

## Instruction for Analysis using (b) (4)

### Table of Contents

Purpose .....	2
Applies to .....	2
General information .....	2
Implementation.....	2
Start of instrument and login.....	2
Start-up and water blank .....	3
Reagent solutions .....	3
Replace/Add reagent flasks while running.....	4
Acknowledge Messages .....	4
Calibration.....	4
Run new calibration .....	4
Approve the calibration.....	5
Run samples .....	5
Change Request for a sample.....	5
See running list.....	6
Run more than 6 racks.....	6
Approve samples in the instrument.....	6
Reporting.....	6
Remove individual racks from the sample tray.....	7
Exit after each run Standby procedure .....	7
Quarterly cleaning .....	7
Special instructions .....	8
Run diluted sample manually.....	8
Add Rack in the Gallery software .....	8
Services .....	8
Raw data binder.....	9
Log book .....	9
Instrument binder .....	9
Revision history.....	9
Person responsible.....	9

## Purpose

To describe the handling of samples, instruments, and associated computer with the (b) (4) (b) (4) when analysing with the (b) (4).

## Applies to

Analytical and Product Science

## General information

A (b) (4) performs several different analyses in parallel. The instrument mixes samples and reagents in cuvettes. Following incubation, the reaction products are detected colourimetrically.

(b) (4)

(b) (4)

## Implementation

### Start of instrument and login

1. Turn on the computer and log in as user (b) (4).  
After for example computer restart, the keyboard can sometimes switch to English configuration. This causes the special characters to appear on the wrong buttons and the password will be incorrect.  
Measure: Try typing special characters in the user name, if this does not work press Alt + Shift, and the special characters should now match with the keyboard.
2. Fill the water container with (b) (4).  
It is advantageous if this is done the day before so the water is degassed.
3. Turn on the DFA with the main power button on the front.
4. Open (b) (4). User name (b) (4)", Password (b) (4)". The instrument will now take about 5 minutes to warm up. Higher permissions to change in methods, for example: (b) (4).
5. Fill the cuvette holder with cuvettes, part of a cuvette batch can be used, in such a case do not tear off more plastic from the cuvettes than necessary.

S

(b) (4)

The screen shows the calibrations that are invalid. Click OK and OK.

3. (b) (4)
4. If the blank measurements vary > 2 mAbs, this could be due to air in the system.  
Measure: (b) (4)
5. Repeat from point 2 until the blank results are < 2 mAbs. If the problem persists, (b) (4)

### Reagent solutions

The entire carousel for reagent solutions is to be stored in the refrigerator when the instrument is not running. (b) (4) is poured at each analytical run.

1. Fill four flasks of wash solution (0.1 M HCl) and place them in positions 1-4.
2. Make sure that the expiration date for the reagent flasks is valid, replace if necessary.
3. Remove the caps to the reagent flasks and place the reagent flasks evenly into the carousel with the (b) (4). An uneven weight distribution could result in problems reading bar codes.
4. Set the carousel, remember to refit the (b) (4) and close the cover. The instrument now reads the reagents.
5. Make sure the reagents are loaded and are sufficient for the run. Select F3, 2 Reagents and click reagents. The software shows an estimate of how many replicates or reagents are sufficient, down to the right. Insert additional reagents if you expect necessary.
6. It may be the case that the bar code could not be read. Measure: Check that the reagents have the bar code facing outwards, they are evenly distributed and/or replace with another reagent flask.

### Washing solution (0.1 M HCl)

When analysing both ammonium and ethanol, the instrument uses a wash solution (0.1 M HCl) after the ethanol reagents due to the risk of interference. The washing solution is not read by bar code but must be added manually (unless already added).

1. (b) (4)
2. Select box 1 top left and select Insert new vial.
3. Select HCL 0.1 M and OK. The instrument runs to the correct position and the slot unlocks.
4. Place in an unmarked flask of wash solution if it is not already there and close the slot.
5. Load all 4 reagent flasks in the same way to positions 1-4.



**Replace/Add reagent flasks while running**

If the instrument has alerted that the reagent has been consumed, make sure the results look OK as some samples may need to be re-analysed.

1. (b) (4)
2. Select an empty box.
3. Press Insert new vials.
4. Select reagent. Press OK.
5. Open the slot, add the reagent and close the slot.
6. (b) (4)

**Acknowledge Messages**

1. (b) (4)
2. Under Not Accepted (b) (4) The message is saved under All.

**Calibration**

Calibration is performed once a week and following quarterly cleaning (Table 1).

**Table 1: Instrument Calibration**

Test Name	Calibrator	Calibration type
(b) (4)	(b) (4)	(b) (4)

**Run new calibration**

1. (b) (4)
2. Select non-valid calibrations that are to be run and press Calibrate.
3. (b) (4)
4. (b) (4)
5. calibration.
6. (b) (4)

### Approve the calibration

1. (b) (4)
2. (b) (4)  
The highest standard point for ethanol should be  $> 0.85$  Abs, otherwise the curve is too flat.
3. (b) (4). Compare the visual slope and intersection point with previous calibrations by going to (b) (4) and select (b) (4) and then Compare. If something looks odd, rerun the calibration by clicking Rerun.
4. Approve the calibration by clicking Accept.

### Run samples

By way of suggestion, run steps 2-5 for all samples before proceeding to step 7.

