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ORIGINAL PHOTO CHEMICALS FUJIFILM

TECHNICAL BULLETIN

MINILAB CHEMICAL GUIDE

Minilab Processing

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Technical docs available on FUJIFILM websites :

- FUJIFILM Europe\Photochemicals : PL Product lists & TB technical bulletins
- FUJIFILM Belgium ESCLUSIVO : distributor web site for PL Product lists & TB technical bulletins, PIS Product Information Sheets, TIS Technical Information Sheets, SG Sales Guides, OASIS process control, …
- originalphotopaper.com/products/photochemicals/

Your local FUJIFILM representative can give technical advice if required.

I. INTRODUCTION

It goes without saying that if a minilab is to fully meet its client's demands, particular attention must be paid to the quality of photographic results.

The correct use and accurate management of chemicals are the most important factors in determining a quality result.

The use of FUJIFILM or Fuji Hunt chemicals will not only result in optimum photographic quality, but will also reap economic, practical and environmental benefits.

Fuji Hunt minilab chemicals allow for odour-free processing. In those products which carry the Air control logo, FUJIFILM replaced the unpleasant smelling components by odour free ones. Additionally the characters 'AC' have been added in the product name. In other formulas where the smelly substances were not replaced, a chemical masking agent (melon fragrance) has been introduced.

The purpose of this **Minilab Chemical Guide** is to provide essential information for minilab sales staff, engineers and minilab operators, and to illustrate the properties of FUJIFILM and Fuji Hunt chemicals, thus providing a sound basis for good laboratory management. Its aim is to explain in the simplest terms, all that is involved in the chemical management of a minilab.

For ease, the Guide is divided into this Introduction and 7 sections:

- Chemical Characteristics
- Control and Management of Processing Chemicals
- Process Options
- Mixing Instructions
- Safe handling of Processing Chemicals
- Glossary
- Product Listings

II. CHEMICAL CHARACTERISTICS

1. CHEMICAL CHARACTERISTICS

Every chemical bath has a precise function regarding the final image on the paper or on the negative. A constant quality level of the actual processing solutions will prevent, in most cases, problems originating from these chemical solutions. It is therefore necessary, before making changes to a processing solution, to verify the proper functioning of the processor (time, temperature, speed, etc.) thus avoiding unnecessary corrections. Being aware of the reactions that take place in a chemical solution can contribute to troubleshooting of possible processing problems.

Developer

The developer reacts with the silver salts in the emulsion of the film or paper. At the same time the developer combines with couplers and produces colour dyes. A black and white (silver) image and a colour image are formed. The black and white image will be removed in the bleach-fix (for the paper process), or in the bleach and the fix (for the negative process).

The quantity of dyes produced is proportional to the activity of the developer, which depends of the time, temperature, agitation, replenishment rate and concentration. When the developer is overactive, the quantity of dyes produced will be greater and thus the image will be darker.

The developer activity also has an influence on the final colours of the print or on the negative. When the developer is under-active you will end up with lighter prints having colour deviations in the black parts, or lighter films appearing underexposed.

Bleach

The bleach, used for the negative process C41, reacts with the metallic silver formed during development and converts it into soluble silver salts. In addition, the bleach also stops the development and avoids fogging.

Fixer

The function of the fixer is to remove the silver salts converted in the bleach.

Bleach-Fix

The bleach-fix, used for the paper process, has three fundamental functions: stopping the development, converting the black and white image back to soluble silver salts, and then removing them from the emulsion.

Super Stabilizer

The Super Stabilizer removes the residues of the chemicals used for negative and paper processing, thus ensuring long term keeping properties

2. CHOOSING THE CHEMICAL PRODUCTS

Selecting the appropriate chemical products for a minilab is the first step in optimising the quality of the photographic results. The right choice also results in an economic advantage allowing the minilab to remain more competitive.

The factors that have to be taken into account when choosing the most appropriate products include the manufacturer of the minilab equipment, the design and the size of the tanks and the workload in terms of number of films and square meters of paper.

A. The Negative Process

The minilabs now on the market can be distinguished according to the process type used for the negative film treatment. FUJIFILM minilabs will use CN16Q, CN16L or CN16S/CN16S ER chemicals. On other makes of machine the most common process types are C41 BNP and C41 RANP. The standard C41 process can still be found on older minilabs.

The differences between the C41 BNP and the C41 RANP process types are determined by the time: the first one takes up to 16 minutes, while the latter takes about 9 minutes from introduction of the film into the processor (including the entrance and drying time). The time saving is a result of much shorter bleach and fixer times.

Developer

A LR (low replenishment) developer is suitable for high throughput minilabs. Smaller units or those with lower throughput will benefit from using a standard replenishment rate (41 mL per film) developer.

Many minilabs that have traditionally used LR and standard developers may need to think about switching to **EnviroNeg Developer 60 AC** (60 mL/film) as film volumes continue to decrease – this new developer can be used with all non-Fuji processors, and also in all Fuji FP minilabs (except those using CN-16S chemistry) in place of existing Fuji CN-16 chemistry. If in doubt, please discuss with your FUJIFILM representative.

For FUJI CN16 Minilabs we have low volume cartridge chemistry CN16S ER available (to install the new replenishment rates, a software update of the film processor is necessary).

Bleach and Fix

The choice of the bleach and the fix depends on the different process types, their processing times and production volumes.

Stabilizer / Rinse

FUJIFILM minilabs use a separate rinse bath (NS or NQS), made with FHRSS water with a conditioner tablet, followed by a stabilizer (N4 safer). Most other minilabs use a single or mono-bath (MB) tank and require a combined rinse and stabilizer, commonly known as a Super Stabilizer.

B. The Paper Process

The choice of the chemical products for the paper process depends on the relationship between the size of the processor tanks and the paper throughput. As the paper process represents the major part of the chemical usage for the minilab, the choice of the most appropriate products must be taken from the point of view of minimising waste generation.

Developer

Replenishment rates can vary from as low as 45mL per square meter up to 160 mL. It is essential to choose the right developer for the equipment and throughput. It is important to ensure that the temperature and replenishment rates are set correctly as CPRA developers operate at 35°C and EnviroPrint at a temperature between 38°C and 40°C, depending on the type of process.

Bleach-Fix

Bleach-Fix Replenisher with a standard replenishment rate is the best solution for minilabs with normal to low throughput. As with the developers, a range of bleach-fix products is available, with replenishment rates varying from 35 to 215 mL/m².

Super Stabilizer

Either FHRSS water with a conditioner tablet or a regular Super Stabilizer can be used to rinse the paper. FUJIFILM minilabs must use FHRSS if the auto-evaporation compensation feature is used. Regular Super Stabilizer will contaminate the developer if used to replace evaporation loss.

III. CONTROL AND MANAGEMENT OF PROCESSING CHEMICALS

1. FACTORS AFFECTING PROCESS CONTROL

A. Processing Temperature

The processing temperature greatly affects photographic characteristics. The temperature of the colour developer is particularly crucial. To maintain correct processing temperature, observe the following precautions:

Solution Temperature Settings

When first installing processing equipment or when replacing control circuit boards, be sure to input the correct processing solution temperatures.

Temperature Calibration

If you do not use an accurate thermometer to calibrate the electrical signals generated by the sensor that maintains the solution temperature, the actual temperature of the solution may not be correct even if the temperature settings appear to be correct.

B. Circulation

Inadequate circulation will cause temperature variations in the processing tank temperatures and also agitation effects, both of which will adversely affect photographic characteristics. To prevent this, do the following maintenance checks :

Circulation Filter

If the circulation filters clog, the circulation throughout is reduced and image contrast is lowered. To prevent this, replace the circulation filters once a month.

Circulation Pump

Since circulation failure is conceivable due to a malfunction or wears in the circulation pumps or an electrical short in the circulation pump circuit, it is important to visually verify that circulation is continuing.

C. Replenishment

The replenishment of processing solutions restores chemical concentration levels that have been consumed and/or exhausted during processing. The replenishment volume is set as a proportional amount (prescribed volume) which is added to particular processing solution. If the actual volume of replenisher added does not meet the prescribed volume, the processing capacity will be altered and the finished product quality will be affected. To prevent this, particular care should be paid to the following points :

Replenishment Settings

The replenishment rate settings must be entered correctly.

Replenisher Filter

If the replenisher filter clogs, the flow of the prescribed amount of replenisher will be impeded, resulting in lowered image sensitivity and contrast. To prevent this, clean or replace the replenisher filter once a month.

Replenishment Volume Check

Since the volume of replenisher provided by the replenisher pump changes according to the pump performance, replenisher flow rates should be checked once a month.

2. MANAGEMENT OF PROCESSING SOLUTIONS

A. Mixing processing solutions

If no mistakes have been made in the proper dilution of chemical components, then the pH and specific gravity values of the solutions should be within limits. If the pH and density of prepared processing solutions are not within these limits, the solutions cannot be used.

B. Evaporation Compensation

The working solutions in the processor have to be maintained at a relatively high temperature for the major part of the day. When no photographic materials are processed and therefore no fresh replenisher is added to the tank, the water in the solution tends to evaporate, while the chemicals stay in the solution. In addition, evaporation will continue even when the processor is shut down.

C. FUJIFILM Minilabs

The FUJIFILM Minilab processors have the ability to automatically replace water lost from the processing tanks through evaporation. This function automatically calculates the level of solution concentration caused by water evaporation and adds an appropriate amount of water to compensate for it, thereby maintaining uniform processing performance.

The water addition volume is set at the factory and basically needs no modification. If, however, the solution becomes more concentrated or diluted, follow the procedure outlined in the service manual to check and change the water addition volume setting.

D. Other Minilabs

If the minilab does not have auto evaporation compensation, it is essential each morning to replace any liquid lost as a result of evaporation. To do this refill the tanks with water back to the normal level.

Water should always be used to replace loss due to evaporation. If replenisher is used it will over-concentrate the developer. However, if a loss of level is due to a leak, then tank solution should be used to replace the missing volume. Repair the leak first. If water loss is greater than 3% of the tank volume, check for leaks.

Check solutions at least once during the day and clean top rollers with a water spray. Do not use too much water. Also wash down with a spray at the end of processing.

3. EQUIPMENT CLEANING

Cleaning of the film processor, crossover rack and shaft receptor prevents the build-up of crystals that may cause film abrasions and processing unevenness. These parts should be removed from the processor and cleaned at the end of every production day.

At the solution surface of the developer there can be a build-up of deposit on the tank walls and racks. Products specifically designed for the cleaning of photographic processing tanks should be used to effectively remove these deposits.

IV. PROCESS OPTIONS

1. INTRODUCTION

As already mentioned in the previous section, FUJIFILM and Fuji Hunt are offering a broad product range to satisfy all the needs of the minilab customers.

It will be the task of the operator to select the most appropriate products for his own specific minilab. Whenever it's necessary, FUJIFILM Staff can help in selecting the right products.

The purpose of this section is to provide you with all the necessary information to make the right choice and will specifically refer to the following items for the negative and paper process:

- TIME
- REPLENISHMENT RATE
- AERATION
- AGITATION
- FILTRATION
- DRYING

2. THE FILM PROCESS

A. Processing time

The time includes the immersion of the film and the transfer to the next tank. The times for the bleach, the fixer and the stabilizer are of less importance. It is possible to use longer times for these baths.

B. Replenishment rate

The given replenishment rates are based on a typical mix of negative film and should be considered as a starting point. The rate is given as mL per film (135-24 exposure).

C. Aeration/oxidation of the bleach (when applicable)

In order to maintain its activity, the bleach needs oxygen. It is very important to check the aeration on a regular basis. The air bubbles should be tiny and the intensity of the aeration needs to be limited to prevent excessive foaming. Too low aeration will cause leuco-cyan dye formation as well as silver retention problems, especially when the bleach is too diluted or under-replenished.

D. Filtration

Processing solutions will accumulate gelatine residues or other insoluble compounds coming from the emulsion. When these compounds are not filtered out, they will stick onto the films and build up on the rollers and racks, causing damage.

