



EnviroNeg Developer 60 and EnviroNeg RA Bleach 10 for C41 Process Low Throughput

Applies to : All C41 processors only achieving low film throughput - all minilabs and other processors

Introduction

In recent years film volumes have declined dramatically, and many (perhaps even most) minilabs (in particular) are processing less than 10 films per day - or even less than 5 films per day, yet wish to continue to operate their film processors. Conventional developers from FUJIFILM, Fuji Hunt, or other suppliers have all been designed with the levels of film throughput found in the 1980's and 1990's - not the levels that are seen now.

These conventional developers, even the higher replenishment rate versions such as Fuji Hunt EnviroNeg Developer and FUJIFILM CN-16Q N1 Developer, are perfect if you have enough film to use the same amount of developer replenisher in 2-3 weeks as the volume of the developer tank in your processor. This is what these developers were designed for. But now, with current film volumes, most laboratories just do not get enough film to do this.

The result is a decrease in process quality - decreased contrast and increased DMin (base stain) on the film. This gives poor print quality, even with the boost given by digital printers such as the Fuji Frontier. The less films you process, the worse it gets. Just allowing the film process to get worse and worse will simply mean that customers will no longer bring them their films, and film volumes will decrease even further. Until now, the only workable solution has been to dump the developer working tank - and sometimes the replenisher as well - and replace with fresh solution. Now there is a better way!

If a laboratory makes a 10 litre mix of developer, but takes more than 3-4 weeks or more to use it, you really must do something!

EnviroNeg Developer 60 AC and EnviroNeg RA Bleach 10 AC

EnviroNeg Developer 60 AC is specially designed for use in all types of film processor that are having problems with low throughput. This includes minilabs, professional dip & dunk (hanger) type machines and hand lines (also known as deep tank processing), and even photofinishing processors that are now too big for your current film volumes. FUJIFILM Europe has published separate Technical Information Sheets (TIS) for professional and photofinishing processors, available on our [esclusivo](#) web site.

This 3-part developer is odour free, and part of our Air Control product range. It has been designed to give greatly improved resistance to oxidation and low throughput conditions, providing much improved process stability and quality and greatly extending the bath lifetime. Under all but the most extreme low throughput conditions, proper use of this new developer will avoid any requirement for developer retanking - previously necessary to retain process activity.

EnviroNeg RA Bleach 10 AC is designed as the ideal partner for EnviroNeg Developer 60 AC for use in all types of film processor that employ the C41RA process - typically minilabs. See later in this article for information about the bleach bath in professional (non-C41RA) processors.

This single part bleach concentrate replaces your existing RA Bleach, and runs at 10 ml/135-24 film - double the standard replenishment rate. Use of this new bleach will greatly reduce the amount of oxidised and stain-causing developer carryover present in the bleach, and also maintain the bleach in a chemically optimum condition. The reduction in DMin can be very significant, with resulting increases in print shadow detail and overall print quality.

Typical processing conditions now found in many minilab and other processors show low or very low contrast coupled with high or very high DMin (base stain). This results in a compressed tonal range, with loss of detail in both highlights and shadows. This inevitably results in considerable and often serious reduction in print (and digital scan) quality, even with the latest Fuji Frontier and other digital minilabs.

EnviroNeg Developer 60 AC and EnviroNeg RA Bleach 10 AC have shown to give very considerable improvements in both process stability and process quality with the minimum of effort on the part of the processor operator. These results have been proven with extended field testing over a long period of time.

Developer and Bleach Selection (Minilabs - C41RA)

EnviroNeg Developer 60 AC is run at 60 ml 135-24 film under normal low throughput conditions. When use of EnviroNeg Developer 60 AC is indicated, EnviroNeg Bleach 10 AC should also be used. The following table can be used to select the most appropriate products for your processor.