1. Place sample tubes in a (b) (4). The sample tubes must have a solution up to the top of the rack. If the solution is insufficient, pour the sample into the sample cup. The tubes must not protrude above the rack handle. The (b) (4)
2. Select (b) (4) and select the rack the samples are placed in (1-12).
3. Select the first position where the sample is placed.
4. Under the Fill Rack tab, select Samples and load Sample ID with the scanning pen.
5. Under the (b) (4) select the test(s) that suits most samples and save.
6. Select (b) (4).
7. Correct the selected tests to ensure they match each sample by selecting Sample ID and click the required test or delete a test by pressing the Delete button. Save.
8. Add dilution to the check sample's ethanol analysis. Select the check sample ethanol test, fill in (b) (4). Save and repeat for all check samples.
9. Place the selected rack in the instrument. To check the loading and selection of tests, go to (b) (4). For example, 0/2 means that 2 analyses have been ordered, but none have been performed. To view all the tests that have been ordered (running list) see F2, 6 Requests.
10. Select (b) (4) and click Start.

### Change Request for a sample

1. Select (b) (4)
2. Select Sample ID.
3. Add by clicking "test" or delete a "test" using the delete button.
4. Click Save.
5. Select (b) (4) and click Start. This is not required if analysis is in progress.



**See running list**

Select (b) (4). No changes can be made from here. The list is always sorted by ID when printing.

**Run more than 6 racks**

Racks that are not run must be stored in a refrigerator.

1. Add all the samples according to the (b) (4).
2. Once a rack has been fully analysed, follow the (b) (4) for all samples in that rack.
3. Remove the rack as described in the (b) (4) but conclude by placing the next unanalysed rack in the empty position.

**Approve samples in the instrument**

It's suggested that this is done a few times during analysis to allow for faster reruns if so required.

1. Select (b) (4).
2. In the Error column, check if any sample is so high that the instrument is unable to dilute it and therefore the sample has to be manually diluted.  
See (b) (4) for further information.
3. Make a rough reasonability check of the results with regard to concentration and spread.  
Measure in case of suspected error in analysis: Select the replicate, or all replicates for the sample and select "Rerun".  
If the run is already complete, then the analysis must also be started (b) (4).
4. Select the results to be approved and click (b) (4) to approve all samples in the view.

**Reporting**

1. **NOTE:** VERIFY that all results have been accepted. (b) (4), select Test Name, select ALL, status should be "man acc".
2. Select (b) (4) and Clear Daily Files.  
**NOTE:** If step 1 is not completed, the results will be deleted.
3. Select (b) (4)
4. Enter the date when the analysis was carried out in First date and Last date.
5. Click Retrieve data and Results to file.
6. Save and name it after the analysis date e.g. (b) (4)
7. Open the CSV file. (b) (4) at the top of the page.
8. (b) (4). Note, results will not be in chronological order.

9. Write an X before the sample name if the results shouldn't be imported.
10. (b) (4) and place.
11. (b) (4)
12. If it is not possible to import, it may help to change all commas to full stops or vice versa.  
Measure: Open the xlsx and use the keyboard short cut (b) (4).
13. (b) (4), and insert in the (b) (4).

### Remove individual racks from the sample tray

1. Go to (b) (4) and select the required Rack.
2. Press "Remove rack", answer Yes
3. The rack runs up and the slot unlocks.
4. Remove the rack and repeat for the next rack that is to be removed.

### Exit after each run

#### Standby procedure

1. Select (b) (4) to add a rack with washing solution.
2. Select a rack 1-12 and select a box.
3. Under the Fill Rack tab, select Controls and Wash solution.
4. Place a (b) (4) in the selected position and the rack in the DFA.
5. Select (b) (4).
6. Select (b) (4) when the instrument is in "Idle"/"Start up not done", to close (b) (4).

### Reagents and waste

1. Remove the (b) (4) with reagent from the DFA and place the caps on the flasks. Keep the whole carousel in the refrigerator. Wipe off any condensate if necessary.
2. Remove all racks. Dispose of the wash solution cup into a hazardous waste carton.
3. Drain the container with water into the sink.
4. Drain the container with (b) (4) into a (b) (4).
5. Close the DFA.

(b) (4)

Perform quarterly and if necessary. Noted in instrument binder.

1. Perform a Standby procedure.

2.

3.

(b) (4)

(b) (4)

4. Mix gently to ensure that it does not foam.  
- hold a piece of paper over the cap.
5. Place the container in the instrument.
6. Select (b) (4).
7. Wait until the instrument is in "Start up not done" or "Idle" status.
8. Repeat points 6-7, twice.
9. Remove the container from the instrument.
10. (b) (4)
11. Fill the water container with (b) (4).
12. Place the water container in the instrument.
13. Perform the following 6 times.  
- Select (b) (4).  
- Wait until the instrument is in "Start up not done" or "Idle" status.
14. (b) (4) with 0.5 litres of MQ water.
- (b) (4)
15. Make a note in the (b) (4).
16. (b) (4).

## Special instructions

### Run diluted sample manually

1. Add the sample (if not already done) under the "Run samples" heading
2. When samples are added (b) (4) or when sample analyses are corrected (b) (4) (b) (4), the manual dilution of the sample is also entered under (b) (4) Save.
3. Select (b) (4).

### Add Rack in the Gallery software

(b) (4)

### Services

(b) (4)

(b) (4) at the  
annual maintenance. An (b) (4)

so that it's (b) (4)

(b) (4)



Once the annual service is complete, an (b) (4)  
(see under (b) (4)).

**Raw data binder**

Paper copies of the results report are added to the raw data binder

**Log book**

The list in the first page of the log book details the information to be entered.

**Instrument binder**

Make a note under the (b) (4) tab in the instrument binder once you have performed any maintenance work.

**Revision history**

Date	Change
180411	(b) (4)
171004	
160817	
160628	
151112	
150921	

**Person responsible**

Director APS