

# Flattening & polishing kit for metal WE

## User guide

250.7010, Edition 4, 2024



---

Copyright ©2024, Antec, The Netherlands. Contents of this publication may not be reproduced in any form or by any means (including electronic storage and retrieval or translation into a foreign language) without prior agreement and written consent from the copyright of the owner. The information contained in this document is subject to change without notice.

ROXY, ALEXYS, DECADE, DECADE II, INTRO, Flexcell, ISAAC, HyREF are trademarks of Antec. Whatman™ (word and device) and Whatman™ (word only) are trademarks of Whatman International Ltd. SOLVENT IFD™ and AQUEOUS IFD™ are trademarks of Arbor Technologies, Inc. Clarity®, DataApex® are trademarks of DataApex Ltd. Microsoft® and Windows™ are trademarks of Microsoft Corporation. Excel is a registered trademark of the Microsoft Corporation.

The software and the information provided herein is believed to be reliable. Antec shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of software or this manual. All use of the software shall be entirely at the user's own risk.

---

## Symbols

The following pictogram is used in this installation guide:



Caution

## General precautions



Execute periodic leak checks on LC tubing and connections. Do not allow flammable and/or toxic solvents to accumulate. Do not close or block drains. Follow a regulated, approved waste disposal program. Never dispose of such products through the municipal sewage system.



**Use proper eye and skin protection when working with solvents.**



**Use of this product outside the scope of this guide may present a hazard.**

## Spare parts and service availability

Manufacturer provides operational spare parts of instruments and current accessories for a period of five years after shipment of the final production run of the instrument. Spare parts will be available after this five years period on an 'as available' basis.

Manufacturer provides a variety of services to support her customers after warranty expiration. Repair service can be provided on a time and material basis. Contact your local supplier for servicing. Technical support and training can be provided by qualified chemists on both contractual or as-needed basis.

# Table of contents

Symbols.....	3
General precautions .....	3
Spare parts and service availability .....	3
<b>CHAPTER 1.....</b>	<b>5</b>
<b>Introduction and preparation .....</b>	<b>5</b>
Introduction.....	5
Unpacking .....	5
Tools.....	6
<b>CHAPTER 2.....</b>	<b>7</b>
<b>Procedure.....</b>	<b>7</b>
Step 1. - Coarse flattening step (30 $\mu\text{m}$ ) .....	7
Step 2. - Fine flattening step (12 $\mu\text{m}$ ) .....	9
Step 3. - Polishing step (1 $\mu\text{m}$ ).....	10

## CHAPTER 1

## Introduction and preparation

### Introduction

The flattening and polishing kit for metal WE is a tailor-made kit to flatten and polish a metal Working Electrode (WE) disc of a FlexCell™. It consists of a three-stage flattening-polishing procedure:

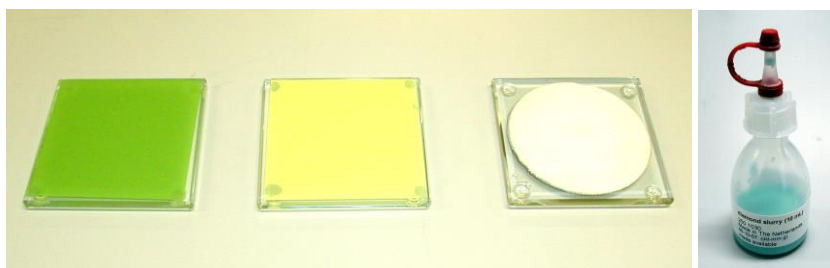
Steps:

- [1] Flattening step, coarse (30  $\mu\text{m}$  flattening plate)
- [2] Flattening step, fine (12  $\mu\text{m}$  flattening plate)
- [3] Polishing step, fine (polishing disc with 1  $\mu\text{m}$  diamond slurry)

The procedure enables the user to restore the flatness of the metal WE surface in a reproducible way.

### Unpacking

Inspect the *transport box* for possible damage as it arrives. Immediately inform the transport company in case of damage, otherwise she may not accept any responsibility. Carefully unpack the kit and inspect it for completeness and possible damage. The content of the kit is shown in figure 1.



**Figure 1.** Content of flattening kit. Left: 30  $\mu\text{m}$  flattening plate (green), 12  $\mu\text{m}$  flattening plate (yellow) and polishing disc. Right: diamond slurry, 1  $\mu\text{m}$ .

Contact your supplier in case of damage or if not all marked items on the checklist are included.

