



## Method parameters

Method . . . . . AB401 Conditioning VMS semiautomated  
Method saving date . . . . . 2024-02-20 15:46:55 UTC+1  
Method version . . . . . 1  
Method group . . . . . Main group  
Method status . . . . . original  
Method saved by (full name) . . . . . Metrohm International Headquarters  
Method saved by (short name) . . . . . Metrohm

## START

### Main track

#### General

Workplace view

Current view . . . . . on

Track view for live window

Live display 1 . . . . . Main track

Live display 2 . . . . . Main track

Electrode check . . . . . on

#### Application note

### Sample data variables

Name	Type	Assignment	Fixed value	Comment	Monitoring
ID1	Text	ID1		Sample identification 1	off
ID2	Text	ID2		Sample identification 2	off
ID3	Text	ID3		Sample identification 3	off
Sample type	Text	Sample type		Sample type	off
Sample amount	Number	Sample amount	30	Sample amount	off
Sample amount unit	Text	Sample amount unit	mL	Sample amount unit	off

Name . . . . . ID1  
Type . . . . . Text  
Assignment . . . . . on. . . . . ID1  
Fixed value . . . . . off. . . . .  
Check at start . . . . . on  
Comment . . . . . Sample identification 1

Name . . . . . ID2  
Type . . . . . Text  
Assignment . . . . . on. . . . . ID2  
Fixed value . . . . . off. . . . .  
Check at start . . . . . on  
Comment . . . . . Sample identification 2



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Name . . . . . **ID3**  
Type . . . . . Text  
Assignment . . . . . on. . . . . ID3  
Fixed value . . . . . off.  
Check at start . . . . . on  
Comment . . . . . Sample identification 3

Name . . . . . **Sample type**  
Type . . . . . Text  
Assignment . . . . . on. . . . . Sample type  
Fixed value . . . . . off.  
Check at start . . . . . on  
Comment . . . . . Sample type

Name . . . . . **Sample amount unit**  
Type . . . . . Text  
Assignment . . . . . on. . . . . Sample amount unit  
Fixed value . . . . . on. . . . . mL  
Check at start . . . . . on  
Comment . . . . . Sample amount unit

Name . . . . . **Sample amount**  
Type . . . . . Number  
Assignment . . . . . on. . . . . Sample amount  
Fixed value . . . . . on. . . . . 30  
Check at start . . . . . on  
Comment . . . . . Sample amount  
Variable monitoring . . . . . off  
Lower limit . . . . .  
Upper limit . . . . .  
Message . . . . .  
Display message . . . . . on  
Record message . . . . . on  
Message by e-mail . . . . . off  
E-mail template . . . . .  
Subject . . . . . Message from viva - method 'Conditioning (Cu VMS), automate' -  
command 'Main track'  
Acoustic signal . . . . . off  
Action . . . . . off  
Cancel determination . . . . . on  
Cancel determination and series . . . . . off

**Command comment**

AB-401/3: Electrode conditioning in VMS semiautomated

**ADD  
SAMPLE**

**ADD VMS**

Addition

Add manually . . . . . off



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Already added . . . . . off  
Add with dosing device . . . . . on  
Dosing unit . . . . . 50 mL VMS  
Dosing rate . . . . . maximum mL/min  
Filling rate . . . . . maximum mL/min

**CALL  
COND**

**CALL COND**

Call text . . . . . Conditioning in Cu VMS  
Track name . . . . . VA track  
Stop criteria  
Evaluation quantity . . . . . on  
Voltammetry command . . . . . CVS  
Substance . . . . . Cu  
Standard deviation . . . . . 0.5 %  
Number of runs . . . . . on  
Number of runs . . . . . 20  
Action . . . . . Cancel command  
Run time . . . . . off  
Condition . . . . . off

**CALL VA**

**CALL VA**

Call text . . . . . Measure VMS  
Track name . . . . . VA track  
Condition . . . . . off

**VA TRACK**

**VA track**

Return immediately . . . . . off

**CVS**

**CVS**

**General/Hardware**

**Device**

Device name . . . . . 894\_1  
Device type . . . . . 894 Professional CVS

**Sensors/Electrodes**

Working electrode . . . . . RDE  
Sensor type . . . . . RDE/SSE  
Reference electrode . . . . . Reference electrode  
Auxiliary electrode . . . . . Auxiliary electrode  
Electrode check . . . . . on

**Stirrer**

Stirring rate . . . . . 2500 min<sup>-1</sup>  
Hydrodynamic measurement . . . . . on

**Pretreatment**

Stirring time . . . . . 5.0 s

**Cyclovoltammetric pretreatment**

Start potential . . . . . 0.2 V  
Vertex potential . . . . . 1.625 V



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Sweep rate . . . . . 1 V/s  
Cycles . . . . . off  
Duration . . . . . - s

