Cleaning and Maintenance of RapidTrace® Workstation

Introduction

In order to keep your RapidTrace® workstation clean, in good working order and free from contamination it is of course essential to routinely clean and purge the fluid path. Whichever matrix and reagents are running through the system, traces of these liquids will be left after use; proteins from plasma, precipitates from buffers or even particulates from oral fluid. Over time if the following cleaning schedule is not observed these contaminants could cause blockages leading to malfunctions and/or cross contamination.

Combined Cleaning Procedure (including mixer)

If you use the mixer function on the RapidTrace it is essential that it is cleaned on a regular basis using the cleaning procedure listed below. It is recommended this procedure is performed on a daily basis at the end of the day's running on the RapidTrace Workstation. The first sample is Sodium Hydroxide followed by a second sample of nitric acid (HNO_3). The sodium hydroxide (NaOH) rinse removes proteins whilst the nitric acid wash neutralizes any sodium hydroxide left over from the first wash whilst also removing any algae and/or bacteria that may be present.

Sample 1: 8 mL Sodium hydroxide
Sample 2: 8 mL Nitric acid
Columns: Blank columns supplied with RapidTrace Workstation
Tubes: 2 sample tubes and 2 eluent tubes

	Step	Source	Output	Volume mL	Flow mL/min
1	Purge-Cannula	Water	Cannula	3	24
2	Add to mixer	Sample	Mixer	2.5	15
3	Purge-Cannula	Mixer	Cannula	2.6	30
4	Add to mixer	Water	Mixer	4.5	30
5	Purge-Cannula	Mixer	Cannula	5	30
6	Add to mixer	Water	Mixer	4.5	30
7	Purge-Cannula	Mixer	Cannula	5	30
8	Add to mixer	Water	Mixer	4.5	30
9	Purge-Cannula	Mixer	Cannula	5	30
10	Load	Sample	Aqueous	2.5	15
11	Rinse	Water	Aqueous	3	18
12	Rinse	Water	Aqueous	3	18
13	Rinse	Water	Aqueous	3	18
14	Load	Sample	Organic	2.5	15
15	Rinse	Water	Organic	3	18
16	Rinse	Water	Organic	3	18
17	Rinse	Water	Organic	3	18
18	Purge-Cannula	Water	Cannula	5	30

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Protein Cleaning Procedure (without mixer)

Similar to the previous method, the protein cleaning procedure just uses the sodium hydroxide part of the cleaning process to remove proteins from the fluid path. This procedure does not include the mixer as many methods do not require the use of the mixer; it should be used by operators using the RapidTrace Workstation with protein heavy matrices.

Sample: 6 mL Sodium hydroxide
Columns: Blank columns supplied with RapidTrace Workstation
Tubes: 1 sample tube and 1 eluent tube

	Step	Source	Output	Volume mL	Flow mL/sec
1	Purge-Cannula	Water	Cannula	5	0.50
2	Load	Sample	Aqueous	3	0.25
3	Rinse	Water	Aqueous	4	0.30
4	Rinse	Water	Aqueous	5	0.30
5	Purge-Cannula	Methanol	Cannula	5	0.50
6	Purge-Cannula	Water	Cannula	5	0.50

Precipitate and Bacteria Cleaning Procedure (without mixer)

To ensure all the sodium hydroxide from the protein clean has been washed through the fluid path it is essential to then further rinse the reagent lines with nitric acid. This wash will not only clear any residue but also kill any bacteria and/or algae that may be growing in the damp environment. Again this rinse should be performed daily and immediately following the sodium hydroxide wash.

Sample: 6 mL Nitric acid
Columns: Blank columns supplied with RapidTrace Workstation
Tubes: 1 sample tube and 1 eluent tube

	Step	Source	Output	Volume mL	Flow mL/sec
1	Purge-Cannula	Water	Cannula	5	0.50
2	Load	Sample	Aqueous	3	0.25
3	Rinse	Water	Aqueous	4	0.25
4	Rinse	Water	Aqueous	5	0.25
5	Purge-Cannula	Methanol	Cannula	5	0.50
6	Purge-Cannula	Water	Cannula	5	0.50

Hot Water Method

If using particularly 'dirty' samples, especially anything suspended in biological fluids it would be good practice to perform a hot water cleaning procedure once a week. This very simple method should just clear the reagent lines of any blockages and build up of precipitates, improving the efficiency of the RapidTrace Workstation and extending the lifespan of the reagent lines.

Sample: Hot Water, water from line 1 should be replaced with a source of hot water close to boiling temperature
Columns: Blank columns supplied with RapidTrace Workstation

	Step	Source	Output	Volume mL	Flow mL/sec
1	Purge-Cannula	Water	Cannula	6	0.50
2	Condition	Water	Aqueous	5	0.50
3	Rinse	Water	Aqueous	5	0.50
4	Purge-Cannula	Water	Cannula	5	0.50

Cleaning the cannula whilst running

When writing a new procedure it is important to always include the three Purge-Clean Cannula steps, this will aid in loading of the sample and keep the fluid path clear of contaminants and blockages.

Step	Step Description
First Purge-Cannula	The first Purge and Clean cannula step is done with the first rinse reagent used, often water or an aqueous buffer, after the first rinse step occurs. This allows any sample still present in the syringe after the Load step to be moved onto the SPE column with the rinse step.
Second Purge-Cannula	The second Purge and Clean Cannula step occurs after the collect step, and should use the elution solvent, typically a strong solvent to thoroughly strip the cannula of any remaining analyte, eliminating carryover between samples.
Third Purge-Cannula	The third Purge and Clean Cannula step occurs as the last step in the procedure, and **always** uses water. **Never** use a buffer as a last step, because that would leave buffer salts in the fluid path.

Reagent line allocation

This is the recommended setup for the reagent lines on your RapidTrace Workstation.

Reagent Line	Source
1	Water
2	Methanol
3	Buffer pH 6
4	Buffer pH 4
5-8	Assigned according to method requirements

Dedicated cleaning racks

To aid in the cleaning of the RapidTrace system it is recommended that you take advantage of the unique and time saving feature of magnetically encoding a spare set of sample racks. With the aid of magnet inserts provided with the system it is possible to pre-programme the RapidTrace Workstation to sense specific methods allocated to specific racks. With no requirement to set up methods, the user simply needs to press start and the system will process the desired cleaning cycle.

Part number	Description	Quantity
C50974	Standard Rack (13 x 100 mm sample tube 12 x 75 mm fraction tube)	Pk/1
C50976	Standard Rack (13 x 100 mm sample tube 12 x 75 mm fraction tube)	Pk/5
C56786	Optional Rack (16 x 100 mm sample tube 16 x 100 mm fraction tube)	1 Rack
C56536	9 position chilled rack (13 x 100 mm sample tube 12 x 75 mm fraction tube)	1 Rack
C54405	Magnetic Kit (replacement 10 magnets for encoding)	1 Kit

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