E. Drying

Keep the drying unit clean to avoid dust formation. When there are filters installed, clean or change them regularly. Do not let the drying temperature rise above 65°C. Films coming out with too much curl is an indication of excessive drying. In this case the drying temperature should be lowered.

3. THE PAPER PROCESS

A. Processing time

The figures given include the immersion time and the time for the transfer to the next tank. The transfer time from one tank to another should be less than 6 seconds.

Development time should be between 20 and 33 seconds for Fast RA4 Processing and 44 and 48 seconds for standard RA4. Longer times for the bleach-fix or the stabilizer don't have any effect on the result. The time for the stabilizer is ~90 seconds, spread over 3 or 4 tanks – less on Fast Processing machines.

B. Replenishment rate

The replenishment rate is given in mL/m². This depends on developer types, throughput and paper type.

C. Agitation

Good agitation is important during the first seconds of immersion of the paper in the developer and in the bleach-fix. When the initial agitation of the developer is insufficient, the resulting image will not be uniform. Poor agitation in the bleach-fix does not stop the action of the developer and typically produces magenta stripes or patches.

This problem can become worse when there is an excessive carry-over of the developer into the bleach-fix. The flow rate of the bleach-fix pump should be at least 0.75 times the tank volume per minute (e.g. when the tanks contain 20 litres, the flow rate of the pump should be at least 15 L/min). For the stabilizer tanks the flow of the circulation pump should be, in one minute, the same as the tank volume (e.g.: if the tank contain 20 litres, the flow rate of the agitation pump should be at least 20 L/min).

D. Filtration

Processing solutions will accumulate gelatine residues and other insoluble compounds coming from the emulsion. When these compounds are not filtered out, they will stick onto the paper and build up on the rollers and racks, causing damage. Use the filters recommended by the manufacturer of the minilab (usually pore size 10 – 30 micron) and replace them regularly.

E. Drying

The temperature in the drying unit should not exceed 75°C.

4. CHOOSING YOUR DEVELOPER

Choosing which developer to use is the most important decision and has a direct effect on the quality of processing and the ease of use and cleanliness of the developer.

The general rule for minilabs is that the developer turnover should not exceed three weeks. This means that you should use a volume of replenisher at least equal to the volume of the tank e.g. if the tank volume is 10 litres you should use at least 10 litres of replenisher within three weeks.

If you do not achieve this, then it is usually better to use a developer with a higher replenishment rate in order to prevent excessive developer oxidation and reduction in print quality.

A. FUJIFILM minilabs

Normally you should use the specific process that is designed for each machine i.e. for negative: CN-16Q, CN-16L or CN-16S or for paper: CP-47,CP-48 or CP-49.

However, if you do have **low throughput** it is better to ensure that you use a high replenishment rate developer. For FP film minilabs this means **changing from CN-16L N1 developer to CN-16Q N1** (don't forget to change the replenishment rate!). This can be done very simply and without retanking – with minimal impact on your minilab operation and great improvement in quality. Where you have exceptionally low throughput you may even want to consider **changing to Fuji Hunt EnviroNeg Developer 60 AC** in place of Fuji CN-16Q. For CN-16S users, a new low throughput chemistry cartridge system – CN-16SER – is available. Please consult your FUJIFILM representative about these low throughout options for your minilab.

B. Other minilabs

The chart on the next page acts as an easy to use calculator for the correct type of developer to use. Simply compare the tank size to the daily throughput (averaged over 3 weeks). It is unlikely that any but the very busiest film processors can now justify running an LR-type developer such as **EnviroNeg Developer LR AC**, and the standard replenishment rate **EnviroNeg Developer AC** should be considered as the normal option. If you have low film volumes – as is frequently the case – you should change to **EnviroNeg Developer 60 AC** from your current product. This will give a much improved film process with higher contrast, lower stain and high quality prints – please see the developer selection chart.

For **Konica, KIS DKS550, 750, 15xx, 16xx and 17xx minilabs**, Fuji Hunt **EnviroPrint FP chemicals** and **EnviroPrint K15 developers** are available. For full details on the DKS chemical system, please see the FUJIFILM Belgium Technical Information Sheet "TIS KIS DKS-15xx conversion". This product line can also be used in the Kodak System 89 DLS Digital Minilab. For the Konica film processors, there is also a Fuji Hunt product range available.

For **Agfaphoto Easy chemicals**, used in **FP.210, D-lab.1 and D-lab.2 minilabs**, FUJIFILM can provide the **ADM Cartridges for paper**. The ADM cartridge for paper can also be used for the **Kodak RP30 and SRP30** laser printers as an alternative for the **Kodak Ektacolor Processing Cartridge 75**.

More details can be found on the next pages in this Technical Bulletin and also on our web site. Alternatively, contact your FUJIFILM representative.

C. How to choose your paper developer

Standard RA4 Process

DEV Tank Size (L)	10x15 prints/ day													
	120	240	480	720	960	1200	1440	1680	1920	2160	2400	2640	2880	3120
40	NR	NR	NR	NR	1	1	2	2	3	3	4	4	4	5
35	NR	NR	NR	1	1	2	2	3	3	4	4	4	5	5
30	NR	NR	NR	1	2	2	3	3	4	4	5	5	5	5
25	NR	NR	NR	1	2	3	4	4	5	5	5	5	5	5
20	NR	NR	1	2	3	4	4	5	5	5	5	5	5	5
15	NR	NR	2	3	4	5	5	5	5	5	5	5	5	5
10	NR	1	3	4	5	5	5	5	5	5	5	5	5	5
5	1	3	5	5	5	5	5	5	5	5	5	5	5	5
	1.8	3.6	7.2	10.8	14.4	18.0	21.6	25.2	28.8	28.8	36.0	39.6	43.2	46.8
	m² paper/day													

NR	Not recommended
1	EnviroPrint Developer MP160 / EnviroPrint Bleach-Fix 215 AC
2	EnviroPrint Developer MP108 / EnviroPrint Bleach-Fix 108 AC
3	EnviroPrint Developer MP73 AC / EnviroPrint Bleach-Fix 70 AC
4	EnviroPrint Developer MP60 AC / EnviroPrint Bleach-Fix 55 AC
5	EnviroPrint 47 Developer AC / EnviroPrint 47 Bleach-Fix AC

RA4 Fast Processing

DEV Tank Size (L)	10x15 prints/ day													
	120	240	480	720	960	1200	1440	1680	1920	2160	2400	2640	2880	3120
40	NR	NR	NR	NR	NR	1	1	1	1	1	2	2	2	2
35	NR	NR	NR	NR	NR	1	1	1	2	2	2	2	2	2
30	NR	NR	NR	NR	1	1	1	2	2	2	2	2	2	2
25	NR	NR	NR	NR	1	1	2	2	2	2	2	2	2	2
20	NR	NR	NR	1	1	2	2	2	2	2	2	2	2	2
15	NR	NR	1	1	2	2	2	2	2	2	2	2	2	2
10	NR	NR	1	2	2	2	2	2	2	2	2	2	2	2
5	NR	1	2	2	2	2	2	2	2	2	2	2	2	2
	1.8	3.6	7.2	10.8	14.4	18.0	21.6	25.2	28.8	28.8	36.0	39.6	43.2	46.8
	m² paper/day													

NR	Not recommended
1	EnviroPrint FP Developer MR / EnviroPrint FP Bleach-Fix MR
2	EnviroPrint 47 Developer AC @ 60 ml/m²/ EnviroPrint FP Bleach-Fix MR

D. How to choose your film developer

C41 developer (C41 & CN16 Minilab)

DEV Tank Size (L)	Films / day							
	2	3	7	10	15	20	25	35
50	NR	NR	NR	NR	NR	1	1	2
40	NR	NR	NR	NR	1	1	1	2
30	NR	NR	NR	1	1	1	2	2
25	NR	NR	NR	1	1	1	2	2
20	NR	NR	1	1	1	2	2	3
15	NR	NR	1	1	2	2	3	4
10	NR	1	2	2	3	3	4	4
5	1	2	2	3	3	4	4	4

NR	Not Recommended
1	See "Very Low Throughput"
2	Use EnviroNeg Developer Replenisher 60 AC @60 ml/135-24
3	Use EnviroNeg Developer Replenisher AC (to replace **FUJI CN16L N1CR** Colour Developer Replenisher)
4	Use EnviroNeg Developer Replenisher LR AC (to replace **FUJI CN16Q N1CR** Colour Developer Replenisher)

5. CHEMICAL SPECIFICATIONS

A. Chemical specifications – FUJIFILM Negative

FUJIFILM CN-16Q				
	Solution Name	**Process Time Min:sec**	**Solution Temp °C**	**Replenishment Rate mL/24 exp 135**
	N1	3:15	38.0	45
(1)	or EnviroNeg Dev Repl Kit	3:15	37.8	41
(1)	or EnviroNeg Dev Repl 60 AC	3:15	37.8	60
	N2	1:00	38.0	20
	N3	3:15	38.0	30
	NS-1	0:40	35.0	0
	NS-2	1:00	35.0	30
	N4	0:40	38.0	20
(2)	or EnviroNeg FF Superflo Stab Repl MB AC	0:40	38.0	20

(1) Check PIS715 for FUJI HUNT replacement for FUJI CN16Q N1RS Developer Replenisher
(2) Check PIS717 for FUJI HUNT replacement for FUJI CN16 N4-R Safer Stabilizer

FUJIFILM CN-16L				
	Solution Name	**Process Time Min:sec**	**Solution Temp °C**	**Replenishment Rate mL/24 exp 135**
	N1	3:05	38.0	21
(1)	or EnviroNeg Dev Repl LR AC	3:15	37.8	21
	N2	0:50	38.0	5
	N3-1	0:50	38.0	0
	N3-2	0:50	38.0	8/10 (2)
	NS	0:30	38.0	17/34 (3)
	N4-1	0:20	38.0	0
	N4-2	0:20	38.0	15/20 (4)
(5)	or EnviroNeg FF Superflo Stab Repl MB AC	0:40	38.0	20

(1) Check PIS716 for FUJI HUNT replacement for FUJI CN16L N1CR Developer Replenisher
(2) 10 mL/135-24 for FP 232B - 8 mL/135-24 for all other processors
(3) 34 for other than FP232 (see manual)
(4) 20 mLL135-24 for FP 232B -15 mL/135-24 for all other processors
(5) Check PIS717 for FUJI HUNT replacement for FUJI CN16 N4-R Safer Stabilizer

FUJIFILM CN-16S			
Solution Name	**Process Time Min:sec**	**Solution Temp °C**	**Replenishment Rate(1) mL/24 exp 135**
N1	3:15	38.0	15
N2	0:50	38.0	5
N3-1	0:50	38.0	0
N3-2	0:50	38.0	7.5
N4-1	0:30	38.0	0
N4-2	0:20	38.0	0
N4-3	0:20	38.0	30

(1) Rep Rate set: 100%

FUJIFILM CN-16SER (1)			
Solution Name	**Process Time Min:sec**	**Solution Temp °C**	**Replenishment Rate(2) mL/24 exp 135**
N1	3:15	38.0	25
N2	0:50	38.0	8.3
N3-1	0:50	38.0	0
N3-2	0:50	38.0	12.5
N4-1	0:30	38.0	0
N4-2	0:20	38.0	0
N4-3	0:20	38.0	50

(1) Minilab software v3.0 update needed
(2) Rep Rate set: 166%

B. Chemical specifications – FUJIFILM Paper

STANDARD PROCESSING CHEMISTRY:

FUJIFILM CP-40FAII
Check PIS677 for an alternative FUJIHUNT chemistry for FUJI minilabs running on CP40 chemistry

FUJIFILM CP-47LII			
Solution Name	**Process Time Min:sec**	**Solution Temp °C**	**Replenishment Rate mL/m²**
P1	0:45	38.5	45
P2	0:45	38.0	35
PS-1 / -2 / -3	1:30	38.0	242(1)

(1) With a reverse osmosis RC50D unit fitted, the replenishment rate can be reduced from 242 to 121 mL/m²

