

# Product Information Bulletin

## Fujicolor Crystal Archive Digital Pearl Paper



### 1. Features and uses

FUJICOLOR CRYSTAL ARCHIVE DIGITAL PEARL PAPER is a silver halide color paper designed exclusively for digital output and a pearl-like appearance, thicker base and high stiffness. When used in conjunction with medium or large scale digital printer systems or the FUJI DIGITAL MINILAB FRONTIER, this paper yields high image quality digital prints that make it suitable for such professional uses as portrait, fashion or commercial photography.

#### Features

- |   |   |
|---|---|
| • High gloss combined with Pearl effect | The embedded pearl-like crystals gives a high gloss reflectance, especially in the highlights. Pearl effect is visible because of scattering and interference of light waves at the crystal |
| • High D-max                            | Boasts a wide tonal range, producing high image quality prints with a rich textural quality   |
| • Purer Whiteness                       | Clearer, more distinct print images and sharper text quality  |
| • Vibrant Color Reproduction            | Expanded color reproduction range with high color saturation, ideally suited to commercial use  |
| • Excellent Latent Image Stability      | Stable production of more uniform high-quality prints for greater productivity  |
| • Excellent Image Stability             | Highest level of image stability ideal for display purposes   |

### 2. Safelight

Handle in total darkness. If safelight use is unavoidable, observe the following precautions.

- Expose paper no longer than 1 minute to light emitted through two Fuji Safelight Filter No. 103A (or Wratten Safelight Filter No. 13) in a 10 watt tungsten lamp safelight located at least 1 meter from the work area
- Safelight filters fade with extended use and need regular checking. Replace when paper fogging is detected.
- Exposed paper is susceptible to safelight-induced sensitivity increases in the exposed area. For this reason, exposed paper should be subjected as little as possible to safelight illumination.

### 3. Pre-processing paper handling / storage

The higher the temperature and humidity, the more paper, whether unused, unexposed or exposed, is susceptible to adverse changes in speed, color balance, physical characteristics and other properties. Unprocessed paper is best stored at low temperatures. Specifically, the following conditions should be used for paper storage.

- Short term storage: Store in a cool and dark location, away from direct sunlight, high temperature and high humidity
- Long term storage: Below 10°C (50°F)

Raw paper which has been stored at a low temperature (by refrigeration) should be set aside and allowed to warm to room temperature prior to being opened. If the paper is taken out of its packaging immediately after being removed from refrigerated storage, condensation will form on the paper surfaces, resulting in print color changes and easily damaged surfaces.

The shortest periods required to return freezer or refrigerator stored paper to room temperature (minimum temperature equalization periods) are as follows.

## 20°C (68°F) Temperature Equalization Periods

Unit: hours

Paper Size \ Storage Temperature	-20°C (-4°F)	0°C (32°F)	10°C (50°F)
127cm x 50 m (50 in. x 164 ft.)	12	10	7

### NOTES

- Do not heat paper in order to equalize temperatures.
- Remove paper from refrigeration one day before use.

If exposed paper remains unprocessed for extended periods of time under normal room conditions or is subjected to high temperature and/or high humidity, changes in the color balance and other properties may occur.

The time between exposure and development should be fixed in order to obtain consistent quality. Avoid waiting until the next day to develop the exposed paper. Rather than holding the paper for processing the next day, initiate processing as soon as possible.

## 4. Processing

This paper is designed for use with Fujicolor Paper Process, CP48S and CP49E or RA-4 type processes.

Combining this paper with Fujifilm chemicals results in many advantages including faster processing, greater processing stability, reduced contamination hazards, greater ease in solution preparation and higher print quality

## 5. Control strips

Processing control can be provided through the use of FUJICOLOR CRYSTAL ARCHIVE PAPER Control Strips Process CP-40FA/43FA/47L/48S/49E.

## 6. Post-processing print handling / storage

Since prints are usually used for the long-term recording of images, as much effort as possible is made to use materials that exhibit the least amount of change overtime. The effects of high force during folding, light, heat, oxygen in the air, contaminating gases, humidity and mold cannot be completely avoided. It is advised to use low forces during assembling the album. Also the change in the photographic image or base material are minimized by maintaining the appropriate storage conditions for prints, such as those used by museums and art galleries. Temperature and humidity control is the most important key to minimizing the change that occurs in prints. Prints stored in the dark under the following conditions may be expected to show almost no change over time.