**Potentiostatic pretreatment**

Potential 1 . . . . . off V  
Waiting time 1 . . . . . 0.0 s  
Potential 2 . . . . . off V  
Waiting time 2 . . . . . 0.0 s  
Potential 3 . . . . . off V  
Waiting time 3 . . . . . 0.0 s  
Potential 4 . . . . . off V  
Waiting time 4 . . . . . 0.0 s  
Potential 5 . . . . . off V  
Waiting time 5 . . . . . 0.0 s  
Equilibration time . . . . . 5.0 s

**Sweep**

Start potential . . . . . 1.625 V  
1st vertex potential . . . . . -0.250 V  
2nd vertex potential . . . . . 1.625 V  
Potential step . . . . . 0.006 V  
Potential step time . . . . . 0.060 s  
Sweep rate . . . . . 0.100 V/s  
Preparation cycles . . . . . 1  
Measuring cycles . . . . . 2  
Sweep duration . . . . . 113.76 s

**Post-treatment**

**Cleaning**

Cleaning potential . . . . . off V  
Cleaning time . . . . . 0.0 s

**Standby potential**

Standby potential . . . . . off V

**Potentiostat**

**Current measuring range**

Highest range . . . . . 224 mA  
Lowest range . . . . . 20 µA

**TRACK**

**Fill DU VMS**

Return immediately . . . . . off  
Delete old data . . . . . off

**LQH**

**DU 50 mL VMS**

**General/Hardware**

**Dosing device**

Dosing unit . . . . . 50 mL VMS

**Parameters**

Function . . . . . Fill



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Port . . . . . 2  
Rate . . . . . maximum mL/min

**TRACK Shut OFF**

Return immediately . . . . . off  
Delete old data . . . . . off

**STIR Stirrer OFF**

**Device**

Device name . . . . . 894\_1  
Device type . . . . . 894 Professional CVS

**Stirrer**

Stirring rate . . . . . 2500 min<sup>-1</sup>

**Action**

Switch on . . . . . off  
Switch off . . . . . on  
Duration . . . . . off  
Time . . . . . 300 s

**EXIT Exitspur**

**CALL Exit shut off**

Call text	Track name	Sample type	Condition
Exit shut off	Shut OFF	off Sample	off

**CALL Fill Dosing Unit**

Call text	Track name	Sample type	Condition
Fill DU VMS	Fill DU VMS	off Sample	off

**ERROR Error track**

**CALL Error shut off**

Call text	Track name	Sample type	Condition
Error shut off	Shut OFF	off Sample	off

**Evaluation parameters**

**General**

**CVS**

**Data processing**

Smoothing . . . . . 1  
Reversed peaks . . . . . off



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#### Curve evaluation

Fixed point evaluation . . . . . on

#### Fixed points

Fixed point	Measured quantity	Fixed value	Sweep direction
1	Potential	1.125 V	anodic
2	Potential	1.475 V	anodic

#### Substances

##### CVS

##### Substances - Recognition

Substance	Active	Characteristic potential	Tolerance	Min. width	Max. width	Min. measured quantity	Sweep direction
Cu	on	0.2 V	0.2 V	0.01 V	1 V	200 pA	anodic

##### CVS

##### Substances - Baseline

Substance	Baseline type	Start base point	End base point
Cu	Horizontal	0.8 V	-0.05 V

##### CVS

##### Calibration curves

#### Results

##### Substance concentration in the sample

##### CVS

Substance	Decimal places	Assignment
Cu	2	none

#### Results

##### Additional results

Result	Places	Prefix	Unit
Peak potential	3		V
Height	2	#	A
RSD of the heights of all replications	1		%
Measured value	2	#	A
RSD of the measured values of all replications	1		%
Area	2	#	C
RSD of the areas of all replications	1		%
Start base point	3		



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Result	Places	Prefix	Unit
End base point	3		
Standardized area	3		
Standardized height	3		
Standardized measured value	3		
Total volume	3	#	L
Zero-order coefficient	3		
First-order coefficient	3		
Second-order coefficient	3		
Fourth-order coefficient	3		
Coefficient of determination	5		
Substance concentration in measuring vessel	2	#	
RSD of the substance concentration in measuring vessel	1		%
Amount of substance	2	#	
RSD of the substance concentration in the sample	1		%
Effective addition volume of the standard solution for the evaluation ratio	2	#	L
RSD of the effective addition volume of the standard solution for the evaluation ratio	1		%
Calibration factor DT	2	#	
RSD of the calibration factor DT	1		%
Effective addition volume of the sample solution for the evaluation ratio	2	#	L
RSD of the effective addition volume of the sample solution for the evaluation ratio	1		%

#### User-defined results

Result type	Result name	Formula	Unit	Decimal places	Assignment	Description
Single result	Conditioned area	= 'RS.CVS.Cu.VAR {1}.AREA.MNV' *1000	mC	2	RS01	Conditioned area
Single result	Contamination current	= 'RS.CVS.VAR{1}.FP{1}.CUR.MNV' * 1000000	µA	2	RS02	Contamination current
Single result	Chloride current	= 'RS.CVS.VAR{1}.FP{2}.CUR.MNV' * 1000000	µA	2	RS03	Chloride current

#### Database

Name database . . . . . viva