FUJIFILM CP-48SII AND CP-48HVII			
Solution Name	**Process Time Min:sec**	**Solution Temp °C**	**Replenishment Rate mL/m²**
P1	0:45	38.5	45
P2	0:45	38.0	35
PS-1 / -2 / -3 / -4	1:30	38.0	150 / 175 / 242(1)

(1) 175 mL/m² for F330 – 150 mL/m² for F350/355/370/375 - 242 mL/m² for F390

FAST PROCESSING CHEMISTRY

FUJIFILM CP-49E AND CP-49HV (FRONTIER 340 – 5XX – 7XX)								
Solution Name	**Process Time Min:sec**				**Solution Temp °C**		**Replenishment Rate mL/m²**	
	F340	F500	F550 F570 F590	F700 F710 F720	F340 F500 F700 F710 F720	F550 F570 F590	F340 F500 F550 F570	F590 F700 F710 F720
P1	0:25	0:23	0:19	0:22	42	43	45	
P2	0:25	0:24	0:19	0:27	40	43	35	
PS-1 / -2 / -3 / -4	0:24	0:21	0:17	0:43	40	45	215	

FUJIFILM CP-49E AND CP-49HV (FRONTIER 7XX CONTINUED)								
Solution Name	**Process Time Min:sec**				**Solution Temp °C**		**Replenishment Rate mL/m²**	
	F750	F760	F770	F790	F750 F760	F770 F790	F750 F760	F770 F790
P1	0:28	0:22	0:22	0:20	42		45	
P2	0:28	0:27	0:22	0:20	40		35	
PS-1 / -2 / -3 / -4	0:45	0:40	0:35	0:32	40		215	

FUJIFILM CP-49E AND CP-49HV (NORITSU QSS-35-F SPECIFICATION)			
Solution Name	**Process Time Min:sec**	**Solution Temp °C**	**Replenishment Rate mL/m²**
	3501i PLUS / LP7000 3501 PLUS / LP7100 3502 PLUS / LP7200	3501i PLUS / LP7000 3501 PLUS / LP7100 3502 PLUS / LP7200	3501i PLUS / LP7000 3501 PLUS / LP7100 3502 PLUS / LP7200
P1	0:22	42	45
P2	0:27	40	35
PS	0:43	40	215

FUJIFILM CP-49E AND CP-49HV (NORITSU QSS-37-F SPECIFICATION)						
Solution Name	**Process Time Min:sec**				**Solution Temp °C**	**Replenishment Rate mL/m²**
	3701 3702	3703	3704	3705	3701 / LPS7500 3702 / LPS7500 3703 / LPS7600 3704 / LPS7700 3705 / LPS7900	3701 / LPS7500 3702 / LPS7500 3703 / LPS7600 3704 / LPS7700 3705 / LPS7900
P1	0:28	0:22	0:22	0:20	42	45
P2	0:28	0:27	0:22	0:20	40	35
PS	0:45	0:40	0:35	0:32	40	215

FUJIFILM CP-49LR (ALL PROCESSORS USING CP49E)			
Solution Name	**Process Time Min:sec**	**Solution Temp °C**	**Replenishment Rate mL/m²**
P1	See tables above	See tables above	40
P2			31.1
PS			215

C. Chemical specifications – Fuji Hunt C41

STANDARD TYPE MINILABS:

C41 - BNP			
Solution Name	**Process Time Min:sec**	**Temperature (°C)**	**Replenishment Rate (mL/135-24 Film)**
EnviroNeg Developer LR AC	3:15	37.8 ± 0.15	21
or EnviroNeg Developer AC	*3:15*	*37.8 ± 0.15*	*41*
or EnviroNeg Developer 60 AC (1) – LOW VOLUME	*3:15*	*37.8 ± 0.15*	*60*
EnviroNeg RA Bleach VR AC (2) *FOR C41B @ 5 mL/135-24 FILM*	3:00 – 4:20	38 ± 3	5
Negacolor RA Fixer (3)	4:00 – 4:20	38 ± 3	35
EnviroNeg FF Superflo Stabilizer MB AC (4)	2:20	38 ± 3	40
EnviroNeg FF Superflo Stabilizer MB AC (4)	1:40	38 ± 3	40
EnviroNeg FF Superflo Stabilizer MB AC (4)	*0:40*	*38 ± 3*	*35*

(1) **EnviroNeg Developer 60 AC** was designed for normal replenishment at 60 mL/135-24 film. Under normal low throughput conditions, this will provide an excellent process. Under very low throughput conditions, as low as 3 films/day for a 10 litre development tank, developer replenishment rate should be increased by 15% up to 70 mL/135-24 film.
Please see ***"How to choose your paper developer"*** on page 14 and ***"very low throughput"*** on page 21 for more details.

(2) **EnviroNeg RA Bleach VR AC** can also be used as bleach for the C41B process running at 5 mL/135-24 film replenishment rate with a diluted Replenisher (see Mixing Instructions).

(3) Two tank counter current flow, equal times in both tanks.

(4) **EnviroNeg FF Superflo Stabilizer MB AC** is normally used in a 3-tank counter current cascade system system but also can be used in a minilab to replace a conventional final Stabilizer following a water wash. In this case, bath time is 40".

C41 – RANP < FOR HIGH FILM VOLUMES >			
Solution Name	**Process Time Min:sec**	**Temperature (°C)**	**Replenishment Rate (mL/135-24 Film)**
EnviroNeg Developer LR AC	3:15	37.8 ± 0.15	21
or EnviroNeg Developer AC	*3:15*	*37.8 ± 0.15*	*41*
EnviroNeg RA Bleach VR AC (1) *FOR C41RA @ 5 mL/135-24 FILM*	0:45 – 1:00	38 ± 3	5
Negacolor RA Fixer (2)	1:30	38 ± 3	35
EnviroNeg FF Superflo Stabilizer MB AC (3)	1:00	38 ± 3	40

(1) **EnviroNeg RA Bleach VR AC** is a variable ratio high-speed one-part bleach for the C41RA process. It is designed to operate with the C41RA bleach processing time of 45 to 60 sec and has a very low 5 mL/135-24 film replenishment rate. It is available in 2 x 5 L packs.

(2) Two tank counter current flow, equal times in both tanks.

(3) **EnviroNeg FF Superflo Stabilizer MB AC** is used in a 3 to 4-tank counter current cascade system.

C41 – RANP < FOR LOW FILM VOLUMES >			
Solution Name	**Process Time Min:sec**	**Temperature (°C)**	**Replenishment Rate (mL/135-24 Film)**
EnviroNeg Developer AC	3:15	37.8 ± 0.15	41
or EnviroNeg Developer 60 AC(1) – LOW VOLUME	*3:15*	*37.8 ± 0.15*	*60*
EnviroNeg RA Bleach VR AC (2) *FOR C41RA @ 10 mL/135-24 FILM – LOW VOLUME*	0:45 – 1:00	38 ± 3	10
Negacolor RA Fixer (3)	1:30	38 ± 3	50
EnviroNeg FF Superflo Stabilizer MB AC (4)	1:00	38 ± 3	60

(1) **EnviroNeg Developer 60 AC** was designed for normal replenishment at 60 mL/135-24 film. Under normal low throughput conditions, this will provide an excellent process. Under very low throughput conditions, as low as 3 films/day for a 10 litre development tank, developer replenishment rate should be increased by 15% up to 70 mL/135-24 film.
Please see ***"How to choose your paper developer"*** on page 14 and ***"very low throughput"*** on page 21 for more details.

(2) **EnviroNeg RA Bleach VR AC** is a variable ratio high-speed one-part bleach for the C41RA process. It is designed to operate with the C41RA bleach processing time of 45 to 60 sec and has a very low 5 mL/135-24 film replenishment rate. It is available in 2 x 5 L packs.
EnviroNeg RA Bleach VR AC can also be used for low throughput in C41RA processors (typically minilabs) by running at an increased REP RATE of 10 mL/135-24 with a diluted Replenisher (see mixing instructions). It should than be used in combination with the low throughput **EnviroNeg Developer 60 AC**.

(3) Two tank counter current flow, equal times in both tanks.

(4) **EnviroNeg FF Superflo Stabilizer MB AC** is used in a 3 to 4-tank counter current cascade system.

LOW THROUGHPUT

EnviroNeg Developer 60 AC and **EnviroNeg RA Bleach VR AC** (at higher replenisher rate) have been designed to allow good quality C41 film processing in the range shown in yellow on the graph (see 0

How to choose your film developer on page 15 – which covers most low throughput situations.

EnviroNeg Developer 60 AC is run at 60 mL/135-24 film under normal low throughput conditions.

For the C41RA process, use of **EnviroNeg RA Bleach VR AC** @ **replenishment rate of 10 mL/135-24 film** is recommended for low or very low throughput in combination with **EnviroNeg Developer 60 AC**.

In low throughput – and especially in very low throughput – situations, it is recommended that you increase the fixer and stabiliser replenishment rates by 50% compared to the standard replenishment rates.

On a typical minilab, this will therefore mean a **Negacolor RA Fixer** replenishment rate of 50 mL/135-24 film, and a **EnviroNeg FF Superflo Stabilizer MB AC** replenishment rate of 60 mL/135-24 film.

Please see the FUJIFILM Belgium Technical Information Sheet "TIS EnviroNeg Developer AC 60 Minilab" for further information.

VERY LOW THROUGHPUT

If your film throughput is even lower – in the green region shown on the graph – it is still possible to run a satisfactory film process by increasing the replenishment rate of ALL baths – developer, bleach, fixer and stabiliser – by 15%. You will never have a perfect process with such low film volumes, but the results are very much improved from any other options you have available other than frequent processor retanking, and very acceptable for obtaining good quality prints. Bath temperatures and mixing instruction remain unchanged.

The **EnviroNeg Developer 60 AC** will then run at an increased replenishment rate of 70 mL/135-24 film.

AGFA MINILABS

AGFA MINILAB SERIES FP1-71 , FP2-71 , FP3-71 WITH AGFA AP71
PROCESS TYPE: C41 - BNP

Solution Name	Process Time Min:sec	Temperature (°C)	Replenishment Rate (mL/135-24 Film)
EnviroNeg Developer LR AC	3:15	37.8 ± 0.15	21
or EnviroNeg Developer AC	*3:15*	*37.8 ± 0.15*	*41*
or EnviroNeg Developer 60 AC (1)	*3:15*	*37.8 ± 0.15*	*60*
EnviroNeg RA Bleach VR AC (2) ***FOR C41B @ 5 mL/135-24 FILM***	3:00 – 4:20	38 ± 3	5
Negacolor RA Fixer (3)	4:00 – 4:20	38 ± 3	35
EnviroNeg FF Superflo Stabilizer MB AC (4)	2:20	38 ± 3	40

(1) **EnviroNeg Developer 60 AC** was designed for normal replenishment at 60 mL/135-24 film. Under normal low throughput conditions, this will provide an excellent process. Under very low throughput conditions, as low as 3 films/day for a 10 litre development tank, developer replenishment rate should be increased by 15% up to 70 mL/135-24 film.
Please see ***"How to choose your paper developer"*** on page 14 and ***"very low throughput"*** on page 21 for more details.

(2) **EnviroNeg RA Bleach VR AC** can also be used as bleach for the C41B process running at 5 mL/135-24 film replenishment rate with a diluted Replenisher (see Mixing Instructions).

(3) Two tank counter current flow, equal times in both tanks.

(4) **EnviroNeg FF Superflo Stabilizer MB AC** is used in a 3 to 4-tank counter current cascade system.

