

FUJICHROME DUPLICATING FILM CDU TYPE II [CDU II]

1 FEATURES AND USES

FUJICHROME DUPLICATING FILM CDU TYPE II is a coupler-incorporated color reversal film for duplicating transparencies. Embodying Fujifilm's state-of-the-art emulsion technologies, this material can be used with tungsten light sources to produce unsurpassed quality duplicates of color transparencies that are accurate and faithful to the original in color and tone, even in second- and third-generation duplications.

Features	Results
<ul style="list-style-type: none"> Faithful tone reproduction to originals 	<ul style="list-style-type: none"> Accurate tone reproduction of the original from highlights to deep shadows. Retains whiter whites and details in highlights/shadows. Excellent grays from highlights to shadows.
<ul style="list-style-type: none"> Accurate color reproduction to originals 	<ul style="list-style-type: none"> Extremely precise and faithful reproduction of skin tones, warm tone colors like browns as well as primary reds, greens and blues without exaggeration.
<ul style="list-style-type: none"> Consistent, high-quality duplications from single and standardized exposure pack printing 	<ul style="list-style-type: none"> No need to utilize exposure compensation techniques to reproduce duplicates faithful to original's density and color.
<ul style="list-style-type: none"> Applicable to a wide variety of originals 	<ul style="list-style-type: none"> Easy to produce optimal quality duplications from all types of originals including coupler-incorporated or coupler-in-developer type transparencies and print films.
<ul style="list-style-type: none"> Excellent quality in second- and third-generation duplications 	<ul style="list-style-type: none"> Holds original color and tone even after second- and third-generation duplications.
<ul style="list-style-type: none"> Suitable for E-6/CR-56 processing 	<ul style="list-style-type: none"> Can be processed in standard E-6 and CR-56 processing and even when processed with ordinary reversal films, quality remains consistently high. Additionally, there is no negative effect on the chemistry.

Besides that, reciprocity characteristics, aging characteristics, treatment and production consistency are equivalent to those of the current CDU product.

2 FILM SIZES, EMULSION NUMBER, BASE MATERIAL AND THICKNESS

	Size	Winding	Emulsion Number
Rolls	35 mm*	30.5 m (100 ft) 122 m (400 ft) 305 m (1000 ft)	Core
	70 mm*	30.5 m (100 ft)	Spool
Sheets	4 × 5 in.	25 sheets × 2 logs	# 301~
	8 × 10 in.	25 sheets × 2 logs	
	11 × 14 in.	25 sheets × 1 log	
	16 × 20 in.	25 sheets × 1 log	
	30 × 40 in.	25 sheets × 1 log	

* Perforated along both edges. See 12 for perforation configurations. Certain sizes are not available in some countries or areas.

Base Material Cellulose Triacetate
 Base Thickness Rolls; 127 μm
 Sheets; 195 μm

3 EXPOSURE

Light Source

Color balanced for tungsten and halogen lamps. Quality results are also produced with continuous spectrum light sources and electronic flash.

Line spectrum light sources such as fluorescent and mercury vapor lamps are not recommended for the production of duplicate transparencies.

Exposure Equipment

Use exposure equipment such as color enlargers, contact printers and camera-based duplicating equipment; the latter especially for reflection print duplication. Also TTL camera duplication is possible.

Exposure Times

Designed to minimize reciprocity failure, high quality results are obtained within the recommended exposure range of 1/1000 to 20 seconds.

Filters

To improve color reproduction, use an ultraviolet absorbing filter in addition to color correction filters with

the exposure equipment. Use an infrared absorbing filter and a diffuser, or neutral density filters as required. Place filters between the light source and original film.

4 FILM HANDLING

- Expose film before the expiration date indicated on the film package and process promptly after exposure.
- Handle film in total darkness. (The use of a safe-light will cause fogging.)

5 FILM STORAGE

Unprocessed Film

- Storing exposed or unexposed film under high temperature and humidity will cause adverse speed, contrast, color and physical changes. 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 Supplies, newly manufactured furniture, paints and bonding agents may produce noxious gases. Do not store film, lighttight boxes with film, loaded cameras or film holders under these conditions.
- Before use, allow films to stand in room temperature; over 3 hours for refrigerated film, and over 6 hours for frozen film. Further, long windings such as 400 or 1,000 feet will require more time. Opening container while film is cold may cause harmful condensation.

