For adequate recording of snow scenes, mountain scenes, or distant landscapes, it is recommended that ultraviolet absorbing filters, such as the Fuji Filter SC-40 or SC-40M (or Wratten No.1A), be employed.

LONG-EXPOSURE CORRECTION

No exposure or color balance compensation is required if exposure times remain within the 1/4000 to 1/10 second range. However, in cases where 1 second or more exposure time is necessary, reciprocity related color balance and exposure compensation is required to reduce the adverse effects of extended duration exposures.

Exposure and Color Balance Corrections for Reciprocity Failure

Shutter Speed (sec.)	1/4000 — 1/10	1	10	100
Color Compensating Filters	None			
Exposure Corrections	None	+ ½ stop*	+ 1½ stops*	+ 2½ stops*

*The "+" designations mean the lens aperture should be opened by the indicated f values.

EXPOSURE UNDER VARIOUS LIGHT SOURCES

This film is designed for exposure under daylight conditions at designated shutter speeds for the derivation of optimum standard results.
In relation to any of the various light sources, except for special effects, the main subject illumination ratio should remain within 1:4 limits.

Daylight

Since this film is designed for a daylight use, there is no need for light filtering when exposed to general subjects under natural daylight conditions. Further, even when exposed under morning and evening twilight conditions when light color temperatures are low, no special light filtering is needed because printing color compensation will result in beautiful prints.

Electronic Flash

- Electronic flash exposures will result in prints having qualities very close to those derived from daylight exposure. The effective light output and color balance will differ with the flash manufacturer, and there will be differences resulting from the use frequency and other factors which should be checked.
- With shutter speeds of less than 1/60th of a second, light sources other than the electronic flash (modeling lamps and room lights) may compromise end result quality. Make test exposures to check outcomes.
- When using eletronic flash the lens opening should be adjusted as indicated in the formula below.

$$\text{Lens Aperture (f-number)} = \frac{\text{ISO 1600 Electronic Flash Guide Number}}{\text{Electronic Flash-to-Subject Distance (meters or feet)}}$$

Further, for electronic flash exposure purposes, the film speed should be set at ISO 1600. Since with the use of electronic flash the amount of light reflected onto the main subject from surrounding surfaces will differ with particular conditions, be sure to refer to the instructions of the particular electronic flash unit being used.

Photo-Reflector Lamps (Daylight Photoflood Lamps)

Since, in comparison with other artificial light sources, daylight photoflood lamps tend to result in under-exposures, it is sometimes essential to increase the amount of light to a level over and above that indicated by exposure meter measurements.
Further, since color balance and light output will differ with manufacturer, use duration, and applied voltage, it is essential that exposure conditions be determined in relation to the particular lighting equipment employed.

Fluorescent Lamps

When exposures are made under fluorescent lamp illumination, the resulting prints are greenish in cast and require color compensation during printing for the derivation of optimum quality.
Therefore, filter provided compensation relative to fluorescent lamp illumination, is not necessary. It is recommended that shutter speeds of 1/30th of a second and slower be used.

Tungsten Lamps

To derive the same results with photographic tungsten lamps (photoflood lamps) as are seen with natural light exposures, it will be necessary to change the light color temperature through the use of a Fuji Filter LBB-12 (Kodak No.80A). Under these conditions provide a two stop increase in the exposure.

LIGHTING EQUIPMENT

Diffusion or intensity adjustment lighting equipment such as umbrellas, reflectors, and diffusers, may suffer from material deterioration or color quality changes. Before using, lighting equipment should be checked to ensure that no undesirable changes have occurred.

FILM HANDLING

- Film should be exposed before the expiration date indicated on the film package and then processed promptly.
- Film that has been placed in cold storage should be allowed to stand for at least one hour after removal so as to reach ambient temperature. If the film package is opened before room temperature is reached, condensation will degrade the film.
- When loading or unloading films, care should be exercised in avoiding exposure to direct sunlight. If there is no shade where film can be loaded or unloaded in subdued light, turning one's back toward the sun will allow loading and unloading under one's own shadow.
- Film loaded into a camera should be exposed and processed as promptly as possible.
- Under certain conditions the x-ray equipment used to inspect carry-on baggage at airport terminals will adversely affect photographic film (causing fogging). The adverse effects of this are increased with the intensity of the X-rays, the speed of the film, and the cumulative number of inspection exposures.
  Since this film retains an ultra-high speed and is especially sensitive to X-rays and other radiation sources, it is essential that at each inspection the film be removed from the baggage and that airport security personnel be asked to inspect the film visually.
- Film fogging may occur in hospitals, factories, laboratories, and other locations using X-rays and other radiation sources. Therefore, utmost care should be exercised in these environments.