AGFA MINILAB SERIES FP100, FP200, FP1-72, FP2-72, FP3-72, MSC101 WITH AGFA AP72

PROCESS TYPE: C41 – RANP < FOR HIGH FILM VOLUMES >			
Solution Name	**Process Time Min:sec**	**Temperature (°C)**	**Replenishment Rate (mL/135-24 Film)**
EnviroNeg Developer LR AC	3:15	37.8 ± 0.15	21
or EnviroNeg Developer AC	*3:15*	*37.8 ± 0.15*	*41*
EnviroNeg RA Bleach VR AC (1) ***FOR C41RA @ 5 mL/135-24 FILM***	0:45 – 1:00	38 ± 3	5
Negacolor RA Fixer (2)	1:30 – 1:37	38 ± 3	35
EnviroNeg FF Superflo Stabilizer MB AC (3)	1:00 – 1:15	38 ± 3	40

(1) **EnviroNeg RA Bleach VR AC** is a variable ratio high-speed one-part bleach for the C41RA process. It is designed to operate with the C41RA bleach processing time of 45 to 60 sec and has a very low 5 mL/135-24 film replenishment rate. It is available in 2 x 5 L packs.

(2) Two tank counter current flow, equal times in both tanks.

(3) EnviroNeg FF Superflo Stabilizer MB AC is used in a 3 to 4-tank counter current cascade system.

AGFA MINILAB SERIES FP100, FP200, FP1-72, FP2-72, FP3-72, MSC101 WITH AGFA AP72 PROCESS TYPE: C41 – RANP < FOR LOW FILM VOLUMES >			
Solution Name	**Process Time Min:sec**	**Temperature (°C)**	**Replenishment Rate (mL/135-24 Film)**
EnviroNeg Developer AC	3:15	37.8 ± 0.15	41
or EnviroNeg Developer 60 AC(1) – LOW VOLUME	*3:15*	*37.8 ± 0.15*	*60*
EnviroNeg RA Bleach VR AC (2) *FOR C41RA @ 10 mL/135-24 FILM – LOW VOLUME*	0:45 – 1:00	38 ± 3	10
Negacolor RA Fixer (3)	1:30 – 1:37	38 ± 3	50
EnviroNeg FF Superflo Stabilizer MB AC (4)	1:00 – 1:15	38 ± 3	60

(1) **EnviroNeg Developer 60 AC** was designed for normal replenishment at 60 mL/135-24 film. Under normal low throughput conditions, this will provide an excellent process. Under very low throughput conditions, as low as 3 films/day for a 10 litre development tank, developer replenishment rate should be increased by 15% up to 70 mL/135-24 film.
Please see ***"How to choose your paper developer"*** on page 14 and ***"very low throughput"*** on page 21 for more details.

(2) **EnviroNeg RA Bleach VR AC** is a variable ratio high-speed one-part bleach for the C41RA process. It is designed to operate with the C41RA bleach processing time of 45 to 60 sec and has a very low 5 mL/135-24 film replenishment rate. It is available in 2 x 5 L packs.
EnviroNeg RA Bleach VR AC can also be used for low throughput in C41RA processors (typically minilabs) by running at an increased REP RATE of 10 mL/135-24 with a diluted Replenisher (see mixing instructions). It should than be used in combination with the low throughput **EnviroNeg Developer 60 AC**.

(3) Two tank counter current flow, equal times in both tanks.

(4) **EnviroNeg FF Superflo Stabilizer MB AC** is used in a 3 to 4-tank counter current cascade system.

KONICA LIQUID TYPE MINILABS

KONICA MINILAB NPS 4, 5 & 6(1)-SERIES WITH CNK-4-40
PROCESS TYPE: C41- BNP

Solution Name		Process Time Min:sec	Temperature (°C)	Replenishment Rate (mL/135-24 Film)
N1-R	EnviroNeg Developer AC (2)	3:15	37.8 ± 0.15	41
	or EnviroNeg Developer 60 AC(3) – LOW VOLUME	*3:15*	*37.8 ± 0.15*	*60*
N2-R	EnviroNeg RA Bleach VR AC (4) *FOR C41B @ 5 mL/135-24 FILM*	3:15	38 ± 3	5
N3-R	Negacolor RA Fixer	3:15	38 ± 3	35
N4-R	EnviroNeg FF Superflo Stabilizer MB AC (5)	2:40	38 ± 3	35
N5-R	EnviroNeg FF Superflo Stabilizer MB AC (5)	1:20	38 ± 3	35

(1) Except NPS 612QA minilab with CL PK50E processor

(2) The replenishment rate of the developer must be lowered from 51 mL/135-24 (CNK-4-40) to 41 mL/135-24.

(3) **EnviroNeg Developer 60 AC** was designed for normal replenishment at 60 mL/135-24 film. Under normal low throughput conditions, this will provide an excellent process. Under very low throughput conditions, as low as 3 films/day for a 10 litre development tank, developer replenishment rate should be increased by 15% up to 70 mL/135-24 film.
Please see ***"How to choose your paper developer"*** on page 14 and ***"very low throughput"*** on page 21 for more details.

(4) **EnviroNeg RA Bleach VR AC** can also be used as bleach for the C41B process running at 5 mL/135-24 film replenishment rate with a diluted Replenisher (see mixing instructions).

(5) The **EnviroNeg FF Superflo Stabilizer MB AC** can be used for both N4 and N5 Processing & Replenisher Tanks.

KONICA MINILAB NPS 8-SERIES & 612QA(1) WITH CNK-4-52 AND CNK-4-52 LR(2)
PROCESS TYPE: C41 - RANP

Solution Name	Process Time Min:sec	Temperature (°C)	Replenishment Rate (mL/135-24 Film)
EnviroNeg Developer LR AC	3:15	37.8 ± 0.15	21
or EnviroNeg Developer AC (2)	*3:15*	*37.8 ± 0.15*	*41*
EnviroNeg RA Bleach VR AC (3) *FOR C41RA @ 5 mL/135-24 FILM*	0:45	38 ± 3	5
Negacolor RA Fixer	1:30	38 ± 3	35
EnviroNeg FF Superflo Stabilizer MB AC (4)	1:00	38 ± 3	40

(1) With CL PK50E processor

(2) Due to the large decrease in film processing volumes, very low replenishment rates are no longer recommended. FUJIFILM recommend to run with increased replenishment rates for both the developer and the fixer to guarantee process stability. With the process CNK-4-52 LR, FUJIFILM recommends:

- **EnviroNeg Developer LR AC** running at 21 mL/135-24 film instead of Konica's recommended 15 mL/135-24
  Or even **EnviroNeg Developer AC** running at 41 mL/135-24 film in extreme low throughput cases.
- **EnviroNeg RA Fixer** running at 35 mL/135-24 film instead of Konica's recommended 21 mL/135-24. If you decide to keep your replenishment rate at 21 mL/135-24 film, you must dilute EnviroNeg RA Fixer replenisher with a mix ratio of 2 parts water + 1 part EnviroNeg RA Fixer concentrate.

(3) **EnviroNeg RA Bleach VR AC** can also be used as bleach for the C41B process running at 5 mL/135-24 film replenishment rate with a diluted Replenisher (see mixing instructions).

(4) **EnviroNeg FF Superflo Stabilizer MB AC** is used in a 3 to 4-tank counter current cascade system.

D. Chemical specifications – Fuji Hunt Standard RA4 Processing

STANDARD TYPE MINILABS

STANDARD RA4			
Solution Name	**Process Time Min:sec**	**Temperature (°C)**	**Replenishment Rate (mL/m²)**
CPRA Digital Pro Developer AC	0:45	35 ± 0.3	215 - 325
EnviroPrint Developer MP160	0:45	38 ± 0.3	160
EnviroPrint Developer MP108	0:45	38 ± 0.3	108
EnviroPrint Developer MP73 AC	0:45	38 ± 0.3	73
EnviroPrint Developer MP60 AC	0:45	38 ± 0.3	60
EnviroPrint 47 Developer AC	0:45	38.5 ± 0.3	45
EnviroPrint Bleach Fix 215 AC	0:45	35 ± 3	215
EnviroPrint Bleach Fix MP215 AC	0:45	35 ± 3	215
EnviroPrint Bleach Fix 108 AC	0:45	35 ± 3	108
EnviroPrint Bleach Fix 70 AC	0:45	35 ± 3	70
EnviroPrint Bleach Fix 55 AC	0:45	35 ± 3	55
EnviroPrint Bleach Fix VR AC	0:45	35 ± 3	215 / 108 / 70 / 55(1)
EnviroPrint 47 Bleach Fix AC	0:45	35 ± 3	35
EnviroPrint Super Stabilizer AC	1:30	34 ± 4	250 (2)

(1) depending on the mix ratio.

(2) Minilab with 4 tank counter current stabilizer.

AGFA MINILABS

AGFA MSC / MSC2 / MSC3 / CLS13 / CLS23 **STANDARD RA4**			
Solution Name	**Process Time Min:sec**	**Temperature (°C)**	**Replenishment Rate (mL/m²)**
EnviroPrint Developer MP108	0:45	38 ± 0.3	108
or EnviroPrint Developer MP60 AC	*0:45*	*38 ± 0.3*	*60*
EnviroPrint Bleach Fix 108 AC	0:45	35 ± 3	108
or EnviroPrint Bleach Fix 70 AC	*0:45*	*35 ± 3*	*70*
EnviroPrint Super Stabilizer AC	1:30	34 ± 4	250 (1) ~ 350 (2)

(1) Minilab with 4 tank counter current stabilizer.

(2) Minilab with 3 tank counter current stabilizer.

KONICA LIQUID TYPE MINILABS

KONICA NPS 6-SERIES PAPER MINILABS WITH CPK-2-20 STANDARD RA4			
Solution Name	**Process Time Min:sec**	**Temperature (°C)**	**Replenishment Rate (mL/m²)**
CPRA Digital Pro Developer AC	0:45	35 ± 0.3	160
EnviroPrint Bleach Fix 215 AC	0:45	35 ± 3	215
or EnviroPrint Bleach Fix MP215 AC	*0:45*	*35 ± 3*	*215*
EnviroPrint Super Stabilizer AC	1:30	35 ± 4	250

E. Chemical specifications – Fuji Hunt RA4 Fast Processing

STANDARD TYPE MINILABS

RA4 FAST PROCESSING			
Solution Name	**Process Time Min:sec**	**Temperature (°C)**	**Replenishment Rate (mL/m²)**
EnviroPrint FP Developer MR(1)	0:33	39.0 ± 0.3	70 ~ 80
	0:27	39.5 ± 0.3	75 ~ 90
	0:20 – 0:22	40.0 ± 0.3	80 ~ 100
EnviroPrint FP Bleach-Fix MR	0:33	38 ± 2	70 ~ 90
	0:27	38 ± 2	75 ~ 100
	0:20	38 ± 2	75 ~ 100
EnviroPrint Super Stabilizer AC	0:50 ~ 0:90	37 ± 3	200 ~ 400

(1) there is also a low replenishment rate version available for high throughput minilabs only

RA4 FAST PROCESSING < FOR HIGH THROUGHPUT >			
Solution Name	**Process Time Min:sec**	**Temperature (°C)**	**Replenishment Rate (mL/m²)**
EnviroPrint 47 Developer AC	0:33	39.0 ± 0.3	60
	0:27	39.5 ± 0.3	60
	0:20 – 0:22	40.0 ± 0.3	70 ~ 75
EnviroPrint FP Bleach-Fix MR	0:33	38 ± 2	70 ~ 90
	0:27	38 ± 2	75 ~ 100
	0:20	38 ± 2	75 ~ 100
EnviroPrint Super Stabilizer AC	0:50 ~ 0:90	37 ± 3	200 ~ 400

The wide variety of "fast" processing equipment as well as the different paper brands on the market makes it difficult to standardise the process parameters. The table above shows recommended replenishment rates and processing temperatures. As with other chemistries, differences between paper brands and processing equipment may mean that you need to fine-tune your process. On the following pages the recommended products for Agfa, KIS DKS, San Marco, Gretag are shown.