Storage period with almost no change	Temperature	Relative Humidity
More than 20 years	Below 10°C (50°F)	30% — 50%
10 — 20 years	Below 25°C (77°F)	30% — 50%

### Notes on Prints Storage

- Prints should be inserted into albums, mounted, or placed into a bag (plastic\*) for photographic prints before being stored.

\*Made of polyester, polystyrene or polypropylene plastic, etc

- Even during normal storage, it is recommended that prints be stored at a place as free as possible from hot and humid conditions, and away from direct illumination. The following are examples of undesirable storage conditions.

- Storage in a room closet facing a wall exposed to cold outside air (which may cause condensation).
- Storage in a place near the ceiling, such as an attic, the top of a closet or cupboard (where high temperatures may occur).

- Storing prints with their front surfaces facing each other may result in unexpected problems. If the adjacent print placement is unavoidable, it is necessary to keep the surface separated by, for example, the use of interleaving sheets of paper.

## 7. Light sources for viewing

When inspecting finished color prints, it is essential that an illumination source must be used that has superior spectral characteristics, adequately high color temperature and sufficient brightness. This is because results can appear different, depending on light quality. For precise results, prints should be examined under the conditions designated by ISO 3664-2009. As a general guide, the following conditions are recommended.

Color Temperature : 5000 ± 300 K  
 Average Illumination : 500 Lux or more  
 General Color Rendering Index: Ra 90 or more\*

\* To attain these values, special fluorescent lamps designed for color evaluation (e.g. EDL type) should be used.

When inspecting finished prints, be careful to shut out all external light and colored reflected light.

## 8. Mounting and lamination

In order to maintain the high quality Pearl and gloss effect we advise to mounting FUJICOLOR CRYSTAL ARCHIVE DIGITAL PEARL PAPER only on very smooth carrier. Also we do not advise using lamination. If due to exhibition circumstances lamination is necessary, a high gloss lamination is best when you want to maintain the level of reflectance. However special sparkling effects are possible when using matte lamination or front side mounting of acrylic. Please consult your mounting and lamination specialist for best results.

## 9. Paper surface available

FUJICOLOR CRYSTAL ARCHIVE DIGITAL PEARL PAPER is only available in Glossy surface.

## 10. Backprinting

FUJICOLOR CRYSTAL ARCHIVE DIGITAL PEARL PAPER is only available without backprinting

## 11. Sizes available

		Box packaging		
		50 m (164 ft)	75 m (246 ft)	150 m (492 ft)
Width	Length			
	10.2 cm (4 in.)			■
	12.7 cm (5 in.)			■
	15.2 cm (6 in.)			■
	20.3 cm (8 in.)		■	■
	25.4 cm (10 in.)		■	■
	30.5 cm (12 in.)		■	
	40.6 cm (16.9 in.)		■	
	50.8 cm (20 in.)		■	
	61.0 cm (24 in.) OUT	■		
	76.2 cm (30 in.) IN	■		
	76.2 cm (30 in.) OUT	■		
127.0 cm (50 in.)	■			

## 12. Markings (Box/Emulsion numbers)

### 12.1 Box markings



“+” indication means that at least 1 spliced baby roll is packed

### 12.2 Bag labelling



“+” indication means that a splice is present in the baby roll.

## 12.3 Emulsion numbers

Emulsion numbering will be in ascending order from Fyx-xxx at introduction.

Note: FUJICOLOR paper is marked with a three digit emulsion number followed by an additional three digit roll number.

Should any problem arise with FUJICOLOR CRYSTAL ARCHIVE DIGITAL PEARL PAPER, the additional three digit number suffix to the emulsion number should be indicated on the claim.

## 13. Technologies incorporated in this paper

### 13.1 Fujifilm Pearl Technology

This photographic paper contains a very special type of pigment: pearl mica pigments. Based on the natural mica, they are covered with a thin layer of metal oxides for example titanium dioxide. Through an interplay of transparency, reflection, coating and multiple reflectance effects you will see silver white and metallic reflectance effects. This will lend your pictures a new warmth and depth. The Fujifilm Pearl Technology does not affect the physical properties like paper cutting.