Processed Film

Light, high temperature and humidity will cause fading and staining. Therefore, put processed film in mounts or sleeves and store in dark, dry, cool and well ventilated places under the following conditions.

Below 25°C (77°F) at 30 to 60% RH

For extended Long-term Storage:

Below 10°C (50°F) at 30 to 50% RH

6 PROCESSING

Process in standard E-6, CR-56 or equivalent chemicals.

7 VIEWING LIGHT SOURCES

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

* 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, and average brightness of 1400cd/m² ± 300 cd/m², 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.

8 SHEET FILM DIMENSIONAL STABILITY, AND FLATNESS

Sufficient dimensional stability and flatness allows use in color separation and photocomposition work.

9 RETOUCHING *

Bleaching

- Regular reducers for bleaching may be used but permanganate and sulfuric acid, followed by perchloric acid are recommended for overall bleaching.
- For selective bleaches, sodium hydrosulfite and sodium acetate for cyan, perchloric acid for magenta and sodium hypochlorite and acetic acid for yellow are recommended.
- Bleaching efficiencies differ with film type, reducer concentration, component ratio, temperature and time as well as duplicating film color balance.
- When using the E-6 reducer, the following improvements have been made in comparison with the current CDU product.
 1. More neutral (less magenta) in total bleaching
 2. Preferable yellow/magenta balance during red bleaching
 3. More effective cyan bleaching

Dye Application

- Commercial retouching dyes may produce printmaking or color separation problems when transparency-to-dye spectral absorption characteristics are different.
- The use of E-6 Retouching Dyes (yellow, magenta and cyan) with FUJICHROME Professional Films is recommended. Dye permeation into the film base coating is accelerated with 0.5 to 1.0% acetic acid in water, or Photo Flo solutions. For optimal results, preliminary testing is recommended.
- Brush stroke on the base coating has become smoother.

10 FILM SPLICING *

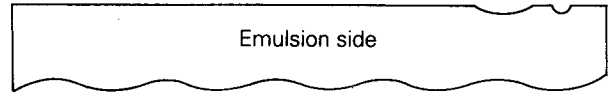
Acetone is suitable for splicing but stronger cohesion results from a 50 : 50 mixture of methyl formate (HCOOCH₃) and methyl acetate (CH₃COOCH₃) used as a solvent.

*** Warning**

- Retouching should be carried out in a well ventilated environment.
- Be especially careful that solutions do not come into contact with skin or get into the eyes.
- Should solutions get into the eyes, wash gently in running water for at least 15 minutes and seek medical attention. Further, for contact with skin, fully flush the contaminated area with plenty of running water.
- When preparing chemicals which are injurious to health if brought into bodily contact, be sure to wear protective clothing and devices such as gloves, goggles and an apron.

11 SHEET FILM CODE NOTCHING

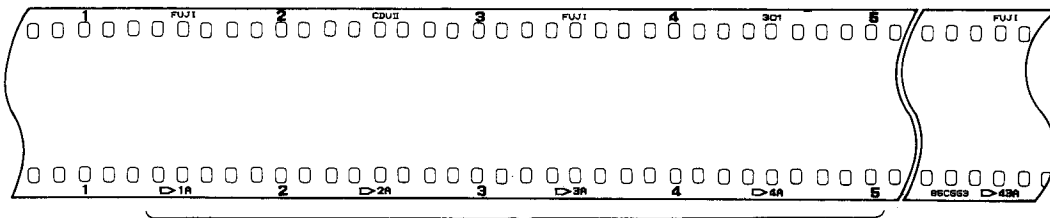
A notch code to identify this emulsion type is located in the upper right-hand corner when the emulsion surface is facing toward you.