AGFA MINILABS

AGFA MSC 100 / 101 / 101.D AND AGFA MSC 200			
Solution Name	**Process Time Min:sec**	**Temperature (°C)**	**Replenishment Rate (mL/m²)**
EnviroPrint FP Developer MR	0:33	39 ± 0.3	75
or EnviroPrint 47 Developer AC	*0:33*	*39 ± 0.3*	*60*
EnviroPrint FP Bleach-Fix MR	0:33	38 ± 2	80 (70~90)
EnviroPrint Super Stabilizer AC	1:06 ~ 1:16	37 ± 3	200

AGFA D-LAB.3 AND MSC 300			
Solution Name	**Process Time Min:sec**	**Temperature (°C)**	**Replenishment Rate (mL/m²)**
EnviroPrint FP Developer MR	0:27	39.5 ± 0.3	90
or EnviroPrint 47 Developer	*0:27*	*39.5 ± 0.3*	*60*
EnviroPrint FP Bleach-Fix MR	0:27	38 ± 2	90 (75~100)
EnviroPrint Super Stabilizer AC	0:54	37 ± 3	200

AGFA D-LAB.1 AND D-LAB.2-SERIES(1)				
Solution Name	**Process Time Min:sec**	**Temperature (°C)**	**Replenishment Rate (mL/m²)**	
			Repl.	**water**
EnviroPrint ADM Paper Cartridge Developer	0:33	D.lab-1: 38 ± 0.3 D.lab-2: 40 ± 0.3	41	10
EnviroPrint ADM Paper Cartridge Bleach-Fix	0:33	38 ± 2	68	0
EnviroPrint ADM Paper Cartridge Stabilizer	1:09	37 ± 3	41	159

(1) EnviroPrint ADM Paper Cartridge processes 110 m² of paper on a Agfa d-lab.1, d-lab.2 and d-lab.2 Plus.

KODAK MINILABS

KODAK RP30 AND SRP30 LASER PRINTERS(1)				
Solution Name	**Process Time Min:sec**	**Temperature (°C)**	**Replenishment Rate (mL/m²)**	
			Repl.	**water**
EnviroPrint ADM Paper Cartridge Developer	0:33	40 ± 0.3	54	0
EnviroPrint ADM Paper Cartridge Bleach-Fix	0:33	38 ± 2	90	0
EnviroPrint ADM Paper Cartridge Stabilizer	1:09	37 ± 3	54	126

(1) EnviroPrint ADM Paper Cartridge processes 83 m² of paper on a Kodak RP30 and SRP30 laser printer (as Replenishment rate are 11% lower than Kodak recommended Rep Rates)

KODAK SYSTEM 88+/89 DLS DIGITIL MINILAB(1)					
Solution Name	**Process Time Min:sec**	**Temperature (°C)**	**Replenishment Rate (mL/m²)**		
			DLS 88+	**DLS 89**	
				Conc.	**water**
EnviroPrint K15 Developer MP90	0:20	40 ± 0.3	90	18 (20%)	72 (80%)
EnviroPrint Bleach-Fix 70 AC part A EnviroPrint Bleach-Fix 70 AC part B	0:20	36.5 ± 1.5	108	23.8 (22%) 19.4 (18%)	64.8 (60%)
EnviroPrint Super Stabilizer AC	1:00	36.5 ± 1.5	400	3.2 (1%)	396.8 (99%)

(1) Running with Ektacolor Rapide.

KIS PHOTO-ME MINILABS

KIS DKS 550 AND 750 MINILABS			
Solution Name	**Process Time Min:sec**	**Temperature (°C)**	**Replenishment Rate (mL/m²)**
EnviroPrint FP Developer MR	0:20	40 ± 0.3	90
EnviroPrint FP Bleach-fix MR	0:20	36.5 ± 1.5	75
EnviroPrint Super Stabilizer AC	1:00	36.5 ± 1.5	400

KIS DKS 15XX, 16XX AND 17XX MINILABS				
Solution Name	**Process Time Min:sec**	**Temperature (°C)**	**Replenishment Rate (mL/m²)**	
			Conc.	**water**
EnviroPrint K15 Developer MP90 ***USED @ 90 mL/m² REP RATE***	0:20	40 ± 0.3	18 (20%)	72 (80%)
EnviroPrint FP Bleach-Fix MR ***USED @ 75 mL/m² REP RATE***	0:20	36.5 ± 1.5	37.5 (50%)	37.5 (50%)
EnviroPrint FP Super Stabilizer ***USED @ 400 mL/m² REP RATE***	1:00	36.5 ± 1.5	3.2 (1%)	396.8 (99%)

KIS DKS 15XX, 16XX AND 17XX MINILABS < FOR LOW THROUGHPUT >				
Solution Name	**Process Time Min:sec**	**Temperature (°C)**	**Replenishment Rate (mL/m²)**	
			Conc.	**water**
EnviroPrint K15 Developer MP90 ***USED @ 108 mL/m² REP RATE***	0:20	40 ± 0.3	21.6 (20%)	86.4 (80%)
EnviroPrint FP Bleach-Fix MR ***USED @ 200 mL/m² REP RATE***	0:20	40 ± 0.3	70 (35%)	130 (65%)
EnviroPrint FP Super Stabilizer ***USED @ 400 mL/m² REP RATE***	1:00	40 ± 0.3	3.2 (1%)	396.8 (99%)

KIS DKS 18XXMINILABS				
Solution Name	**Process Time Min:sec**	**Temperature (°C)**	**Replenishment Rate (mL/m²)**	
			Conc.	**water**
EnviroPrint FP Developer MR ***USED @ 108 mL/m² REP RATE***	0:30	39 ± 0.3	18.4 (17%)	89.6 (83%)
EnviroPrint FP Bleach-Fix MR ***USED @ 108 mL/m² REP RATE***	0:30	36.5 ± 1.5	43.2 (40%)	64.8 (60%)
EnviroPrint FP Super Stabilizer ***USED @ 400 mL/m² REP RATE***	1:00	36.5 ± 1.5	3.2 (1%)	396.8 (99%)

KONICA LIQUID TYPE MINILABS

NPS 8-SERIE MINILAB AND P1(1) SUPER1400 PAPER MINILABS (CPK-2-22LR)			
Solution Name	**Process Time Min:sec**	**Temperature (°C)**	**Replenishment Rate (mL/m²)**
EnviroPrint FP Developer MR			
With processor CL PP8xx	0:27	38 ± 0.3	80 (2)
With processor CL PP8xxx	0:22	39.8 ± 0.3	80 (2)
EnviroPrint FP Bleach-Fix MR			
With processor CL PP8xx	0:27	38 ± 1.5	80~100
With processor CL PP8xxx	0:22	39.8 ± 1.5	80~100
EnviroPrint Super Stabilizer AC	1:06 ~ 1:21	37.0 ± 3	200

(1) with PP8610 processor

(2) Depending on daily/weekly minimum required volumes, it may be necessary to increase the replenishment to 90 mL/m² to maintain a correct process activity and stability.

NPS 8-SERIE MINILAB AND P1(1) SUPER1400 PAPER MINILABS (CPK-2-22)(2)			
Solution Name	**Process Time Min:sec**	**Temperature (°C)**	**Replenishment Rate (mL/m²)**
EnviroPrint FP Developer MR			
With processor CL PP8xx	27	38	80 (3)
With processor CL PP8xxx	22	39.8	80 (3)
EnviroPrint FP Bleach-Fix MR			
With processor CL PP8xx	27	38	80~100
With processor CL PP8xxx	22	39.8	80~100
EnviroPrint Super Stabilizer AC	66 ~ 81	34 - 40	200

(1) With PP8610 processor

(2) FUFIFILM recommends to run at medium replenishment rate (accordingly Rep Rate must be changed in the minilab settings)

(3) Depending on daily/weekly minimum required volumes, it may be necessary to increase the replenishment to 90 mL/m² to maintain a correct process activity and stability.

6. QUALITY CONTROL SOFTWARE

OASIS Pro

OASIS Pro is a software program for color chemical process monitoring.

The OASIS Pro program is a Windows based application allowing the processing lab to rapidly read and plot process control strips, possibly transfer the data between sites, and allowing on-site evaluation of the graphs with the help of process diagnostics.

The OASIS Pro family of quality control software consists of four programs, from basic to high end functionalities, to suit all types of processing labs.

OASIS Pro Lite is the simplest program and suitable for minilab monitoring, allowing reading of process and printer control tests, viewing graphs and process diagnostics.

The OASIS Pro program is designed to achieve a high standard of process control with a reduced need to employ specially trained and skilled personnel.

Further information on process monitoring support is available on the FUJIFILM web site.

V. MIXING INSTRUCTIONS

1. WATER

Standard tap water is acceptable for solution preparation for non-FUJI minilab. When well water is used for mixing chemical solutions, water analysis and testing should be considered as a check for water hardness, dissolved solids and other impurities. Depending upon water quality, softening or de-ionising water to prepare chemical solutions may be necessary. It is essential that filters (25-micron rating) be used in water supply systems.

For the FUJI Frontier Minilabs the use of soft water (FRSS-treated deionized water with conductivity < 50 µS) is strongly recommended, for solution preparation of developer and bleach-fix (P1 and P2) tank solutions and replenishers, although typically standard tap water can be used in emergencies.
The Super Rinse (PS tank) should be prepared with soft water (FRSS-treated deionized water with conductivity < 50 µS). Tap water is not recommended. The use of tap water might render the print dyes unstable as proper washing and stabilising of the paper emulsions will not occur. The difference will not be seen as the prints leave the processor, but they might discolour and fade very quickly.

2. PROCESS SOLUTION PREPARATION-MIXING AND STORAGE

A. Concentrates

Keep chemicals completely out of the reach of children. Store at a safe height for easy handling.
Unopened chemical containers should be kept in dry locations at temperatures between 5°-30°C. Storage of chemical concentrates below recommended temperatures can result in crystallisation or formation of precipitates. If this should happen these precipitates can sometimes be dissolved back into solution by heating the bottle in hot water. However, it is probably safer not to use chemicals that have crystallised or precipitated as some chemical activity may be lost.

Storage above recommended temperatures may cause accelerated deterioration of product and may result in reduced shelf life.

B. Processing solutions

Most FUJIFILM and Fuji Hunt products are supplied as liquid concentrates and need to be mixed with water before use. It is essential to closely follow the mixing instructions and always ensure that **adequate mixing of one part is completed before the next part is added**. Mixing of each part should be at least 30 seconds or 20 plunges of a replenisher mix paddle. Some chemicals are provided in a “Ready to Use” format.

None of these products, used under normal conditions, is particularly subject to oxidation. The quantity of prepared developer replenisher, however, should not be more than the amount normally used within a week. Keeping it longer than the recommended time can cause oxidation, and reduce the developer activity. The guideline for Monopart Developers is that each drum of **Monopart Developer concentrate should be consumed preferably within 1 week** (and **definitely** within a maximum of 2 weeks).

Because all chemical solutions can be affected by air, there are certain recommendations for proper storage of all chemical replenisher solutions. Solution storage containers should be equipped **with floating lids and tank covers for protection against dust/dirt, evaporation and excessive chemical oxidation**.

It is recommended that mixed chemical solutions are stored at temperatures above 15°C and below 30°C. When the tank or replenisher solution storage temperature falls below 15°C, the dissolved chemicals

become less soluble and begin to precipitate out. Excessive precipitation may cause abrasions in the sensitised materials and/or equipment malfunction. It is therefore important to avoid an excessive drop in the storage temperature during the winter. Temperatures of more than 30°C may degrade solution performance. Also store processing chemicals away from direct sunlight.

Do not mix or store developer in tanks which have contained fixer or bleach-fix, as there will be a greater possibility of contamination.

The greatest caution should be taken to avoid the following chemical or solution mixtures as they may result in the generation of noxious gases:

FUJIFILM Super Conditioner (FSC) Tablets

You must never mix FUJIFILM Super Conditioner Tablets with acidic compounds or solutions (Bleach-fix) as this will result in the generation of noxious chlorine gas.

Fixer

You must never mix the fixer with alkaline compounds or solutions (colour developer) as this will result in the generation of noxious ammonia gas.

Bleach-Fix

You must never mix the bleach-fix with alkaline compounds or solutions (colour developer) as this will result in the generation of noxious ammonia gas.