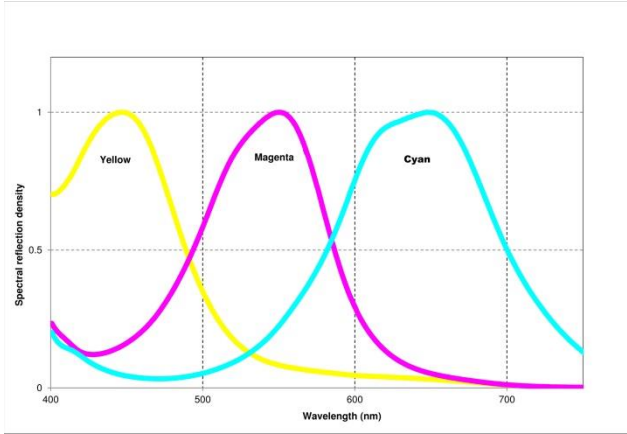
### 13.2 X-Coupler Technology

Through the incorporation of a cyan coupler (X-Coupler Technology), which features a molecular structure developed by Fujifilm's proprietary technologies, this paper is capable of reproducing the subtle shades of green and of forming colors of high purity, such as vibrant blues and reds.

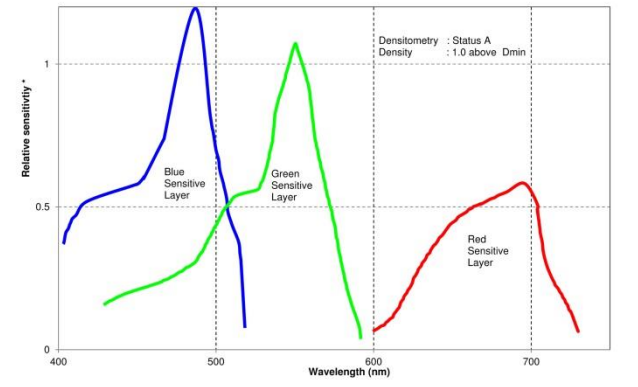
### 13.3 NLS (New Low Stain Spectral Sensitizer) Technology and ARR (Advanced Resistance-to-Radiation) Technology

FUJICOLOR CRYSTAL ARCHIVE DIGITAL PEARL PAPER has not only WE (White Enhancing) Technology but also incorporated NLS Technology, which is Fujifilm's LSS Technology taken to a higher level. The results are more brilliant, purer whites and clearer and more distinct highlights. In addition, ARR Technology, an advance over the previous RR Technology, has been incorporated to suppress color paper fogging caused by ambient radiation, enhancing the maintenance of white purity in unexposed color paper.

## 14. Spectral sensitivity curves

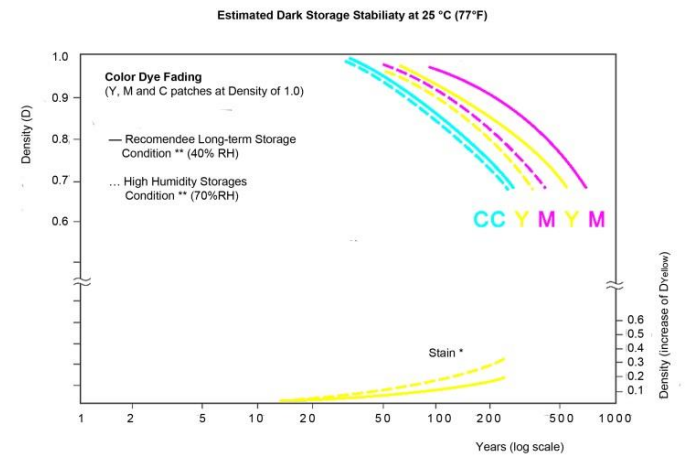
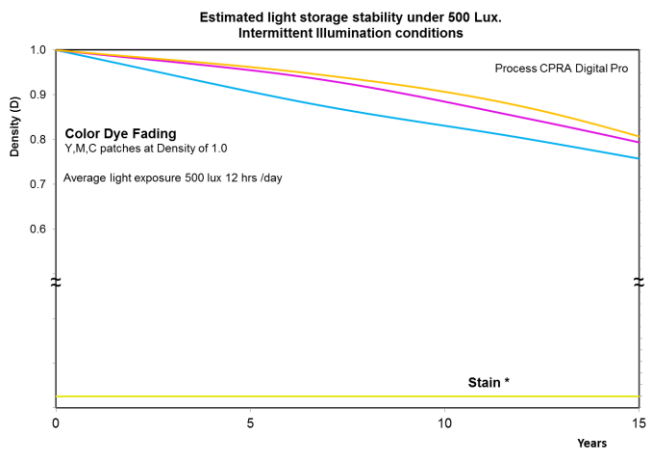