FILM STORAGE

Unprocessed Film Storage

When exposed or unexposed film is stored under high temperature and humidity conditions, it will not only sustain changes in such photographic properties as film speed and color balance but also certain physical changes. To avoid such problems, care should be exercised as suggested below.

- Storage Locations and Temperatures
  - ○ Refrigerator :below 10°C (50°F)
  - ○ Extended Term Storage
    Freezer :below 0°C (32°F)

  Further, since film removed from its packaging and stored as such over an extended period of time may be subjected to the effects of harmful gases and other substances, it is best to contain such film in sealed polyethylene or plastic bags.

- Film loaded cameras should not be left in hot, humid locations.

Processed Film Storage

Processed films are subject to color fading and discoloration from light (especially ultraviolet rays), high temperatures and humidity. To avoid the adverse effects of light, heat and moisture, it is recommended that processed film be placed in negative envelopes and stored in dry, cool and dark locations.

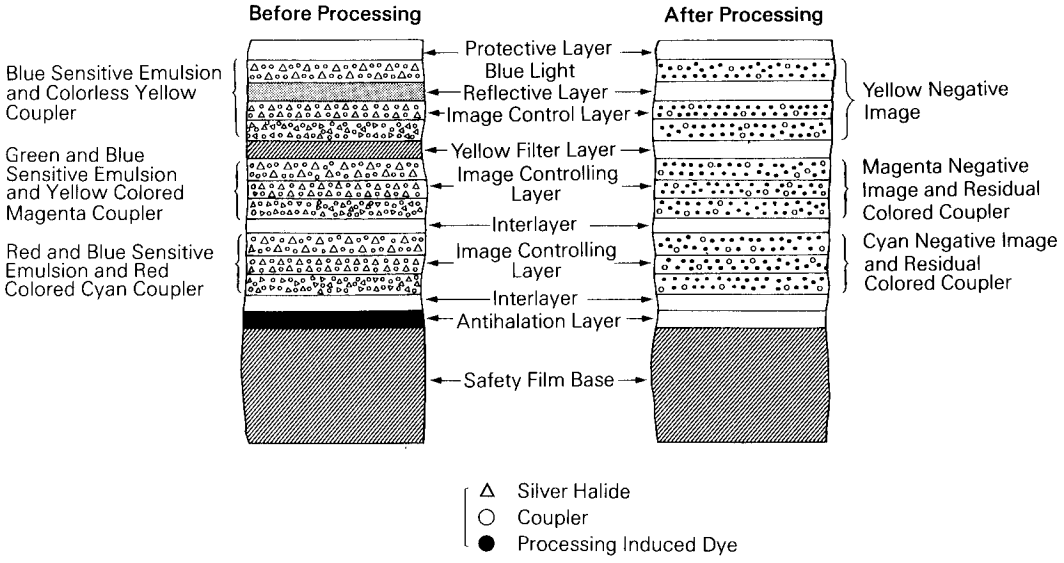
- Recommended Storage Conditions
  - ○ Temperatures: below 25°C (77°F), Humidities: 30 to 60% RH
  - ○ Extended Duration Conditions
    Temperatures: below 10°C (50°F), Humidities: 30 to 50% RH