3. MIXING REPLENISHER – FUJIFILM NEGATIVE

REPL TANK	FUJIFILM Products – CN-16Q Process	To Mix REPL	Water	+ Parts
N1-R	CN16 NQ1-RS Colour Developer Replenisher	**5 L N1-R**	4 L	+ A+B+C
	or EnviroNeg Developer Replenisher KIT	**10 L N1-R**	8,9 L	+ A+B+C
	or EnviroNeg Developer Replenisher 60 AC	**5 L N1-R**	4,32 L	+ A+B+C
N2-R	CN1 NQ2-RS Bleach Replenisher	**4 L N2-R**	2 L	+ A+B
N3-R	CN16 NQ3-RS Bleach-Fix Replenisher	**4 L N3-R**	2 L	+ A
NS-R	CN16 NQS-R Super Rinse(1)	**5 L NS-R**	5 L	+ 1 FSC tablet
N4-R	CN16 N4 Safer Stabilizer(2)	**4 L N4-R**	4 L	+ 40ml dosing
N4-R	CN16 N4 Safer Stabilizer(2)	**8 L N4-R**	8 L	+ 80ml dosing

REPL TANK	FUJIFILM Products – CN-16L Process	To Mix REPL	Water	+ Parts
N1-R	CN16L N1CR Colour Developer Replenisher **4x5L sz**	**5 L N1-R**	4 L	+ A+B+C
	or EnviroNeg Developer Replenisher LR AC **2x5L sz**	**5 L N1-R**	4,43L	+ A+B+C
	or EnviroNeg Developer Replenisher LR AC **2x10L sz**	**10 L N1-R**	8,86L	+ A+B+C
N2-R	CN16L N2-R Bleach Replenisher	**4 L N2-R**	-	+ 2xA
N3-R	CN16L N3-R Fixer & Replenisher	**4 L N3-R**	-	+ 2xA
NS-R	CN16L NS-R Super Rinse(1)	**10 L NS-R**	10 L	+ 2 FSC tablet
N4-R	CN16 N4 Safer Stabilizer(2)	**4 L N4-R**	4L	+ 40ml dosing

(1) 5L NQS-R & NS-R is made using 5L soft water (FRSS- treated deionized water with conductivity < 50µS) + crushed 1 FSC 100 tablet

(2) N4 Safer Stabilizer is available in a dosing bottle. Fill the indicated amount into the measure on the dosing bottle for preparation of new working solution.

FUJIFILM Products – CN16-S and CN-16S ER Process

Mixing is automatically done by the processor.
Minilab software update is needed to convert CN16S into CN16SER.

Chemicals packed in dedicated cartridges CN-16S NC1 & NC2 and CN-16SER NC1 & NC2 for easy loading.

Processing capacity of **CN-16S** NC1 = 200 films 135-24 , **CN-16S** NC2 = 1000 films 135-24.
Processing capacity of **CN-16SER** NC1 = 120 films 135-24 , **CN-16SER** NC2 = 600 films 135-24.

NC1 cartridge contains 1 unit Colour Developer concentrate part A,1 unit Bleach,1 unit Fixer
NC2 cartridge contains 1 unit Colour Developer concentrate part B and 1 unit Stabilizer

FHRSS-12 Cartridge

The **F**uji **H**unt **R**inse **S**aving **S**ystem – 12 cartridge is the new generation “de-ionising” (water softening, to produce “soft water”) unit.
It is fully compatible with Fujicolor **Negative/Paper processes** and the FRSS-10 body (or alternative PM2S rinse system e.g. FRSS15).

To ensure enhanced safety and processing stability, water treated by FHRSS-12 must be used in combination with Fuji Super Conditioner Tablets (FSC100) to prepare **Super Rinse**.

FUJIFILM Super Conditioner (FSC-100) Tablets

FUJIFILM minilabs use a separate **Super Rinse** bath (NS or NQS/ PS). The **Super Rinse** is prepared by dissolving a crushed FSC-100 Super condioner tablet in soft water (FRSS- treated deionized water with conductivity < 50 µS).

4. MIXING REPLENISHER – FUJIFILM PAPER

FUJIFILM CP-48SII & FUJIFILM CP-48HVII
Mixing is automatically done by the processor. Chemicals are packed in a dedicated cartridge CP-48SII PC and CP-48HVII PC for easy loading. Cartridge contains: 1 unit Colour Developer concentrate, 1 unit BF part A and 1 unit BF part B Processing capacity of 1 cartridge is 111 m². **CP-48SII PC** is the standard chemistry for use in FUJIFILM Frontier 330, 350, 355, 370, 375 and 390 series. **CP-48HVII PC** is for high processing volume minilabs and can be replenished on top of CP-48SII. Both products are interchangeable.
FUJIFILM CP-49E and CP-49HVII
Mixing is automatically done by the processor. Chemicals are packed in a dedicated cartridge CP-49E PC and CP-49HVII PC for easy loading. Cartridge contains: 1 unit Colour Developer concentrate, 1 unit BF part A and 1 unit BF part B Processing capacity of 1 cartridge is 111 m². **CP-49E PC** is the standard chemistry for use in : FUJIFILM Frontier 340, 500, 550, 570 and 590. Frontier LP7000, 7100, 7200, 7500, 7600, 7700 & 7900 Noritsu QSS-35 and QSS-37 series **CP-49HVII PC** is for high processing volume minilabs and can be replenished on top of CP-49E. Both products are interchangeable.
FUJIFILM CP-49LR
Mixing is automatically done by the processor. Chemicals are packed in a dedicated cartridge CP-49LR PC for easy loading. Cartridge contains: 1 unit Colour Developer concentrate, 1 unit BF part A and 1 unit BF part B Processing capacity of 1 cartridge is 125 m². **CP-49E LR** is the low replenishment rate chemistry for use in : FUJIFILM Frontier 340, 500, 550, 570 and 590. Frontier LP7000, 7100, 7200, 7500, 7600, 7700 & 7900 Noritsu QSS-35 and QSS-37 series **FJ CP-49LR** can be used at high volume processing customers only. **FJ CP-49LR** can be replenished on top of FJ CP-49E chemistry. Replenishment rates must be changed immediately after the new product FJ CP-49LR is installed and the new replenisher mixed.

REPL TANK	FUJIFILM Products – CP47L II Process	To Mix REPL	Water	+ Parts
	P1-R Colour Developer	2.5L	-	+ A
	P2-R Bleach-Fix	8L	-	+ 2x A + 2x B
	PS-R Super Rinse(1)	10L	10L	+ 2x FSC tablet

(1) 5 L PS-R is made using 5L demineralised water coming from the FRSS body + 1 crushed FSC-100 tablet.
(more info see

(2) FHRSS-12 Cartridge on page 34).

FUJIFILM CP-40FAII
Check PIS677 for an alternative FUJIHUNT chemistry for FUJI minilabs running on CP40 chemistry

5. MIXING REPLENISHER - FUJI HUNT C41

A. EnviroNeg and Negacolor Chemicals (1)

To make 1 L Replenisher:	Water mL	Part A mL	Part B mL
DEVELOPER			
EnviroNeg Developer 60 AC	864	100	13.7
EnviroNeg Developer AC	890	80	10
EnviroNeg Developer LR AC	887	80	11
BLEACH			
EnviroNeg RA Bleach VR AC *FOR C41RA @ 5 mL/135-24 FILM*	-	1000	-
EnviroNeg RA Bleach VR AC *FOR C41RA @ 10 mL/135-24 – LOW VOLUME FOR C41B @ 5 mL/135-24 FILM*	200	800	-
FIXER			
Negacolor Fixer RA (2)	750	250	-
STABILIZER			
EnviroNeg FF Superflo Stab MB AC	990	10	-

(1) Where there is only one part this is shown as part A.

(2) These products are used in the C41RA(NP) and C41B(NP) process. Where there is only one part this is shown as part A.

6. MIXING REPLENISHER – FUJI HUNT STANDARD RA4 PROCESSING

A. EnviroPrint Chemicals (1)

To make 1 L replenisher	Water mL	Part A mL	Part B mL
DEVELOPER			
CPRA Digital Pro Developer AC	795	105	100
EnviroPrint Developer MP160	800	200	-
EnviroPrint Developer MP108	800	200	-
EnviroPrint Developer MP73 AC	800	200	-
EnviroPrint Developer MP60 AC	800	200	-
EnviroPrint 47 Developer AC	740	260	-
BLEACH-FIX			
EnviroPrint Bleach-Fix MP215 AC	700	300	-
EnviroPrint Bleach-Fix 215 AC	760	120	120
EnviroPrint Bleach-Fix 108 AC	670	180	150
EnviroPrint Bleach-Fix 70 AC	600	220	180
EnviroPrint Bleach-Fix 55 AC	550	250	200
EnviroPrint 47 Bleach-Fix AC	330	335	335
EnviroPrint Bleach-Fix VR AC(2) @215 mL/m²	760	120	120
EnviroPrint Bleach-Fix VR AC(2) @108 mL/m²	670	180	150
EnviroPrint Bleach-Fix VR AC(2) @70 mL/m²	600	220	180
EnviroPrint Bleach-Fix VR AC(2) @55 mL/m²	550	250	200
STABILIZER			
EnviroPrint Super Stabilizer AC	990	10	-

(1) Where there is only one part this is shown as part A.

(2) mix ratio depends on rep rate

7. MIXING REPLENISHER – FUJI HUNT RA4 FAST PROCESSING

A. EnviroPrint FP Chemicals MP AC

To make 1 L replenisher	Water mL	Concentrate mL
DEVELOPER		
EnviroPrint FP Developer MR	800	200
EnviroPrint 47 Developer AC(1)	740	260
BLEACH-FIX		
EnviroPrint FP Bleach-Fix MR	500	500
STABILIZER		
EnviroPrint FP Super Stabilizer	992	8

(1) high throughput minilabs only.

B. EnviroPrint ADM Paper Cartridge

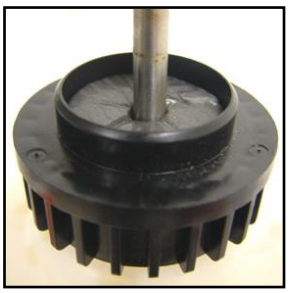
Mixing of replenisher is automatically done by the processor. For correct settings of **EnviroPrint ADM Paper Cartridge**, see page 39

Chemicals are packed in a dedicated cartridge for easy loading.

EnviroPrint ADM Paper Cartridge processes 110 m² of paper on a Agfa D-Lab.1, D-Lab.2 and D-Lab.2 Plus.
EnviroPrint ADM Paper Cartridge On processes 83 m² of paper on a Kodak RP30 and SRP30 Laser minilab.

Each cartridge contains: 1 unit Colour Developer concentrate , 1 unit Bleach-Fix part A, 1 unit Bleach-Fix part B and 1 unit Stabilizer concentrate.

C. EnviroPrint K15 Developers AC



Like the DIS system, the KIS Photo-me DKS 15xx, 16xx and 17xx minilabs and Kodak 89 DLS Digital Minilabs are pumping the correct volumes of concentrates and water directly into the working tanks. The correct volumes can be found on page 28. Thanks to the special K15-cap, the life-time of the developer concentrate is extended during use. When positioning the **EnviroPrint K15 Developer MP90** the K15-cap should not be removed. Position the stainless steel punching and suction tube right above the “pre-cut” opening. Perforate the seal by lowering the suction tube into the drum.

To handle the empty drum in a safe manner, replace the original black K15-cap with the red cap supplied with each drum.

