

FUJICOLOR NPH 400 PROFESSIONAL [NPH]

1 FEATURES AND USES

FUJICOLOR NPH 400 PROFESSIONAL [NPH] is an ISO 400 rated, daylight-type color negative film designed for portrait, wedding photography and other commercial applications.

Incorporating the most advanced FUJI technology, this film is able to meet the wide-ranging demands of photographers.

Features	Results
<ul style="list-style-type: none"> • High Speed of ISO 400 	<ul style="list-style-type: none"> • Accurate ISO 400 rating for versatility and superb results on a wide range of photographic assignments
<ul style="list-style-type: none"> • Optimized Skin Tone Reproduction 	<ul style="list-style-type: none"> • Smooth, natural and unbiased skin tones in portrait and wedding photography where skin tone is of utmost importance
<ul style="list-style-type: none"> • More Accurate Color Reproduction 	<ul style="list-style-type: none"> • Moderate color saturation to produce subtle and accurate color tones required in professional work
<ul style="list-style-type: none"> • Fine Grain Equal to ISO 100 	<ul style="list-style-type: none"> • Fine grain performance allows enlargements to be made with confidence
<ul style="list-style-type: none"> • Rich Gradation and Uniform Gray Balance 	<ul style="list-style-type: none"> • Fine detail in highlights and shadows • Neutral tone over entire density range
<ul style="list-style-type: none"> • Exceptionally Wide Latitude 	<ul style="list-style-type: none"> • Good results in significant over and under exposure situations

2 SIZES, BASE AND EMULSION NUMBER

Sizes	Base Thickness	Base Material	Emulsion Number
135 36-exp. 135 36-exp. (5-roll packs)	122 µm (4.8 mil)	Cellulose Triacetate	101 - 199
120 120 (5-roll packs)	104 µm (4.0 mil)		
220 (5-roll packs)			

3 FILM SPEED

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

* Indicates the effective speed resulting from designated filter use.

** Fuji Light Balancing Filter.

4 EXPOSURE GUIDE

• Exposure Determination without an Exposure Meter

When an exposure meter is not available, use the following table as a guide to exposure determination.

Daylight Exposure Guide

(Shutter Speeds: 1/500 sec.)

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/11	f/8	f/5.6

NOTES

- This table applies for conditions prevailing from 2 hours after sunrise until 2 hours before sunset.
- The use of an exposure meter is highly recommended in cloudy weather or in open shade since light intensity differentials are under continual flux.
- Apertures increased by one or two stops are usually suitable for back-lighted close-up subjects.

Low Light Exposure Guide

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

For indoor and night scenes, illumination levels differ widely from place to place. Use the table as a guide only.

5 EXPOSURE UNDER VARIOUS LIGHT CONDITIONS

Daylight

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

Subject Conditions	Filter
Fair weather open shade and shaded landscapes	SC-39 * (No. 2C **)
Bright distant scenes, snow landscapes, sea-side scenes, aerial scenes and open landscapes	SC-40M * (No. 1A **)

* Fuji Sharp Cut Filters (Ultraviolet)

** Kodak Filters

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

Subject Conditions	Filter
<u>High Color Temperature:</u> Cloudy weather landscapes and portraits or clear weather open shade subjects	LBA-2 * (No. 81A **)
<u>Low Color Temperature:</u> Scenes and portraits under morning or evening twilight conditions	LBB-2 * (No. 82A **)

* Fuji Light Balancing Filters (Ultraviolet)

** Kodak Filters

NOTE When using artificial illumination either as the main or auxiliary light source with sunlit subjects either indoors or out, it is important to use either blue flash bulbs or electronic flash.

Electronic Flash

- Since electronic flash characteristics are similar to daylight, no filters are required. Effective light output and color balance will differ with the equipment type, age, color temperature and other factors. This will require making initial tests.
- With shutter speeds slower than 1/60 of a second, the influence of non-flash light sources such as modeling lamps and room illumination may cause undesirable color balance shifts. Test exposures are recommended.
- Adjust the lens opening for electronic flash according to the following formula:

$$\text{Aperture} = \frac{\text{Lens} \times \text{ISO 400 Electronic Flash Guide Number}}{\text{Electronic Flash-to-Subject Distance (in Meters)}}$$

- The film speed should be set at the ISO setting currently being used for ISO 400 rated film.
- Since the amount of light reflected onto the subject from surrounding surfaces will differ with conditions, refer to the instructions for the flash unit.