## 15. Spectral dye density curves



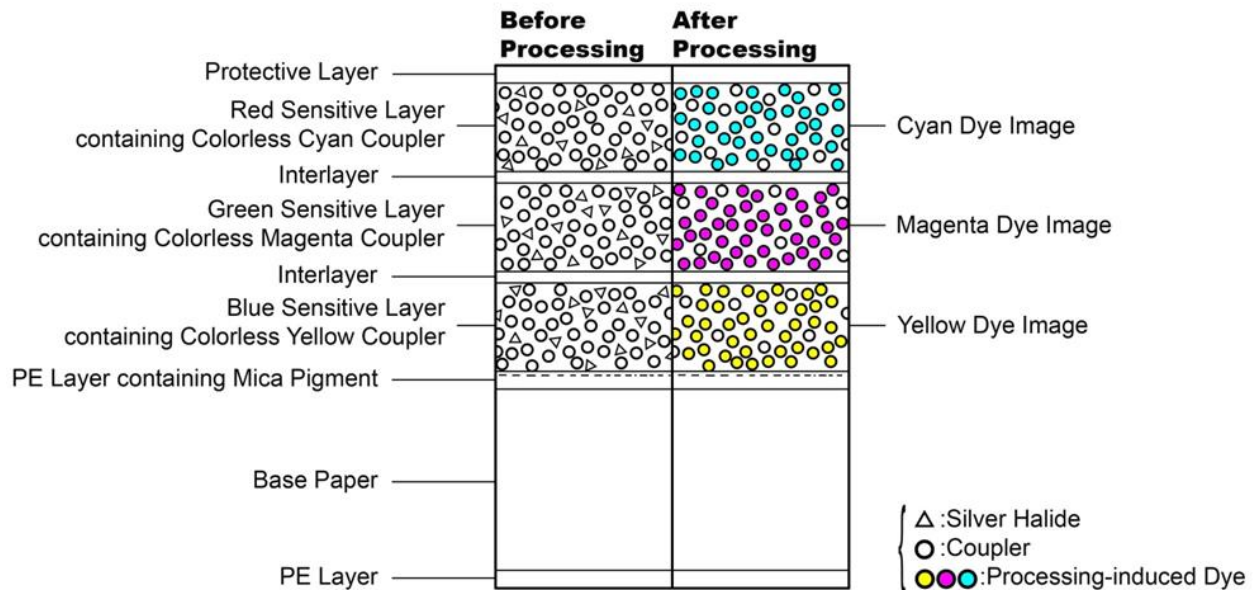
\* Sensitivity equals the reciprocal of the exposure (J/cm<sup>2</sup>) required to produce a specified density

## 16. Image storage characteristics



- \* Time induced white background staining (yellowing) is as important as dye image fading in affecting image quality.
- \*\* In regard to color image dark storage stability, the level of humidity is just as important as temperature. For this reason, more accurate evaluations can be made by using the two humidity standards; One for high humidity storage conditions (70% RH) and the recommended condition for long term storage (40% RH).

## 17. Paper structure



## 18. Calibration data

### Fuji Crystal Archive Digital Pearl Paper

Equipment		Latest Software	Calibration data				
Brand	Name		LUT + Target density RGB	Basic calibration ymcd	Intermittance rgb	Thickness	
			Pearl				
Frontier	3 series	Installer R	LUT A + Glossy	n.a.	n.a.	n.a.	
	5 series	Installer R	LUT A + Glossy				
	7 series	V 4.01	LUT A-1 + Glossy				
Noritsu	QSS 28x ~ LP24Pro	Vol.2 7.20	165	n.a.	n.a.	n.a.	
	35xx, 37xx	Vol.3 N4.54					
Agfa	DLab 1, 2, 3		2.35 / 2.35 / 2.25	1.30 / 1.22 / 1.24	n.a.	n.a.	
KIS	DKS 15x, 16x, 17x		Printer defines own and highest possible Dmax settings (exposure vs chemistry relation)				
ISAG	Fastprint		2.35 / 2.35 / 2.25	n.a.	n.a.	0.27	
	Wideprint 8", 12"		165			n.a.	n.a.
	Wideprint R2R						
ZBE Chromira	SE, Pro Lab, R2R		2.35 / 2.35 / 2.25	n.a.	n.a.	n.a.	
Polieletronica	Laserlab 50/76/127		Printer defines own and highest possible Dmax settings (exposure vs chemistry relation)				
Durst	Epsilon		2.35 / 2.35 / 2.25	0.004 / 0.056 / 0.000 / 0.920	90 / 50 / 37	n.a.	
	Zeta			170.2 / 112.0 / 0.00 / 104.3	101 / 56 / 42		
	Theta 50/51						
	Theta 76/76HS						
	Lambda						124.0 / 95.8 / 0.00 / 129.0
OCE Lightjet	430 / 500XL / 5000		Media target can be downloaded from the Fujifilm Europe .eu website				