8. MIXING TANK SOLUTION – FUJIFILM NEGATIVE

CN 16Q Mixing instructions processor tank solution – per 1 Liter

PROCESS TANK	FUJIFILM Products – CN16Q Process	Replenisher	Starter	Water
N1	CN16 NQ1-RS Colour Developer Replenisher	833 ml **N1-R**	**CN16 NQ1-S Developer Starter** 19,6 ml	147,4 ml
	or EnviroNeg Developer Replenisher KIT	850 ml **N1-R**	**EnviroNeg Universal Starter AC** 15 ml	135 ml
	or EnviroNeg Developer Replenisher 60 AC	800 ml **N1-R**	**EnviroNeg Universal Starter AC** 15 ml	185 ml
N2	CN1 NQ2-RS Bleach Replenisher	1000 ml **N2-R**	-	-
N3	CN16 NQ3-RS Bleach-Fix Replenisher(1)	600 ml **N3-R**	400 ml **NQ2-R**	-
NS	CN16 NQS-R Super Rinse	1000 ml **NS-R**	-	-
N4	CN16 N4 Safer Stabilizer	1000 ml **N4-R**	-	-

(1) Alternative Mixing instruction for 1L Tank Solution: 600 ml NQ3-R + 40 ml NQ2A + 160 ml NQ2B + 200 ml water

CN16Q Mixing instructions processor tank solution – per tank

PROCESS TANK	Tank volume	FUJIFILM Products – CN16Q Process	Replenisher	Starter	Water
N1	12 L	CN16 NQ1-RS Colour Developer Replenisher	10 L **N1-R**	**CN16 NQ1-S Developer Starter** 235 ml	1,77 L
	12L	or EnviroNeg Developer Replenisher KIT	10,2 L **N1-R**	**EnviroNeg Universal Starter AC** 180 ml	1,62 L
	12L	or EnviroNeg Developer Replenisher 60 AC	9,6 L **N1- R**	**EnviroNeg Universal Starter AC** 180 ml	2,22 L
N2	4L	CN1 NQ2-RS Bleach Replenisher	4 L **N2-R**	-	-
N3	10L	CN16 NQ3-RS Bleach-Fix Replenisher	6L **N3-R**	4L **NQ2-R**	-
NS	8L	CN16 NQS-R Super Rinse	8L **NS-R**	-	-
N4	4,5L	CN16 N4 Safer Stabilizer	4,5L **N4-R**	-	-

CN16L Mixing instructions processor tank solution – per 1 Liter

PROCESS TANK	FUJIFILM Products – CN16L Process	Replenisher	Starter	Water
N1	CN16L N1CR Colour Developer Replenisher	747 ml **N1-R**	CN16L N1-S Developer Starter 55 ml	198 ml
	or EnviroNeg Developer Replenisher LR AC	750 ml **N1-R**	**EnviroNeg Universal Starter AC** 30 ml	220 ml
N2	CN16L N2-R Bleach Replenisher	667 ml **N2-R**	-	333 ml
N3-1	CN16L N3-R Fixer & Replenisher	400 ml **N3-R**		600 ml
N3-2	CN16L N3-R Fixer & Replenisher	333 ml **N3-R**		667 ml
NS	CN16L NS-R Super Rinse	1000 ml **NS-R**	-	-
N4	CN16 N4 Safer Stabilizer	1000 ml **N4-R**	-	-

CN16L Mixing instructions processor tank solution – per tank

PROCESS TANK	Tank volume	FUJIFILM Products – CN16L Process	Replenisher	Starter	Water
N1	18 L	CN16L N1CR Colour Developer Replenisher	13,5 L **N1-R**	CN16 NQ1-S Developer Starter 990 ml	3,5 L
	18 L	**or** EnviroNeg Developer Replenisher LR AC	13,5 L **N1-R**	**EnviroNeg Universal Starter AC** 540 ml	3,96 L
N2	5 L	CN16L N2-R Bleach Replenisher	3,34 L **N2-R**	-	1,66 L
N3-1	5 L	CN16L N3-R Fixer & Replenisher	2 L **N3-R**		3 L
N3-2	5 L	CN16L N3-R Fixer & Replenisher	1,67 L **N3-R**		3,34 L
NS	10 L	CN16L NS-R Super Rinse	10 L **NS-R**	-	-
N4	8 L	CN16 N4 Safer Stabilizer	8 L **N4-R**	-	-

FUJIFILM CN-16S and CN-16SER
A dedicated start-up kit to make 5.2 L Colour Developer, 3.6 L Bleach, 3.6 L Fixer and 1.9 L Stabilizer is available. Colour developer starter is already incorporated in the start-up chemicals. **Before starting to use CN16SER the minilab software must be updated by a minilab technician.**

9. MIXING TANK SOLUTION – FUJIFILM PAPER

FUJIFILM CP-49E, FUJIFILM CP-49HVII & FUJIFILM CP-49LR
A dedicated kit CP49E start-up kit to make either 3.7 L Colour Developer or 3.7 L Bleach-Fix is available. Colour developer starter is already incorporated in the start-up chemicals.
FUJIFILM CP-48SII & FUJIFILM CP-48HVII
A dedicated kit CP48S start-up kit to make either 4.2 L Colour Developer or 4.2 L Bleach-Fix is available. Colour developer starter is already incorporated in the start-up chemicals.

FUJIFILM CP-47LII			
	Replenisher	**Water**	**Starter**
To make 1 L Tank from Replenisher	mL	mL	mL
P1 Colour Developer	300 P1-R	610	90 P1-S
P2 Bleach-Fix	500 P2-R	500	-
PS Super Rinse	= 1000 PS-R	-	-

10. MIXING TANK SOLUTION – FUJI HUNT C41

A. EnviroNeg and Negacolor chemicals

To make 1 L Tank from replenisher	Replenisher mL	Water mL	Starter mL
DEVELOPER			
EnviroNeg Developer 60 AC	800	185	15 (1)
EnviroNeg Developer AC	850	135	15 (1)
EnviroNeg Developer LR AC	750	220	30 (1)
BLEACH			
EnviroNeg RA Bleach VR AC *FOR C41RA @ 5 mL/135-24 FILM*	667	333	-
EnviroNeg RA Bleach VR AC *FOR C41RA @ 10 mL/135-24-LOW VOLUME FOR C41B @ 5 mL/135-24 FILM*	834	166	-
FIXER			
Negacolor Fixer RA(2)	1000	-	-
STABILIZER			
EnviroNeg FF Superflo Stab MB AC	1000	-	-

(1) The correct starter to use is **EnviroNeg Universal Developer Starter AC**.

(2) This product is used in the C41RA(NP) and C41B(NP) process.

11. MIXING TANK SOLUTION – FUJI HUNT STANDARD RA4 PROCESSING

A. EnviroPrint Chemicals

To make 1 L Tank from Replenisher	Replenisher mL	Water mL	Starter mL
DEVELOPER			
CPRA Digital Pro Developer AC	800	160	40 (1)
EnviroPrint Developer MP160	700	220	80 (1)
EnviroPrint Developer MP108	600	320	80 (1)
EnviroPrint Developer MP73 AC	500	390	110 (1)
EnviroPrint Developer MP60 AC	400	480	120 (1)
EnviroPrint 47 Developer AC	300	570	130 (1)
BLEACH-FIX			
EnviroPrint Bleach-Fix MP215 AC – *option 1*	833	147	20 (2)
EnviroPrint Bleach-Fix MP215 AC – *option 2*(3)	1000	-	-
EnviroPrint Bleach-Fix 215 AC	1000	-	-
EnviroPrint Bleach-Fix 108 AC	667	333	-
EnviroPrint Bleach-Fix 70 AC	545	455	-
EnviroPrint Bleach-Fix 55 AC	500	500	-
EnviroPrint Bleach-Fix 35 AC	500	500	-
EnviroPrint Bleach-Fix VR AC @ 215 mL/m^2(4)	1000	-	-
EnviroPrint Bleach-Fix VR AC @ 108 mL/m^2(4)	667	333	-
EnviroPrint Bleach-Fix VR AC @ 70 mL/m^2(4)	545	455	-
EnviroPrint Bleach-Fix VR AC @ 55 mL/m^2(4)	500	500	-
STABILIZER			
EnviroPrint Super Stabilizer AC	1000	-	-

(1) The correct starter to use is **EnviroPrint General Developer Starter AC.**

(2) The correct starter to use is EnviroPrint Bleach-Fix MP Starter AC.

(3) Option 2 requires 8 – 12 hours recirculation in the processor tank before use

(4) mix ratio depends on rep rate.

12. MIXING TANK SOLUTION – FUJI HUNT RA4 FAST PROCESSING

A. EnviroPrint FP Chemicals MP AC

To make 1 L Tank from Replenisher	Replenisher mL	Water mL	Starter mL
DEVELOPER			
EnviroPrint FP Developer MR			
33 sec – 39.0°C	500	440	100 (1)
27 sec – 39.5°C	500	450	80 (1)
20 - 22 sec – 40.0°C	500	460	60 (1)
BLEACH-FIX			
EnviroPrint FP Bleach-Fix MR – *option 1*	550	430	20 (2)
EnviroPrint FP Bleach-Fix MR – *option 2*(3)	660	340	-
STABILIZER			
EnviroPrint Super Stabilizer AC	1000	-	-

(1) The correct starter to use is **EnviroPrint General Developer Starter AC**

(2) The correct starter to use is EnviroPrint Bleach-Fix MP Starter AC.

(3) Option 2 requires 8 – 12 hours recirculation in the processor tank before use

B. EnviroPrint ADM Paper Cartridge

The **EnviroPrint ADM Paper tank kits** have been discontinued.
Please consult PIS682 on how to startup Agfa D-lab.1, Agfa D-Lab.2 and Kodak RP30 minilabs by using CP49E start up kits (developer and bleach fix).

C. EnviroPrint K15 Developers AC

To make 1 L Tank Solution	Water mL	Part A mL	Part B mL	Starter mL
DEVELOPER				
EnviroPrint K15 Developer MP90	860	100	-	60 (1)
BLEACH-FIX				
EnviroPrint FP Bleach-Fix MR	705	275	-	20 (2)
EnviroPrint Bleach-fix 70 AC (3)	700	160	160	-
STABILIZER				
EnviroPrint FP Super Stabilizer	992	8	-	-

(1) The correct starter to use is **EnviroPrint General Developer Starter AC.**

(2) The correct starter to use is EnviroPrint Bleach-Fix MP Starter AC.

(3) To be used in Kodak System 89 DLS Digital Minilab.

VI. SAFE HANDLING OF PROCESSING CHEMICALS

IMPORTANT: Always read the SDS and Product Label : They will provide information concerning the necessary precautions for safe handling of any chemical product.

1. CHEMICAL HANDLING

Chemical concentrates contain ingredients that may be harmful if allowed to contact skin or eyes. It is highly recommended that all lab personnel be protected from fumes and splashing as noted in the section on handling chemicals. Similar precautions should be exercised when handling mixed replenishers and working tank solutions. All those who work with such chemicals must take great care to avoid contact with the skin, the eyes, and other parts of the body.

In case of accidental contact with processing chemicals, wash the affected part with large amounts of running water. In case of contact with developer, wash with an acid soap, and then liberally with water. It is advisable to see a doctor.

Some photographic solutions give off an unpleasant vapour, so it is essential that ventilation is adequate. Never inhale processor solutions.

2. PROTECTIVE EQUIPMENT

Always wear protective gloves, and adequate eye protection.

Gloves: Tight fitting, chemical resistant disposable gloves provide protection for short use requirements. Disposable gloves should be discarded after one use and not rinsed for reuse. Reusable, unlined nitric, butyl rubber or neoprene gloves are the best choice for mixing and working with chemical concentrates and mixed solutions.

Goggles: Goggles are recommended for mixing chemicals. The goggles should be tight fitting and should not have any openings that would allow chemicals to contact the eye. Safety glasses are not adequate for working with liquid chemicals.

Aprons: A protective neoprene apron should always be worn to avoid splashing of chemicals when mixing and pouring.

3. WORK ENVIRONMENT AND VENTILATION

While working with chemicals, you should always open a window or turn on a ventilation fan to provide adequate ventilation.

Symptoms of a poor ventilation problem include scratchy and/or dry throat, itchy irritated eyes, irritated and/or bloody nose, headache, fatigue, nausea, vomiting and loss of consciousness. Though these symptoms are not specific enough to rule out other causes, persistent symptoms may indicate the need to examine the ventilation system.

A ventilation rate of ± 1 m^3 per person or a general room change over rate of 12-15 times per hour, with a minimum of 20% fresh air introduction, is generally considered adequate for general ventilation of photographic operations where a moderate to low volume of chemical mixing occurs.