C41 Developer and Bleach Selection Chart

Films / Week	Developer Tank Volume							
	5	10	15	20	25	30	40	50
200	Orange	Orange	Orange	Orange	Yellow	Yellow	Yellow	Green
150	Orange	Orange	Orange	Yellow	Yellow	Yellow	Green	Green
100	Orange	Orange	Yellow	Yellow	Green	Green	Green	Green
80	Orange	Yellow	Yellow	Green	Green	Green	Green	Red
60	Orange	Yellow	Green	Green	Green	Green	Red	Red
40	Yellow	Green	Green	Green	Red	Red	Red	Red
20	Yellow	Green	Red	Red	Red	Red	Red	Red
10	Green	Red	Red	Red	Red	Red	Red	Red

Key :

	Use EnviroNeg Developer AC / EnviroNeg RA Bleach AC
	Use EnviroNeg Developer 60 AC / EnviroNeg RA Bleach 10 AC
	see "Very Low Throughput" below
	Not recommended

Please note that the recommendations in this chart depend on good working practices by the laboratory, but provide a good starting point. This means a floating lid or balls in the developer replenisher tank, mixing only the minimum volume of developer at one time (no multiple 5 litre packs mixed together, for example), running only normal operating hours, compensation for evaporation, etc. Some processors may be more tolerant of low throughput than others, depending on processor design. Although it is possible to use EnviroNeg Developer 60AC with high film volumes, you are recommended to use the standard replenishment rate developer EnviroNeg Developer instead if high film volumes are maintained for an extended period.

Where use of EnviroNeg Developer AC developer is indicated above, EnviroNeg RA Bleach 10 AC should not be used. In this case, use the normal EnviroNeg RA Bleach AC and go back to the standard 5 ml/135-24 film replenishment rate specified for this product.

Developer and Bleach Selection (Prolabs - C41 Process)

EnviroNeg Developer 60 AC is run at 60 ml 135-24 film under normal low throughput conditions. Negacolor Ultra Bleach 3 should continue to be used. The following table can be used to select the most appropriate developer for your processor.

C41 Developer Selection Chart

Films / Week	Developer Tank Volume							
	5	10	15	20	25	30	40	50
200	Orange	Orange	Orange	Orange	Yellow	Yellow	Yellow	Green
150	Orange	Orange	Orange	Yellow	Yellow	Yellow	Green	Green
100	Orange	Orange	Yellow	Yellow	Green	Green	Green	Green
80	Orange	Yellow	Yellow	Green	Green	Green	Green	Red
60	Orange	Yellow	Green	Green	Green	Green	Red	Red
40	Yellow	Green	Green	Green	Red	Red	Red	Red
20	Yellow	Green	Red	Red	Red	Red	Red	Red
10	Green	Red	Red	Red	Red	Red	Red	Red

Key :

	Use EnviroNeg Developer AC / Negacolor Ultra Bleach 3
	Use EnviroNeg Developer 60 AC / Negacolor Ultra Bleach 3
	see "Very Low Throughput" below
	Not recommended



Please note that the recommendations in this chart depend on good working practices by the laboratory, but provide a good starting point. This means a floating lid or balls in the developer replenisher tank, mixing only the minimum volume of developer at one time (no multiple 20 litre packs mixed together, for example), running only normal operating hours, compensation for evaporation, etc. Some processors may be more tolerant of low throughput than others, depending on processor design. Although it is possible to use EnviroNeg Developer 60AC with high film volumes, you are recommended to use the standard replenishment rate developer EnviroNeg Developer instead if high film volumes are maintained for an extended period.

Where use of EnviroNeg Developer 60 AC developer is indicated above, bleach regeneration (if practised) should be stopped immediately, and the system changed back to a replenished-only system. Any collected bleach overflow waiting for regeneration should be discarded.