12 PROCESSED FILM EDGE MARKINGS

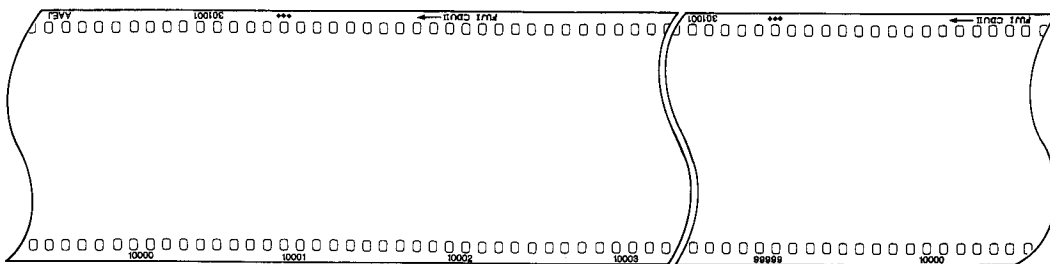
<Rolls>

- 35 mm Roll Film



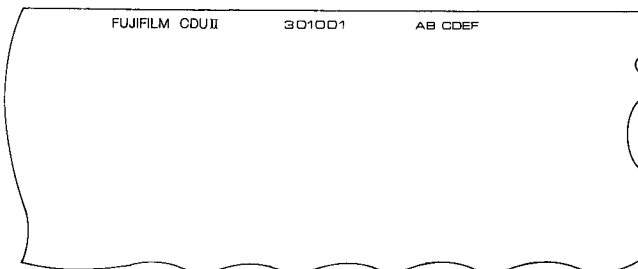
These designations are repeated along the film edge.

- 70 mm Roll Film



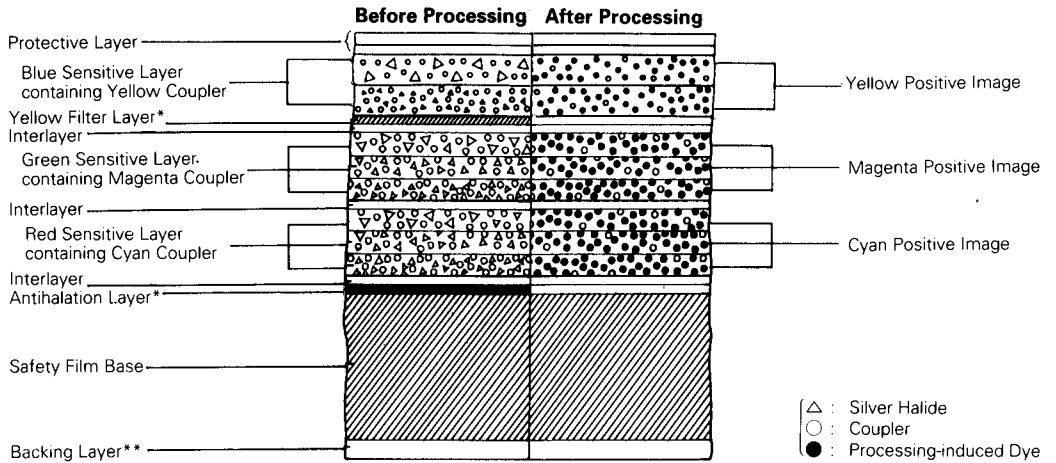
<Sheets>

- 4 x 5 in.



* In all cases the emulsion is on the opposite side.

13 FILM STRUCTURE



* These layers become colorless and transparent after processing.