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

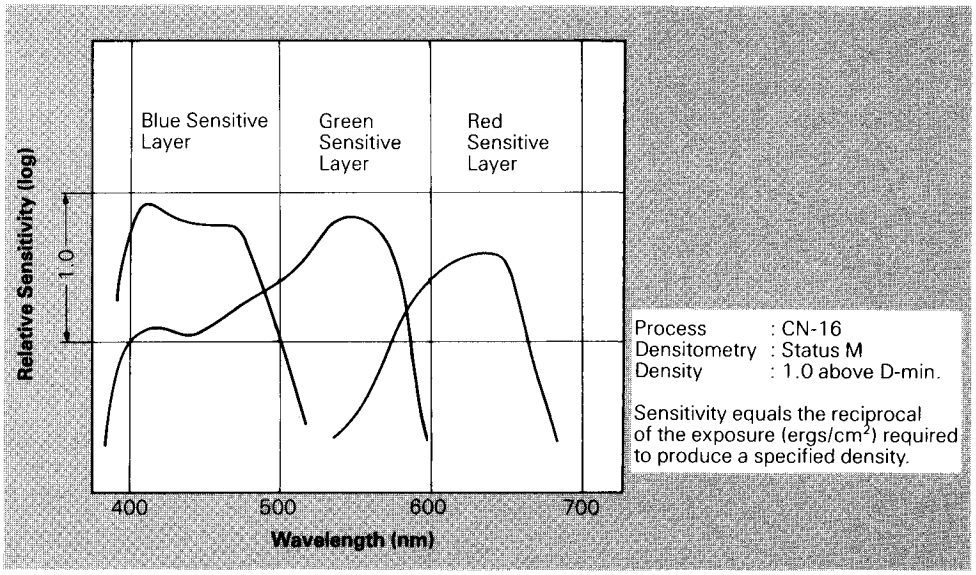
PROCESSING

This film is intended for processing in Fuji Film Process CN-16, or Process C-41 or equivalents.