Flash Bulbs

- With blue flash bulb exposures, compensating filters are unnecessary but with clear flash bulbs a Fuji LBB-8* (No. 80C or 80D**) filter should be used.
- Light quality will vary with bulb manufacture while variations will also depend on lighting equipment and related diffusion techniques. Make test exposures.

* Fuji Light Balancing Filters

** Kodak Filters

Daylight Photoflood Lamps

- Daylight photoflood lamps tend to result in underexposure, 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 and High-intensity Discharge Lamps

This film will provide the best results when exposed to fluorescent and H/D lamp light if the following filter and exposure recommendations are applied. Fluorescent and H/D lamps are subjected to color and brightness variations during alternating-current cycles.

To avoid related variability problems, expose NPH at speeds longer than 1/125 sec with H/D or 1/60 sec for fluorescent lamps. If accurate color renditions are essential it is best to make test exposures for determining color and density under actual use conditions.

Fluorescent Lamp Type	Daylight (D)	Cool White (CW)	White (W)	Warm White (WW)	Deluxe White Mercury	Clear Mercury
Color Compensating Filters *	30R	20M	10C +20M	30B	20M +10R	70R
Exposure Correction **	+1 Stop	+2/3 Stop	+2/3 Stop	+1 Stop	+2/3 Stop	+2 Stops

If the fluorescent lamp type is unknown, use a 30M cc filter and a +1 stop exposure correction. This will provide acceptable results under most conditions.

Tungsten Lamps

Fuji Light Balancing Filter LBB-12 (or Kodak No. 80A) is recommended with photoflood lamps.

Under these conditions a 2 stop larger lens opening will also be necessary.

6 LONG AND SHORT EXPOSURES

No exposure or color balance compensation is required when exposure time is within a 1/4000 to 1 second. However for exposures of 4 seconds or longer, exposure compensations are required.

Exposure Time (sec.)	1/4000 to 1	4	16
Color Compensating Filter	None	None	None
Exposure Correction (Lens Opening)	None	+ 1/2 stop	+ 1 stop

(Exposure time longer than 16 seconds is not recommended.)

7 FILM HANDLING

- Unprocessed film must be handled under conditions of absolute darkness without safelight illumination.
- Expose and process 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

- 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 10°C (50°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 or two). Opening while temperatures are still low may cause moisture condensation.

Processed Film

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

9 PROCESSING

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

10 NEGATIVE EXPOSURE EVALUATION

NPH exposure adequacy can be accurately estimated by using an electronic densitometer equipped with Status M filters. When read through the RED filter, an 18% gray card receiving the same illumination as the subject, should render density reading between 0.78 and 0.98. These densities are for exposures made under recommended light sources and with optimal film processing.

11 PRINTING

This film can be printed on materials made by FUJIFILM or other manufacturers, including FUJICOLOR Professional papers for prints, and FUJITRANS SUPER FA Display Material for display transparencies.

12 RETOUCHING

120/220 NPH negatives can be retouched on both the base and emulsion surfaces. Retouching characteristics are similar to other professional color negative films.

13 VIDEO ANALYZING

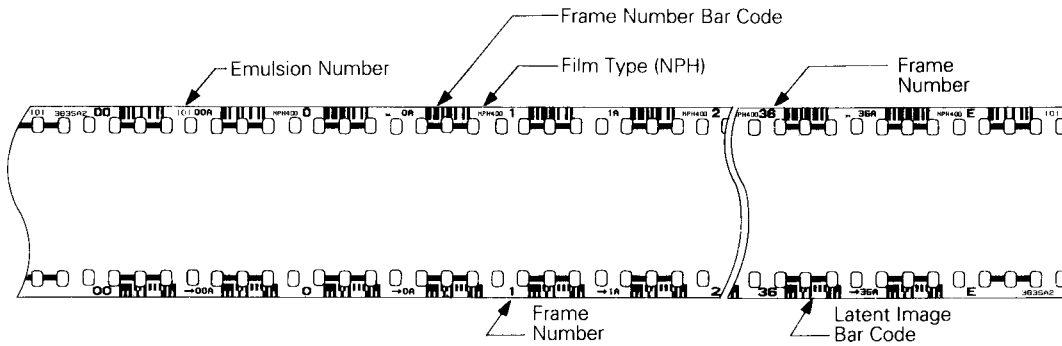
A separate channel set up is recommended for the analyzer. Excellent results are attainable on the Kodak PVAC*, Bremson CVIS** and other analyzers. Starting values and Setup and Balancing manuals are available.

