

# User Bulletin #66

## *Procise and Procise cLC Protein Sequencers*

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July 23, 1999 (updated 01/2001)

### **SUBJECT: New Cleaning Procedures for Glass Cartridge Blocks**

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**Overview** The glass cartridge blocks used on the Procise® and Procise® cLC protein sequencers can retain proteins and/or amino acids on the surface or within the channel bored through the blocks. This can result in excessive amino acid background.

This user bulletin describes two new cleaning methods for glass cartridge blocks.

#### **Aqueous-Acetonitrile Cleaning Method**

The cartridge blocks and lines are washed on the instrument with a 10% or 20% solution of acetonitrile in water.

#### **Pyrolysis Method**

In certain cases, the aqueous-acetonitrile cleaning may not be effective enough on its own. It may then be coupled with the pyrolytic cleaning method in which the glass blocks are heated to high temperature in a furnace and any contamination is burned off.

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## Safety

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<b>Documentation User Attention Words</b>	<p>Five user attention words appear in the text of all Applied Biosystems user documentation. Each word implies a particular level of observation or action as follows.</p> <p><b>Note</b> This word is used to call attention to information.</p> <p><b>IMPORTANT</b> This word calls attention to information that is necessary for correct operation of the kit or instrument.</p> <p><b>CAUTION</b> This word informs the user that damage to the instrument could occur if the user does not comply with the information. It also indicates a potentially hazardous situation that could result in minor or moderate injury to the user.</p> <p><b>! WARNING !</b> This word informs the user that serious physical injury or illness to the user or other persons could occur if these required precautions are not taken.</p> <p><b>DANGER</b> Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury.</p>
<b>General Warning</b>	<p><b>! WARNING ! CHEMICAL HAZARD.</b> Some chemicals used with Applied Biosystems instruments or kits may be hazardous and can cause injury, illness, or death. Check regularly for chemical leaks and chemical spills, which represent potential safety hazards to the operator. If a leak or a spill occurs, follow clean-up instructions in the Material Safety Data Sheets (MSDSs), or in the Waste Profile in the Site Preparation and Safety Guide. Hazardous Chemical Warnings are prominently displayed on the labels of all hazardous materials. Always read the appropriate MSDSs and Waste Profiles before using the chemicals in any way.</p>
<b>User Safety Precautions</b>	<p>Always wear the appropriate protective gloves, clothing, and eyewear when handling chemicals.</p>
<b>Ordering MSDSs</b>	<p>Material Safety Data Sheets (MSDSs) for hazardous chemicals manufactured by Applied Biosystems will accompany your first shipment. To receive additional copies of MSDSs at no extra cost, call Applied Biosystems at (800) 327-3002.</p> <p>For chemicals required for this instrument but not manufactured or sold by Applied Biosystems, please obtain the MSDSs from their manufacturers.</p>

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## Cleaning the Glass Cartridge Blocks

**Advantages of Aqueous-Acetonitrile Cleaning** The aqueous-acetonitrile cleaning method has a number of significant advantages over the current nitric-acid sonication method:

- ◆ No nitric acid
- ◆ No sonication damage (e.g., chipped or cracked blocks)
- ◆ Automated cleaning of blocks on the instrument
- ◆ Cartridge inlet and outlet lines are also cleaned
- ◆ More effective cleaning

**About the Cleaning Solution** The cartridge blocks and lines on the instrument are washed with a 10% or a 20% solution of acetonitrile in water.

Use the correct cleaning solution for your instrument.

Instrument	Cleaning Solution	P/N
Procise	S4B	400314
Procise cLC	S4C	402051

**! WARNING ! CHEMICAL HAZARD.** Acetonitrile is a flammable chemical that is irritating to the eyes, skin, and respiratory system if inhaled. It can also cause convulsions or fatal cyanide poisoning. Read the MSDS in the Site Preparation and Safety Guide. Wear appropriate protective eyewear, clothing, and gloves.

**Procedure for Cleaning** To clean the glass cartridge blocks:

Step	Action
1	Create the appropriate cycle and method for your instrument. See "Creating Cartridge Cycle and Wash Method for Procise Systems" on page 4 or "Creating Cartridge Cycle and Wash Method for Procise cLC Systems" on page 6.
2	Place the S4B or S4C in the S1 bottle position using the <b>Bottle Change Procedure</b> .
3	Install glass blocks in holders with only the cartridge seal in place. It is not necessary to install a glass fiber filter.
4	From the <b>Start Run</b> page, set all cartridges to run the Cart Wash S1 or the Cart Wash S1 cLC method for one cycle.
5	<b>IMPORTANT</b> After all cartridges have been washed, be sure to replace the original solvent (heptane on the cLC) in the S1 bottle position using the <b>Bottle Change Procedure</b> .