All recommended Dmax values can only be reached when using high active chemistry equal to Fujifilm CPRA Digital Pro AC and Fujifilm ADM chemistry  
For competitive and recycling chemistry the Dmax should be reduced with -0.10 density

Media target and ICC Profile location: <https://www.fujifilm.eu/eu/support/photofinishing/color-management>

**For a correct monotone (BW and Sepia) print quality the advice is to calibrate each emulsion-roll number.**

## 19. Use with Frontier

Please refer to the following calibration data as a general guide when using FUJICOLOR CRYSTAL ARCHIVE DIGITAL PEARL PAPER on a digital printer.

All Frontiers requires a dedicated LUT when printing. It is necessary to adjust for the paper type for each paper magazine by changing the paper "Type" specification in the "Paper Magazine Registration" menu.

### Registration and Setup of the Paper Type specification on Paper Magazine for Frontier 330/350/370/390 series.

- Log in to the < 4 Setup and Maintenance > menu with < SE2 > for the user name and password of < 7777 >.
- Select < 5 Printer Adjustment / Maintenance >, < 1 Paper Magazine Registration > (Menu 451) and change the type to "**A, Glossy**" as shown in the table below.

Paper	Type
Crystal Archive Digital Pearl Paper	A

- Select < 2 Print Condition Setup and Check >, < 1 Paper condition Setup > (menu 421) and perform a paper condition setup for all magazines for which the paper type is changed.

It is important to click the "initialize" button to initialize the settings before making the paper condition setup. After initialization the first

paper condition setups will deviate by a great degree, but this will be balanced after the second or third attempt

(Please note that clicking on the "initialize" button will not be possible if you do not login with a user name or lab administrator account or higher).

### Registration and Setup of the Paper Type specification on Paper Magazine for Frontier 340/355/375/550/570/590 series.

- Log in to the < 4 Setup and Maintenance > menu with < SE2 > for the user name and password of < 7777 >.
- Select the < Adjustment / Maintenance >, < 02 Print Condition Setup and Check >, < 0221 Paper Magazine Registration >. Change the paper type to "**A, Glossy**" as shown in the table below.

Paper	Type
Crystal Archive Digital Pearl Paper	A

- Click the < Setup and Maintenance >, < 02 Print condition Setup and Check >, < 0200 Paper Condition Setup > and perform a paper condition setup for all magazines for which the paper type is changed.

It is important to click the "initialize" button to initialize the settings before making the paper condition setup. After initialization the first

paper condition setups will deviate by a great degree, but this will be balanced after the second or third attempt.

(Please note that clicking the "initialize" button will not be possible if you do not log in with a user name of lab administrator or higher)

### Registration and Setup of the Paper Type specification on Paper Magazine for Frontier 700 series

1. On the Maintenance Application display, click the [maintenance] to access the Maintenance display. Click [Extension] – [Setup] – [Laser Setup] – [Paper Specification Registration/Setup].
2. Select the paper type "A-1" as shown in table below:

Paper	Type	Surface
Crystal Archive Digital Pearl Paper	A-1	Glossy

Follow the instructions on the Paper Specification registration / set up. Make the test prints and register the measurement results.

## 20. Technical Support

In case abnormalities are found when using this FUJICOLOR CRYSTAL ARCHIVE DIGITAL PEARL PAPER please contact your local Fujifilm subsidiary and/or distributor.

Relevant Fujifilm subsidiary and/or distributor contact information can be found on the following internet address: <http://www.fujifilm.com/worldwide/>

Notice: The data herein published were derived from materials taken from general production runs. However changes in specification may occur without notice

**FUJIFILM**

FUJIFILM Europe B.V.  
PO box 600  
5000 AP Tilburg  
The Netherlands

©Technical Market Support  
November 2018

Document nr: AF3-220E2