



License ID 1955606
Client ID 001-NBK-02361
User Metrohm

Program version viva 3.0 - 69
2024-03-21 15:17:59 UTC+1

Method parameters

Method AB401 Brightener (CVS, MLAT)
semiautomated
Method saving date 2024-02-20 15:46:54 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		Sample amount	off
Sample amount unit	Text	Sample amount unit		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



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Comment Sample identification 2

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 off.

Check at start on

Comment Sample amount unit

Name **Sample amount**

Type Number

Assignment on. Sample amount

Fixed value off.

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 'Brightener determination (CVS, MLAT), automated' - command 'Main track'

Acoustic signal off

Action off

Cancel determination on

Cancel determination and series off

Command comment

AB-401/3: Determination of brightener by CVS-MLAT semiautomated

CALL Intercept



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CALL

Call text	Track name	Sample type	Condition
Measure intercept	Intercept	off Sample	off

CALL

CALL Sample

Call text	Track name	Sample type	Condition
Measure Sample	Sample	off Sample	off

CALL

CALL Additions

Call text	Track name	Sample type	Condition
Standard additions	Standard addition	off Sample	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⁻¹
Hydrodynamic measurement on

Pretreatment

Stirring time 5.0 s

Cyclovoltammetric pretreatment

Start potential 0.2 V
Vertex potential 1.625 V
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



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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 -0.300 V
2nd vertex potential 1.625 V
Potential step 0.006 V
Potential step time 0.040 s
Sweep rate 0.150 V/s
Preparation cycles 1
Measuring cycles 2
Sweep duration 77.76 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

Intercept

Return immediately off
Delete old data off

CALL

Intercept solution

Call text	Track name	Sample type		Condition
Add VMS	Intercept VMS	off	Sample	off
Add suppressor	Intercept suppressor	off	Sample	off

CALL COND

Conditioning intercept

Call text Conditioning intercept
Track name VA track
Stop criteria
Evaluation quantity on
Voltammetry command CVS
Substance Brightener
Standard deviation 2 %



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Number of runs on
Number of runs 20
Action Cancel command
Run time off
Condition off

**CALL
INTERCEPT**

Measure intercept

Call text Measure intercept
Track name VA track
Condition off

TRACK

Sample

Return immediately off
Delete old data off

CALL

Sample addition

Call text	Track name	Sample type	Condition
Add sample manually	Add sample manually	off Sample	off

ADD AUX

ADD additional suppressor

Auxiliary solution

Solution Suppressor concentrate
Volume 0.2 mL
Include volume in calculation on

Addition

Add manually off
Already added off
Add with dosing device on
Dosing rate 2 mL/min
Filling rate maximum mL/min

CALL VA

Measure sample

Call text Measure sample
Track name VA track
Condition off

TRACK

Standard addition

Return immediately off
Delete old data off

LOOP

Variations

Stop criteria

Max. run number on
Max. run number 2
Maximum run time off
Signal assessment for DT off



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Condition off

ADD STD ADD STD

Standard

Solution Brightener concentrate

Addition increments

Number 1

Addition volume 1 0.015 mL

Addition

Add manually off

Already added off

Add with dosing device on

Dosing rate 2.0 mL/min

Filling rate maximum mL/min

CALL VA Measure additions

Call text Measure additions

Track name VA track

Condition off

TRACK Add sample manually

Return immediately off

Delete old data off

ADD ADD Sample
SAMPLE

Addition

Add manually on

Display standard message on

Display message defined by the user off

Already added off

Add with dosing device off

TRACK Intercept VMS

Return immediately off

Delete old data off

ADD AUX ADD VMS intercept

Auxiliary solution

Solution VMS

Volume 30 mL

Include volume in calculation on

Addition

Add manually off

Already added off

Add with dosing device on

Dosing rate maximum mL/min

Filling rate maximum mL/min

Intercept suppressor



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TRACK Return immediately off

Delete old data off

ADD AUX ADD Suppressor intercept

Auxiliary solution

Solution Suppressor concentrate

Volume 1.2 mL

Include volume in calculation on

Addition

Add manually off

Already added off

Add with dosing device on

Dosing rate 2 mL/min

Filling rate maximum mL/min

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

Port 2

Rate maximum mL/min

TRACK Fill DU Brightener

Return immediately off

Delete old data off

LQH DU 2 mL Brightener

General/Hardware

Dosing device

Dosing unit 2 mL Brightener

Parameters

Function Fill

Port 2

Rate maximum mL/min

TRACK Fill DU Suppressor

Return immediately off

Delete old data off

LQH DU 2 mL Suppressor

General/Hardware

Dosing device



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Dosing unit 2 mL Suppressor

Parameters

Function Fill
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⁻¹

Action

Switch on off
Switch off on
Duration off
Time 300 s

EXIT

Exit track

CALL

Exit shut off

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

CALL

Fill Dosing Units

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



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Evaluation parameters

General

CVS

Data processing

Smoothing 1
Reversed peaks off

Curve evaluation

Fixed point evaluation off

Substances

CVS

Substances - Recognition

Substance	Active	Characteristic potential	Tolerance	Min. width	Max. width	Min. measured quantity	Sweep direction
Brightener	on	0.1 V	0.2 V	0.01 V	1.0 V	200 pA	anodic

CVS

Substances - Baseline

Substance	Baseline type	Start base point	End base point
Brightener	Horizontal	0.3 V	-0.05 V

Standards

Standards

Name Brightener concentrate

Brightener 1000 mL/L

Calibration

General

Calibration method MLAT
Blank value correction with evaluation quantity off

CVS

Calibration curves

Substance	Evaluation quantity	Curve type	Weighting
Brightener	Area	Linear regression	on

Results

Substance concentration in the sample

CVS



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Substance	Decimal places	Assignment
Brightener	2	RS01

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		
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		%

Database

Name database viva