## Creating Cartridge Cycle and Wash Method for Procise Systems

**The Cartridge Cycle** If you are using a Procise sequencer, create a cartridge cycle like the one shown below. Save the cycle as Cart Wash S1.

**Note** Refer to your instrument user manual for instructions on creating and saving a cycle.

### Cart Wash S1

Step	Fxn #	Function Name	Time/Temp	El. Time
1	258	Begin	0	:00
2	41	Del S1, Cart (top)	120	2:00
3	42	Del S1, Cart (bottom)	10	2:10
4	41	Del S1, Cart (top)	10	2:20
5	42	Del S1, Cart (bottom)	10	2:30
6	41	Del S1, Cart (top)	10	2:40
7	42	Del S1, Cart (bottom)	10	2:50
8	41	Del S1, Cart (top)	10	3:00
9	42	Del S1, Cart (bottom)	10	3:10
10	41	Del S1, Cart (top)	60	4:10
11	148	Cartridge Wait	30	4:40
12	41	Del S1, Cart (top)	60	5:40
13	148	Cartridge Wait	30	6:10
14	42	Del S1, Cart (bottom)	60	7:10
15	103	Wash Reagent Block (S1)	60	8:10
16	104	Wash Solvent Block (S1)	60	9:10
17	101	Wash Input Block (S1)	60	10:10
18	102	Wash Output Block (S1)	60	11:10
19	135	Flush Cart Reagent Block	60	12:10
20	136	Flush Cart Solvent Block	60	13:10
21	137	Flush Input Block	60	14:10
22	138	Flush Output Block	60	15:10
23	131	Dry Cart (top)	60	16:10
24	259	End	0	16:10

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**The Sequence Method** After you have created the Cart Wash S1 cycle as above, create a method like the one shown below. Save the method as Cart Wash S1.

**Note** Refer to your instrument user manual for instructions on creating and saving a method.

**Note** The cartridge temperature for the wash cycle is higher than the temperature used for normal chemistry.

The screenshot shows the PROCISE software interface for configuring a method. The window title is 'PROCISE'. At the top, there is a 'Sequence Methods' dropdown menu and a status indicator 'Idle'. Below this are three buttons: 'Stop Run...', 'Pause Now', and 'Pause Later...'. The 'Method' dropdown is set to 'Cart Wash S1'. The 'Starting Temperatures' section includes three spinners: 'Cartridge (°C)' set to 60, 'Flask (°C)' set to 64, and 'Column (°C)' set to 55. The 'Cycles & Gradients' section features a table with columns for 'Cycle #', 'Cartridge Cycle', 'Flask Cycle', and 'Gradient'. The first row is highlighted in cyan and contains the values: '0', 'Cart wash S1', 'None', and 'None'. To the left of the table are 'Insert Row' and 'Delete Row' buttons. The interface also includes a vertical scrollbar on the right side.

Cycle #	Cartridge Cycle	Flask Cycle	Gradient
0	Cart wash S1	None	None

## Creating Cartridge Cycle and Wash Method for Procise cLC Systems

**The Cartridge Cycle** If you are using a Procise cLC sequencer, create a cartridge cycle like the one shown below. Save the cycle as Cart Wash S1 cLC.