A general rule to follow to minimise odours and air pollutants is to keep lids on storage containers, treatment containers and processing equipment, whenever possible.

4. EMERGENCY PROCEDURES

If you should get any chemical substances on your skin or in your eyes, flush the affected areas with large amounts of running water.

If you should ingest chemical substances or get some in your eyes, take the label of the offending substance and seek medical attention immediately.

In all instances, the SDS will provide additional information with regard to precautions and safety data.

5. CONTACT DERMATITIS

Dermatitis is a broad term used to describe skin inflammation of any kind. Direct irritants like acids, alkalis, solvents and soaps can cause dermatitis. Dermatitis can also be due to sensitizers (allergic substances). In the case of sensitizers, dermatitis occurs after repeated contact and can involve a remote or larger skin area than the contacted skin location. Dermatitis can be the result of a chemical in the workplace or it may be the result of a household chemical, bacteria or plant.

In the case of workers in the photographic industry, dermatitis is usually due to an allergic response (caused by a sensitising chemical) after prolonged or repeated contact with the chemical. The precautionary health hazard information on the SDS indicates whether the chemical or chemical solution will cause adverse skin reactions and if that chemical is considered a sensitizer.

VII. GLOSSARY

Listed below are brief explanations of the terms used in this publication.

Concentrates

Products that need to be diluted with water before the preparation of replenisher or tank solution.

Replenisher

A solution which is added regularly to the processor (usually by means of an automatic measuring system) in order to maintain the working strength tank solution at a constant level of activity.

Starter

A concentrate mixed with the replenisher, to prepare working strength solution. For some solutions it is necessary to add water as well.

TTO

A TTO (Tank Turn Over) is defined as the consumption of a volume of replenisher equal to the volume of the processor tank.

Overflow

A solution discharged from the processor during the work cycle.

Working Strength Solution

The solution used in the processor tank. Is often called **'Tank Solution'.**

Replenisher Tanks

Storage tanks containing replenisher for each processing bath.

Processor tanks

The tanks in which paper or films are immersed during processing.

Replenishment Rate

The amount of replenisher added to the processor tank for each square metre of paper, or for each film processed.

Control Strip

Strips of paper or film, exposed but not developed, supplied for process control by the photographic material manufacturer. With each packet a reference strip is provided, which has been pre-developed in optimal conditions.

Densitometer

A piece of equipment for measuring the values of the processed control strips, as against those of the reference strip.

Carryover

The solution which is transferred, during the course of processing, from one processor tank to the next, on the surface of the film, the paper or leaders.

Seasoned Solution

Processor solution that, after a certain throughput, assumes the physical and chemical characteristics for which it was designed.

Throughput

The amount of film or paper processed during a period of time.

SDS

Safety **D**ata **S**heet provides detailed information on the chemicals, their properties and safety and environmental information.

VIII. MINILAB PRODUCT RANGE

1. FUJI HUNT PRODUCT LIST

A. C41 Film Process

Product	Conc.	To Make	Cat N°
PROCESS KIT			
Film X-press Kit		5 L	914 085
ENVIRONEG DEVELOPERS			
EnviroNeg Universal Starter AC	*6 x 1 L*		*972 497*
EnviroNeg Developer Replenisher LR Kit AC		2 x 5 L	992 271
EnviroNeg Developer Replenisher LR Kit AC		2 x 10 L	954 743
EnviroNeg Developer Replenisher Kit AC		2 x 10 L	954 693
EnviroNeg Developer Replenisher 60 AC		2 x 5 L	998 518
NEGACOLOR BLEACHES			
EnviroNeg RA Bleach Replenisher VR AC		2 x 5 L	971 135
NEGACOLOR FIXERS			
Negacolor RA Fixer & Replenisher		4 x 10 L	992 024
ENVIRONEG FF STABILIZERS			
EnviroNeg FF Superflo Stabilizer MB AC	2 x 1 L dosing	2 x (10 x 10 L)	991 596

B. RA4 paper Process

Product	Conc.	To Make	Cat N°
PROCESS KIT			
EnviroPrint ADM Paper Cartridge		2 x 110 m²	997 569
Please consult PIS682 on how to startup Agfa D-lab.1, Agfa D-Lab.2 and Kodak RP30 minilabs by using CP49E start up kits (developer and bleach fix).			
ENVIROCHEM DEVELOPERS			
EnviroPrint General Developer Starter AC	*6 x 1 L*		*971 657*
EnviroPrint 47 Developer Replenisher		4 x 10 L	998 104
EnviroPrint Developer Replenisher MP60 AC		6 x 10 L	994 345
EnviroPrint Developer Replenisher MP60 AC		50 L	994 368
EnviroPrint Developer Replenisher MP73 AC		6 x 10 L	992 911
EnviroPrint Developer Replenisher MP73 AC		50 L	992 917
EnviroPrint Developer Replenisher MP108		6 x 10 L	990 912
EnviroPrint Developer Replenisher MP108		50 L	990 994
EnviroPrint Developer Replenisher MP160		6 x 10 L	991 702
EnviroPrint Developer Replenisher MP160		50 L	991 281

Product	Conc.	To Make	Cat N°
CPRA DEVELOPERS			
CPRA Digital Pro Developer Replenisher Kit AC		2 x 20 L	991 224
EnviroPrint FP DEVELOPERS			
EnviroPrint FP Developer Replenisher MR		6 x 5L	994 186
EnviroPrint K15 DEVELOPERS			
EnviroPrint K15 Developer Replenisher MP90		4 x 12.5L	995 472
ENVIROPRINT BLEACH-FIXES AIRCONTROL			
EnviroPrint Bleach-Fix MP Starter AC	*6 x 500 mL*		*992 420*
EnviroPrint 47 Bleach-Fix Replenisher AC		4 x 10 L	998 112
EnviroPrint Bleach-Fix Replenisher 55 AC		2 x 10 L	995 654
EnviroPrint Bleach-Fix Replenisher 70 AC		2 x 10 L	995 670
EnviroPrint Bleach-Fix Replenisher 70 AC Part A		50 L	995 688
EnviroPrint Bleach-Fix Replenisher 70 AC Part B		50 L	995 696
EnviroPrint Bleach-Fix Replenisher 108 AC		2 x 10 L	995 712
EnviroPrint Bleach-Fix Replenisher 108 AC Part A		50 L	995 720
EnviroPrint Bleach-Fix Replenisher 108 AC Part B		50 L	995 738
EnviroPrint Bleach-Fix & Replenisher 215 AC		2 x 10 L	995 746
EnviroPrint Bleach-Fix & Replenisher 215 AC		50 L	995 753
EnviroPrint Bleach-Fix Replenisher MP 215 AC		4 x 10 L	999 622
EnviroPrint Bleach-Fix Replenisher VR AC Part A	20 L		995 761
EnviroPrint Bleach-Fix Replenisher VR AC Part B	20 L		995 779
ENVIROPRINT FP BLEACH-FIXES			
EnviroPrint Bleach-Fix MP Starter AC	6 x 500 mL		992 420
EnviroPrint FP Bleach-Fix Replenisher MR		4 x 5 L	994 178
ENVIROPRINT STABILIZERS			
EnviroPrint Super Stabilizer & Replenisher AC	2 x 1 L dosing	2 x (10 x 10 L)	990 630
EnviroPrint Super Stabilizer & Replenisher AC		6 x 50 L	976 035
ENVIROPRINT FP STABILIZERS AC			
EnviroPrint FP Super Stabilizer & Replenisher	6 x 1 L		994 228

2. FUJIFILM PRODUCT LIST

A. CN16 Film Process

Product	Conc.	To Make	Cat N°
CN16Q			
EnviroNeg Developer Replenisher Kit AC		2x10L sz	992 271
EnviroNeg Developer Replenisher 60 AC ***LOW VOLUME***		2x5L sz	954 743
FJ CN16Q2RS Bleach Replenisher		4 x 4 L	993 600
FJ CN16Q3RS Bleach-Fix Replenisher		4 x 4 L	931 261
EnviroNeg FF Superflo Stabilizer & Replenisher MB AC		2x10x10L sz	991 596
CN16L			
EnviroNeg Universal Developer Starter AC	*6x1L conc*		*972 497*
EnviroNeg Developer Replenisher LR AC		2x5L sz	992 271
EnviroNeg Developer Replenisher LR AC *(INA Y2021)*		2x10L sz	954 743
FJ CN16L N2R Bleach Replenisher LQ		4 x 2 L	992 966
FJ CN16L N3R Fixer & Replenisher		4 x 2 L	958 694
EnviroNeg FF Superflo Stabilizer & Replenisher MB AC		2x10x10L sz	991 596
CN16S			
FJ CN16S NC1 Replenisher Kit x 2		2 x 200 films	967 026
FJ CN16S NC2 Replenisher Kit x 2		2 x 1000 films	990 077
FJ CN16S N1		1 x 5,2 L	975 003
FJ CN16S N2		1 x 3,6 L	975 011
FJ CN16S N3		6 x 3,6 L	975 029
FJ CN16S N4		24 x 1,9 L	990 069
CN16SER			
FJ CN16SER NC1 Replenisher Kit x 2		2 x 120 films	998 484
FJ CN16SER NC2 Replenisher Kit x 1		1 x 600 films	998 492
FJ CN16S N1		1 x 5,2 L	975 003
FJ CN16S N2		1 x 3,6 L	975 011
FJ CN16S N3		6 x 3,6 L	975 029
FJ CN16S N4		24 x 1,9 L	990 069

Check PIS716 for FUJI HUNT replacement for FUJI CN16L N1CR Developer Replenisher

Check PIS715 for FUJI HUNT replacement for FUJI CN16Q N1RS Developer Replenisher

Check PIS717 for FUJI HUNT replacement for FUJI CN16 N4-R Safer Stabilizer

B. CP/RA4 Paper Process

Product	Conc.	To Make	Cat N°
CP47 L II			
FJ CP47LII P1S Developer Starter		6 x 10 L	995 076
FJ CP47LII P1R Developer Replenisher		4 x 2,5 L	995 092
FJ CP47LII P2R Bleach-Fix Replenisher		2 x 4 L	995 100
CP48 HV II			
FJ CP48 HVII Kit x 2			995 118
FJ CP48SII P1		1 x 4,2 L	994 483
FJ CP48SII P1		10 L	994 491
FJ CP48SII P2		1 x 4,2 L	994 509
FJ CP48SII P2		10 L	994 517
CP48 S II			
FJ CP48SII PC Kit x 2			994 475
FJ CP48SII P1		1 x 4,2 L	994 483
FJ CP48SII P1		10 L	994 491
FJ CP48SII P2		1 x 4,2 L	994 509
FJ CP48SII P2		10 L	994 517
CP49 E			
FJ CP49E PC EZII Kit x 2 LQ		2 x 111 m²	992 990
FJ CP49E P1 Start-up Colour Developer		1 x 3,7 L	992 206
FJ CP49E P2 Start-up Bleach-Fix		1 x 3,7 L	992 214
CP49 LR			
FJ CP49LR PC Kit x 2		2 x 125 m²	995 126
FJ CP49E P1 Start-up Colour Developer		1 x 3,7 L	992 206
FJ CP49E P2 Start-up Bleach-Fix		1 x 3,7 L	992 214
CP49 HV II			
CP49HV II PC Kit x 2		2 x 111 m²	999 516
FJ CP49E P1 Start-up Colour Developer		1 x 3,7 L	992 206
FJ CP49E P2 Start-up Bleach-Fix		1 x 3,7 L	992 214

3. MISCELLANEOUS PRODUCT LIST

Product	Conc.	To Make	Cat N°
MISCELLANEOUS SUPPLIES			
FHRSS-12 Cartridge			992 081
FJ Super Conditioner Tablets		2 x (100 x 5 L)	999 632
FJ Super Conditioner Tablets		20 x (100 x 5 L)	999 721
ADDITIVES			
Ultra Bleach-Fix Extender	10 L		928 127
Acticide MV	5 kg		942 229
High Purity Water			
HIPURO High Purity Water	20 L		999 127
HIPURO High Purity Water	60 L		992 156