Bleach and Fixer

For all minilab film processors using standard replenisher chemistry (i.e. all those not using special cartridges), the replenishment rate of fixer and stabiliser should be increased by about 50% when the processor is running under low throughput conditions. This means replenish at 50 ml/135-24 film for Negacolor RA Fixer instead of 35 ml/135-24. Product mixing is unchanged from standard.

For other film processors, the usual bleach found on professional and photofinishing C41 film processors is Negacolor Ultra Bleach 3. Product mixing is unchanged from standard with low throughput, but you should not be carrying out bleach regeneration when film volumes are low. If you are currently regenerating the bleach but have low throughput, then just switch back to a standard replenished system. You may also find that occasional use of a carbon filter in the bleach recirculation system (for a few hours at a time – never leave a carbon filter in place for extended periods or else it will block) helps to control excessive stain (Dmin) caused by oxidised developer by-products found in the bleach due to developer carryover. The carbon filter can be washed out and saved for future use; typically such a filter can be used several times before it becomes ineffective.

For all professional and photofinishing film processors using standard fixer replenisher, the replenishment rate of fixer and stabiliser should be increased by about 50% when the processor is running under low throughput conditions. This means replenish at 45 ml/135-24 film for Unilec or Unimatic Fixer instead of 30 ml/135-24. Product mixing is unchanged from standard. You should change the stabiliser on a regular basis (typically weekly) if you are not already doing so.

Very Low Throughput

EnviroNeg Developer 60 AC (and EnviroNeg RA Bleach 10 AC for the C41RA process in minilabs) has been designed to allow good quality C41 film processing in the range shown in yellow on the above graph – which covers most low throughput situations. If your film throughput is even lower – in the green region shown on the graph above – 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% from the standard low throughput recommendations. 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 instructions remain unchanged.

Developer Replenisher Storage

To prevent excessive oxidation of developer replenisher, it is highly recommended that you only mix one batch at a time, in order to give minimum time that the developer replenisher will remain in the replenisher tank. If your replenisher tank is significantly larger than 25L, as may well be the case in a prolab environment, it is recommended that you exchange this tank for a smaller one more appropriate to current film volumes. Additionally, the replenisher tank must have a floating lid – either a correctly fitting custom lid designed for the tank, or floating balls or plastic pellets designed for this use.

Please Note : Successful operation of ANY C41 processor under low throughput conditions ABSOLUTELY REQUIRES use of plastic balls or pellets in your minilab developer replenisher tank, or a floating lid (or balls) in the developer replenisher tanks for other processors. A large part of the problem of developer oxidation is due to oxidation of the replenisher long before it even gets to the working tank. If your replenisher is oxidised you are in trouble from the start! This protection is only required for the developer replenisher, not the other baths.



Please check your developer replenisher tank and see if there is a good covering of plastic balls or pellets, or a floating lid. If not, suitable balls can be ordered from your local FUJIFILM distributor. Floating lids for prolab replenisher tanks can be usually made by a local plastics manufacturer - but first check if your existing replenisher tank is a suitable size. If you are planning to use the 20L size packs, your replenisher tank should be no larger than 25-30L; a tall smaller surface area tank is much much better than a short fat tank! You are strongly advised to make sure your tank is a good shape right from the start.

Summary

The use of EnviroNeg 60 Developer AC (and EnviroNeg Bleach 10 AC for C41RA minilabs) will go a long way to help with improving process quality and reducing process control problems, and also avoid the need for frequent chemistry dumps and retanks. The chemistry will cost you more per film processed than standard chemistry, but this cost is more than offset by the chemistry and time saved in not having to regularly dump and remix your chemistry - and you get a greatly improved process as part of the deal. You will be able to offer a good or very good quality film process instead of producing flat, thin negatives and very poor quality prints. This can only improve your film processing volume - or at the very least help retain the volume you currently have.

Further information

Further information is available in our Technical Information Sheets and Product Information Sheet, available from your FUJIFILM representative.

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Sales & Technical Service
Europark-Noord 21-22
9100 Sint-Niklaas
Belgium

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