** The backing layer is not provided with roll film, 35 mm size and 70 mm size film.

14 DIFFUSE RMS GRANULARITY VALUE 9

Micro-Densitometer Measurement Aperture: 48 μm in diameter

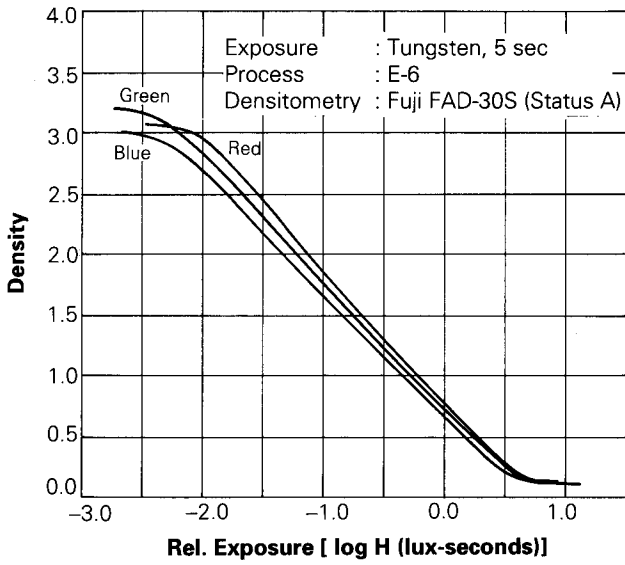
Sample Density: 1.0 above minimum density

15 RESOLVING POWER

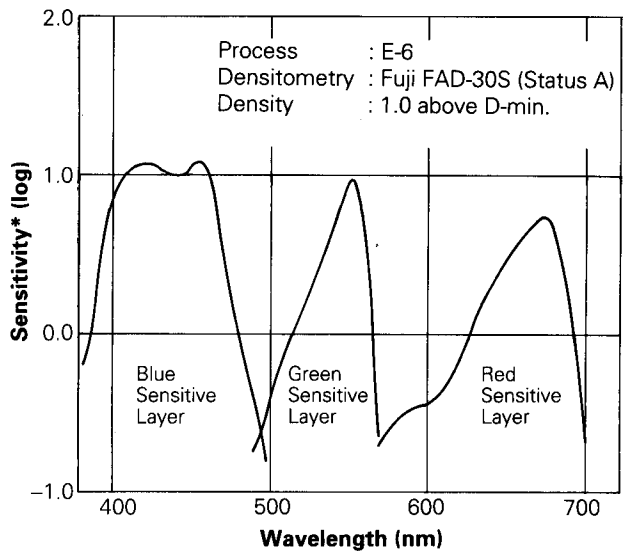
Chart Contrast 1.6 : 1 **63** lines/mm

Chart Contrast 1000 : 1 **125** lines/mm

16 CHARACTERISTIC CURVES

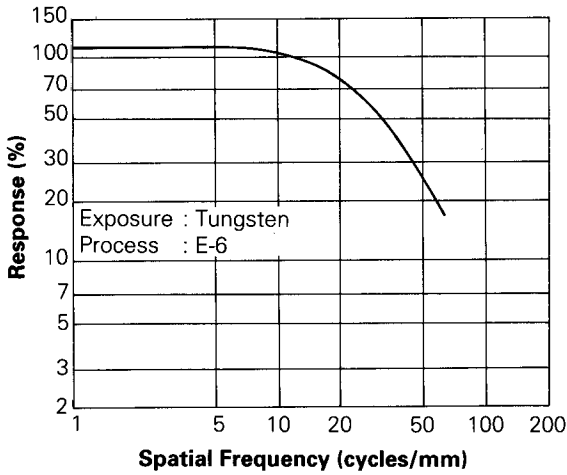


17 SPECTRAL SENSITIVITY CURVES

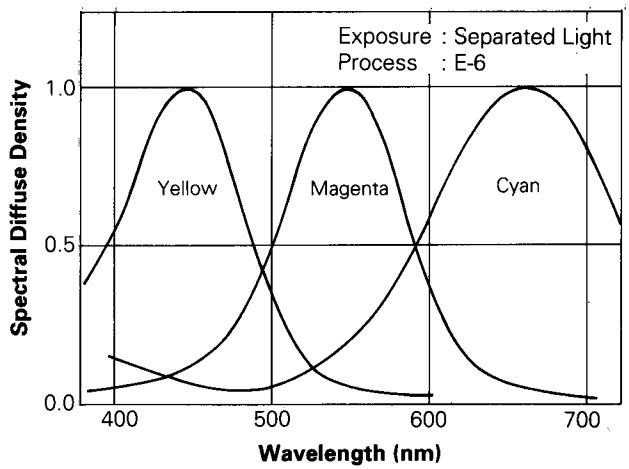


* Sensitivity equals the reciprocal of the exposure (erg/cm²) required to produce a specified density.

13 MTF CURVE



19 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.



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