- * PVAC is a registered trademark of the Eastman Kodak Company
- ** CVIS is a registered trademark of Bremson Data Systems

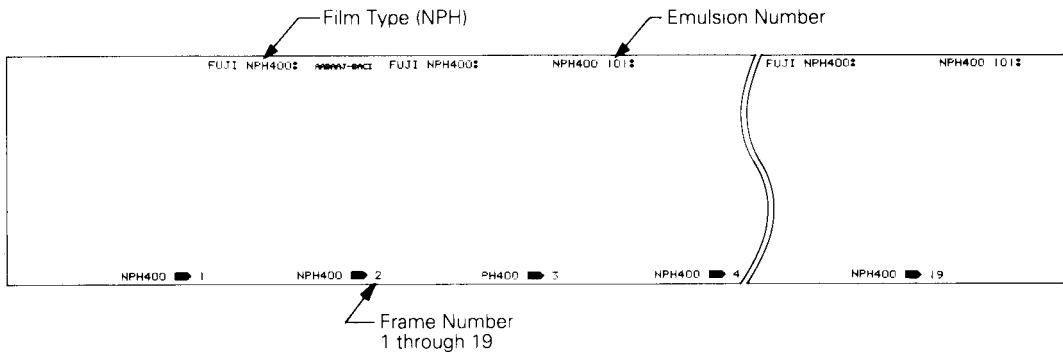
14 IDENTIFYING FILM

It may be necessary to segregate NPH from other color negatives when utilizing the many different analyzers and printers. The following markings identify NPH films.

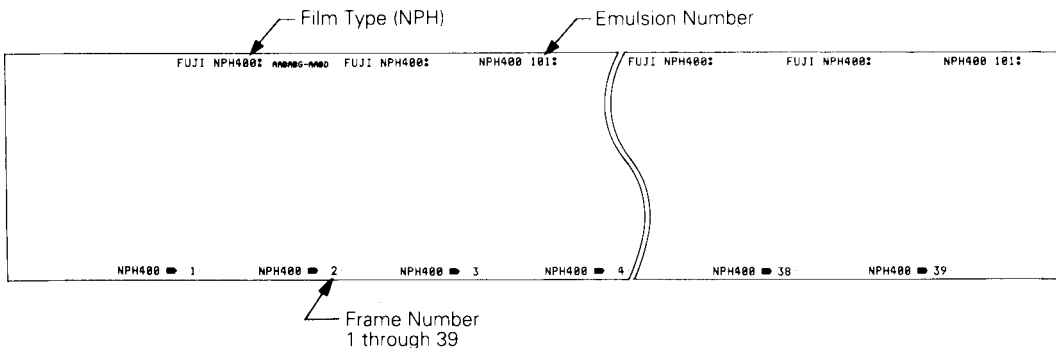
135 Size Film



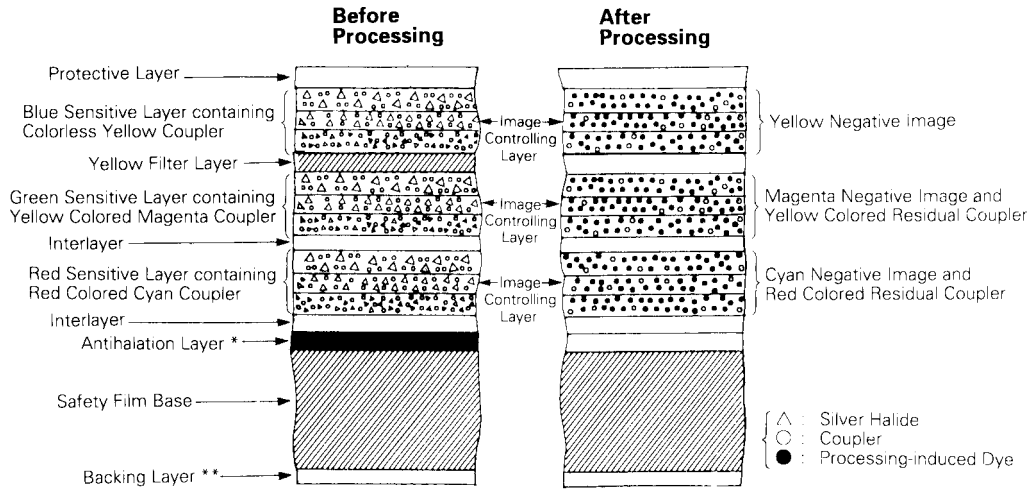
120 Size Film



220 Size Film



15 FILM STRUCTURE



* These layers become colorless and transparent after processing.