## Tools

The following additional parts are required:

- FlexCell user manual (p/n 100.0010), delivered with the cell
- Tissues
- Demi water
- Ethanol

## CHAPTER 2

## Procedure

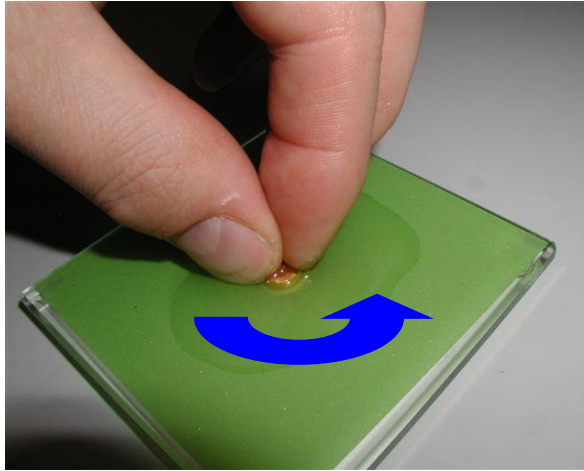
### Step 1. - Coarse flattening step (30 $\mu\text{m}$ )

The first step of the procedure consists of a coarse flattening step using the green 30  $\mu\text{m}$  flattening plate (p/n 250.1042). This will remove all surface irregularities in the metal WE disc created during use. Please follow the step below

- Disassemble the FlexCell as described in the corresponding user manual and take the metal WE disc out.
- Wet the green 30  $\mu\text{m}$  flattening plate with a droplet of demineralised water.



- Hold the metal WE disc (face down) at the edge between thumb and pointing finger as shown in the figure below. Flatten the electrode surface by making circular or "figure 8" movements for about 1 minute. Apply only gently pressure and keep the electrode flat on the plate. To assure that the electrode is homogeneously flattened hold the metal WE disc at the edges at different positions during this flattening step. So, change position a few times during flattening.



- Flush the electrode surface with demi water and subsequently clean the electrode with an ethanol-wetted tissue.
- Check the surface for any surface irregularities. The electrode should be uniformly flat with a coarse surface roughness (uniform pattern of scratches).
- Repeat this step in case the electrode surface still shows some marks from the spacer or other clear marks.





## Step 2. - Fine flattening step (12 $\mu\text{m}$ )

The second step of the procedure consist of a fine flattening step using the yellow 12  $\mu\text{m}$  flattening plate (p/n 250.1040). This step will reduce the surface roughness of the metal WE disc introduced in the previous step and prepare the electrode for the polishing step (3). The procedure is identical to that of step 1. Please follow the steps below:

- Wet the yellow 12  $\mu\text{m}$  flattening plate with a droplet of demineralised water.
- Hold the metal WE disc (face down) at the edge between thumb and pointing finger. Flatten the electrode surface by making circular or “figure 8” movements for about 1 minute. Apply only gently pressure and keep the electrode flat on the plate. To assure that the electrode is homogeneously flattened hold the metal WE disc at the edges at different positions during this flattening step. So, change position a few times during flattening.
- Flush the electrode surface with demi water and subsequently clean the electrode with an ethanol-wetted tissue.
- Check if the WE surface is uniform and does not show any surface irregularities. The electrode should be uniformly flat with an intermediate surface roughness.



### Step 3. - Polishing step (1 $\mu\text{m}$ )

The third step of the procedure consist of a fine polishing step using 1  $\mu\text{m}$  diamond slurry (p/n 250.1030) on a polishing disc (p/n 250.1025). This last step will bring the WE surface back to its original flatness and restore the mirror-like appearance again. Please follow the step below

- Shake diamond slurry thoroughly before use!!
- Rinse the polishing disc with demi water before applying the diamond slurry!
- Apply a small amount of slurry on the wetted polishing disc, usually a few droplets is sufficient.
- Hold the metal WE disc (face down) at the edge between thumb and pointing finger. Flatten the electrode surface by making circular or "figure 8" movements for about 1 minute. Apply only gently pressure and keep the electrode flat on the disc. To assure that the electrode is homogeneously polished hold the metal WE disc at the edges at different positions during this polishing step. So, change position a few times during polishing.
- Clean the electrode with an ethanol-wetted tissue.
- Inspect the surface visually. The surface of the working electrode should have a mirror-like appearance; some very small scratches may be present. Repeat the procedure in case the electrode did not reach this stage of flatness.



- Reassemble the flow cell. The flow cell is now ready for use.

When finished, clean the polishing disc and flattening plates with water. Store the plates and polishing disc dust free in its plastic bag. When the paper on the plates become blunt, replace it.