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Spectroquant®

Volatile Organic Acids Test

1. Method

In an acidic medium lower fatty acids ("volatile organic acids") react with a diole to form fatty acid esters, which are subsequently converted into hydroxamic acids with hydroxylamine. These in turn react with iron(III) ions to form red complexes that are determined photometrically.

2. Measuring range and number of determinations

Measuring range	Number of determinations
50 - 3000 mg/l ¹⁾ 71 - 4401 mg/l ²⁾	100

¹⁾ calculated as acetic acid

²⁾ calculated as butyric acid

For programming data for selected photometers / spectrophotometers see www.sigmaaldrich.com/photometry.

3. Applications

Sample material:

Digested sludge
Activated sludge
Process water

4. Influence of foreign substances

This was checked individually in solutions containing 1500 and 0 mg/l acetic acid. The determination is not yet interfered with up to the concentrations of foreign substances given in the table. Cumulative effects were not checked; such effects can, however, not be excluded.

Concentrations of foreign substances in mg/l or %					
Al ³⁺	1000	Mn ²⁺	50	Acetaldehyde	50
Ca ²⁺	1000	NH ₄ ⁺	1000	Acetone	1000
Cd ²⁺	50	Ni ²⁺	50	Ethanol	5 %
Cr ³⁺	50	Pb ²⁺	50	Formaldehyde	50
Cu ²⁺	50	PO ₄ ³⁻	1000	Surfactants ¹⁾	1000
Fe ³⁺	1000	Zn ²⁺	200	NaCl	20 %
Hg ²⁺	50			NaNO ₃	20 %
Mg ²⁺	1000			Na ₂ SO ₄	10 %

¹⁾ tested with nonionic, cationic, and anionic surfactants

5. Reagents and auxiliaries

Please note the warnings on the packaging materials!

The test reagents are stable up to the date stated on the pack when stored closed at +15 to +25 °C.

Package contents:

1 bottle of reagent OA-1
1 bottle of reagent OA-2
1 bottle of reagent OA-3
1 bottle of reagent OA-4
1 bottle of reagent OA-5
4 empty round cells with bar code

Other reagents and accessories:

MQuant® Universal indicator strips pH 0 - 14, Cat. No. 109535

Pipettes for pipetting volumes of 0.50, 0.75, and 5.0 ml
Thermoreactor

6. Preparation

- Analyze immediately after sampling. Otherwise store at 4 °C for max. 24 hours.
- The pH must be within the range 2 - 12.**
- Filter turbid samples.

7. Procedure

Reagent OA-1	0.75 ml	Pipette into a clean round cell.
Reagent OA-2	0.50 ml	Add with pipette.
Pretreated sample	0.50 ml	Add with pipette, close the cell tightly, and mix.
Heat the cell at 100 °C in the preheated thermoreactor for 15 min, then cool to room temperature under running water.		
Reagent OA-3	1.0 ml	Add with pipette.
Reagent OA-4	1.0 ml	Add with pipette, close the cell tightly, and mix.
Reagent OA-5	1.0 ml	Add with pipette, close the cell tightly, and mix. A transient turbidity or precipitate may form.
Leave to stand for 1 min (reaction time) , then measure the sample in the photometer.		

Notes on the measurement:

- For photometric measurement the cells must be clean. Wipe, if necessary, with a clean dry cloth.
- Measurement of turbid solutions yields false-high readings.
- The color of the measurement solution remains stable for 30 min after the end of the reaction time stated above.

8. Analytical quality assurance

recommended before each measurement series
To check the photometric measurement system (test reagents, measurement device, handling) and the mode of working, a freshly prepared standard solution containing 2.05 g/l of sodium acetate anhydrous (corresponding to 1500 mg/l of acetic acid) (application see the website) can be used.

Sample-dependent interferences (matrix effects) can be determined by means of standard addition.

Additional notes see under www.qa-test-kits.com.

For quality and batch certificates for Spectroquant® test kits see the website, where you will find all data in production control, that are determined in accordance with ISO 8466-1 and DIN 38402 A51.

9. Notes

- Reclose the reagent bottles immediately after use.
- Information on disposal can be obtained at www.disposal-test-kits.com.**