** The backing layer is not provided with 135 size film.

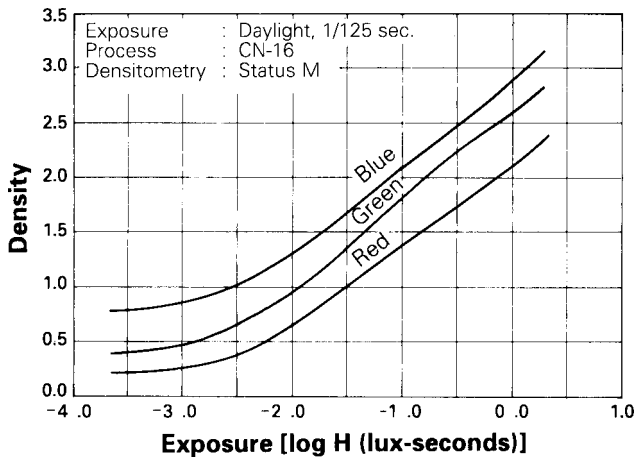
16 DIFFUSE RMS GRANULARITY VALUE..... 4

Micro-Densitometer Measurement Aperture: 48μm in diameter.
 Magnification: 12 X.
 Measured Sample Density: 1.0 above minimum density.

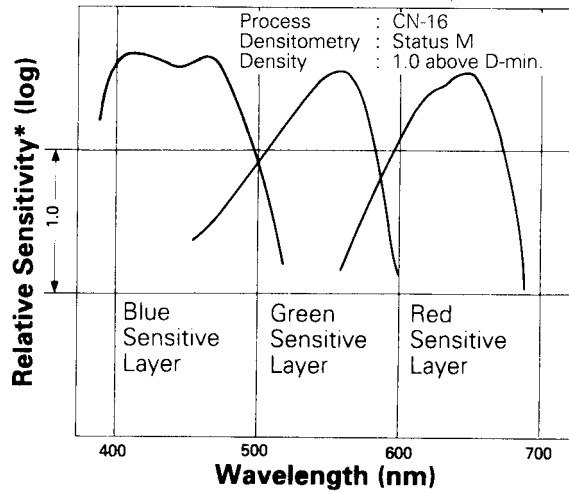
17 RESOLVING POWER

Test-Object Contrast: 1.6:1 50 lines per mm
 Test-Object Contrast: 1000:1 100 lines per mm

18 CHARACTERISTIC CURVES

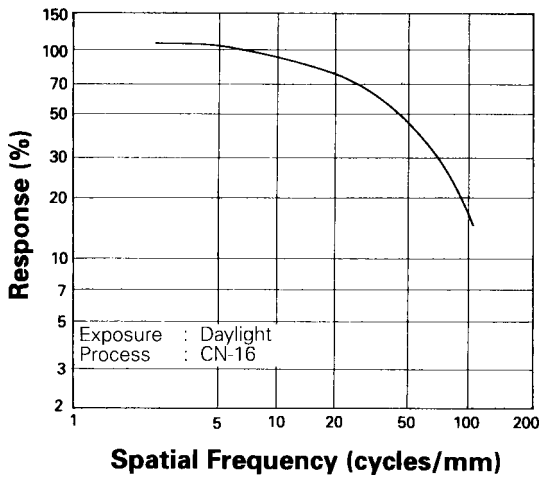


19 SPECTRAL SENSITIVITY CURVES

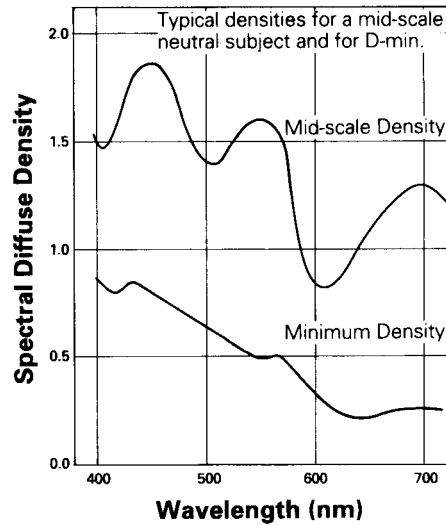


* Sensitivity equals the reciprocal of exposure (ergs/cm²) required to produce a specified density.

20 MTF CURVE



21 SPECTRAL DYE DENSITY CURVES



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 FUJIFILM products. Further, FUJIFILM is in a constant process of upgrading quality which may result in data changes.