**Note** Refer to your instrument user manual for instructions on creating and saving a cycle.

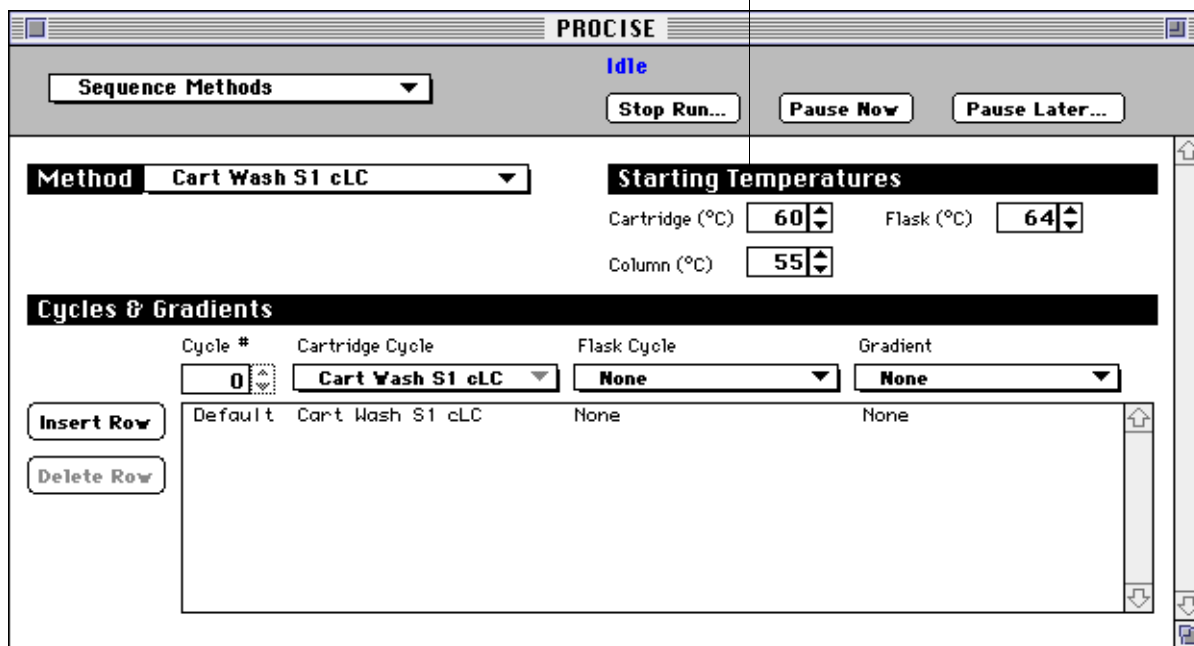
### Cart Wash S1 cLC

Step	Fxn #	Function Name	Time/Temp	El. Time
1	258	Begin	0	:00
2	41	Del S1, Cart (top)	120	2:00
3	42	Del S1, Cart (bottom)	10	2:10
4	41	Del S1, Cart (top)	10	2:20
5	42	Del S1, Cart (bottom)	10	2:30
6	41	Del S1, Cart (top)	10	2:40
7	42	Del S1, Cart (bottom)	10	2:50
8	41	Del S1, Cart (top)	10	3:00
9	42	Del S1, Cart (bottom)	10	3:10
10	41	Del S1, Cart (top)	60	4:10
11	148	Cartridge Wait	30	4:40
12	41	Del S1, Cart (top)	60	5:40
13	148	Cartridge Wait	30	6:10
14	42	Del S1, Cart (bottom)	60	7:10
15	240	Wash Cart Solvent Block S1	60	8:10
16	241	Wash Cart Reagent Block S1	60	9:10
17	101	Wash Input Block (S1)	60	10:10
18	102	Wash Output Block (S1)	60	11:10
19	135	Flush Cart Reagent Block	60	12:10
20	136	Flush Cart Solvent Block	60	13:10
21	137	Flush Input Block	60	14:10
22	138	Flush Output Block	60	15:10
23	131	Dry Cart (top)	60	16:10
24	259	End	0	16:10

**The Sequence Method** After you have created the Cart Wash S1 cLC cycle as above, create a method like the one shown below. Save the method as Cart Wash S1 cLC.

**Note** Refer to your instrument user manual for instructions on creating and saving a method.

**Note** The cartridge temperature for the wash cycle is higher than the temperature used for normal chemistry.



## Pyrolizing the Glass Cartridge Blocks

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**About Pyrolysis** In some cases, the aqueous-acetonitrile wash may not be sufficient to remove all contaminants from the blocks.

If there is still high background signal after aqueous-acetonitrile cleaning and you have access to a muffle furnace, clean the cartridge blocks using the pyrolysis procedure described below.

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**Procedure for** To pyrolyze the glass cartridge blocks, you need:

**Pyrolysis**

- ◆ A furnace or oven that can achieve 630 °C
- ◆ Shallow pyrex dish(es) or beaker(s)

Step	Action
1	Remove the glass cartridge blocks from the instrument, and place them into pyrex dishes.  Make sure that the sealing surfaces of each block are facing upward.
2	Place the pyrex dishes into the furnace, and set the temperature to 630 °C.
3	Make sure the glass cartridge blocks are maintained at 630 °C for at least two hours.
4	<b>! WARNING ! HOT. Allow the furnace to cool down, preferably overnight, before removing the blocks.</b>
5	<b>Note</b> Use new, clean, disposable powder-free latex gloves when handling the glass blocks.  Reinstall the glass cartridge blocks on the instrument with a cartridge seal in place.  If you have not recently done so, carry out the aqueous-acetonitrile cleaning as described in "Cleaning the Glass Cartridge Blocks" on page 3. This is to ensure that the inlet and outlet lines are also clean.

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