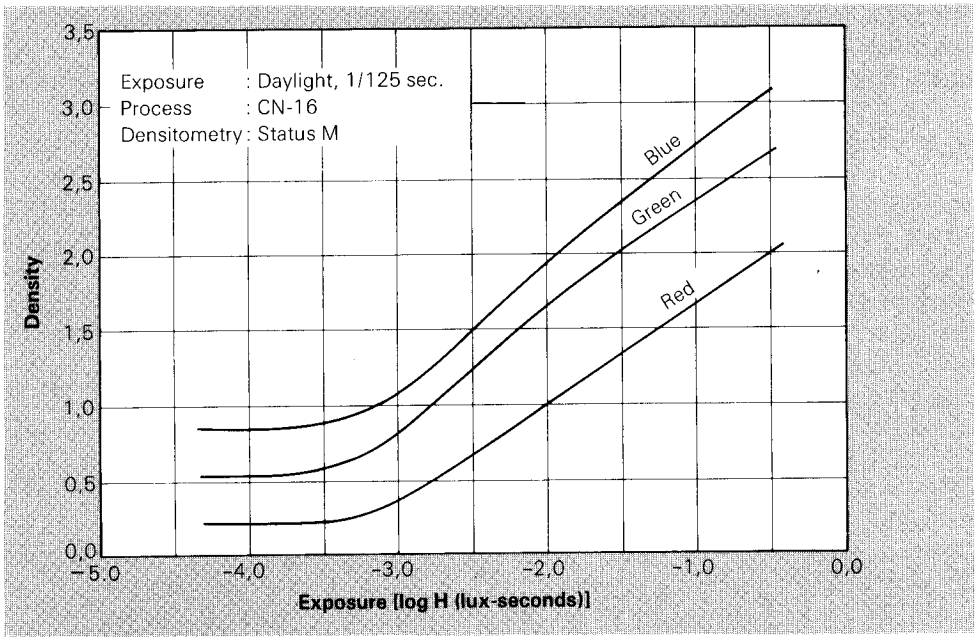
FILM STRUCTURE



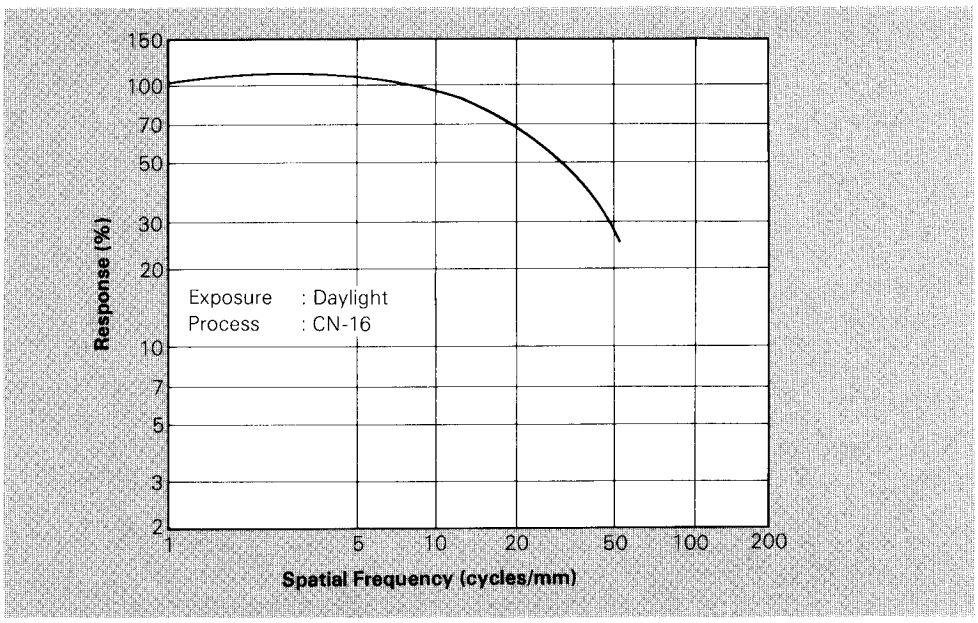
SPECTRAL SENSITIVITY CURVES



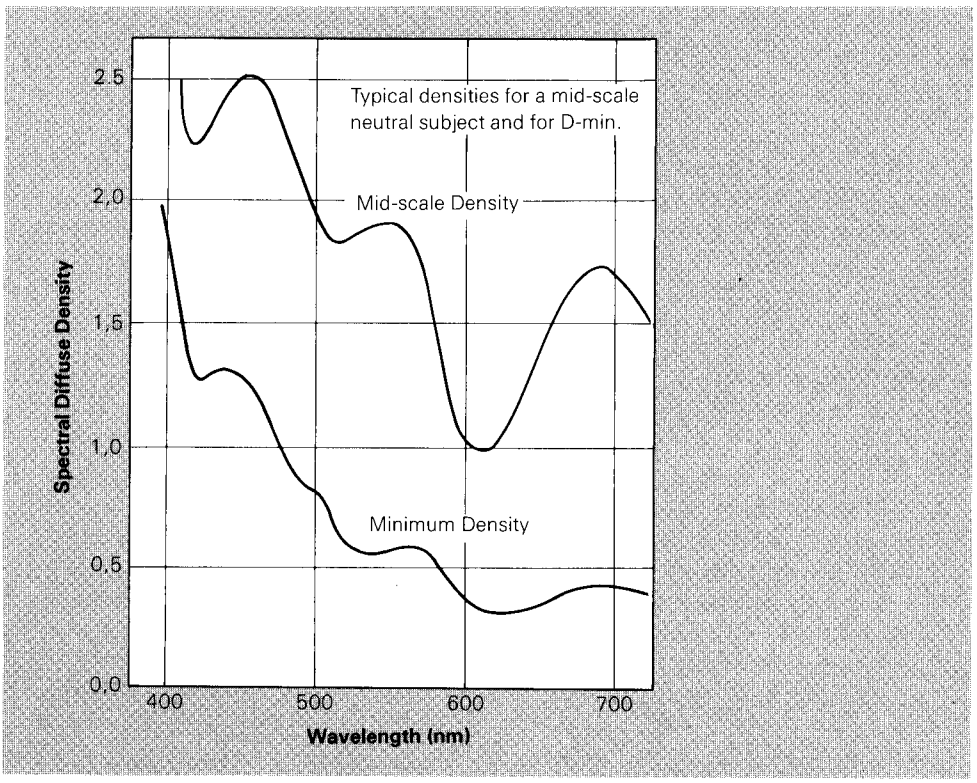
CHARACTERISTICS CURVES



MTF CURVE



SPECTRAL DYE DENSITY CURVES



DIFFUSE RMS GRANULARITY VALUE

10

Micro-Densitometer Measurement Aperture: 48 μm in diameter
Measured Sample Density (NET): 1.0

NOTICE
The sensitometric curves and other data herein published were derived from particular materials taken from general production runs. As such they do not represent in exact duplication the characteristics of every lot produced nor a standard for Fuji Film products. Further, Fuji Film is in a constant process of upgrading quality which may result in data changes.

FUJI PHOTO FILM CO., LTD.
26-30, Nishiazabu 2-chome, Minato-ku, Tokyo 106, Japan

Ref. No. **AF3-659E (N)** (EIGI-92.4-OB•3-6) Printed in Japan