



Application Note AN-V-070

Determination of iodide in glacial acetic acid

Iodide determination by cathodic stripping voltammetry (CSV) at the HMDE (hanging mercury drop electrode)

Methyl iodide is a key ingredient to facilitate chemical reactions during production of glacial acetic acid. However, this raises the chance of iodide ending up in the final product. This is a problem because manufacturers commonly use acetic acid as a reagent to produce other chemicals, such as vinyl acetate. Even trace amounts of iodide can poison the catalysts used in these processes, increasing costs, and negatively affecting product quality. Regular determination of the iodide concentration ensures

the desired quality of acetic acid, safeguarding the integrity of various downstream industrial processes. Using ICP-MS to measure iodine in glacial acetic acid faces challenges due to memory effects that cause high background signals. Cathodic stripping voltammetry (CSV) at the hanging mercury drop electrode (HMDE) overcomes these limitations and provides a robust, cost-effective, and convenient alternative.

SAMPLE

Glacial acetic acid, 99.8%

EXPERIMENTAL

Add 10 mL acetic acid sample and then 2 mL ultrapure water into the measuring vessel. Carry out the determination of iodide using the 884 Professional VA (Figure 1) and the parameters specified in Table 1. The concentration is determined by two additions of iodide standard addition solution.



Figure 1. 884 Professional VA manual for MME.

Table 1. Parameters

| Parameter | Setting |
|-----------------------|---------|
| Mode | HMDE |
| Deposition potential | 0.1 V |
| Deposition time | 30 s |
| Start potential | -0.15 V |
| End potential | -0.5 V |
| Sweep rate | 13 mV/s |
| Peak potential iodide | -0.32 V |

ELECTRODES

- Multi-Mode Electrode pro

RESULTS

The method is suitable for the determination of iodide in acetic acid samples. The limit of detection of the method (for a deposition time of 30 s) is approximately 1 µg/L.

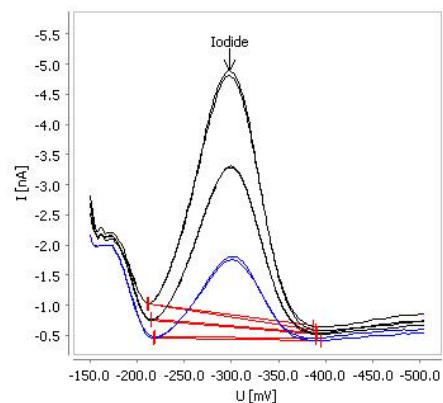


Figure 2. Determination of iodide in glacial acetic acid with CSV.

Table 2. Result

| Sample | Iodide (µg/L) |
|-------------|---------------|
| Acetic acid | 4.85 |

CONTACT

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CONFIGURATION



884 Professional VA manual para electrodo Multi-Mode (MME)

884 Professional VA manual para electrodo Multi-Mode (MME) es el aparato de iniciación para el análisis de trazas de última generación mediante voltamperometría y polarografía con el electrodo Multi-Mode pro, el scTRACE Gold o el electrodo a gota de bismuto. La reconocida tecnología de electrodos de Metrohm, combinada con un potente potenciostato/galvanostato y el software viva sumamente flexible, aporta nuevas perspectivas para la determinación de metales pesados. El potenciostato con calibrador certificado se reajusta automáticamente antes de cada medida y garantiza la mayor precisión posible.

Con el aparato también se pueden llevar a cabo determinaciones con electrodos de disco rotatorio, como determinaciones de aditivos orgánicos en banos galvánicos mediante la voltamperometría de redisolución cíclica (CVS), la voltamperometría de redisolución cíclica por impulsos (CPVS) y la cronopotenciometría (CP). El cabezal de medida intercambiable permite cambiar rápidamente entre las diversas aplicaciones con electrodos diferentes.

El software **viva** es necesario para el control, así como para el registro y evaluación de datos.

El 884 Professional VA manual para MME se suministra con una extensa gama de accesorios y un cabezal de medida para el electrodo Multi-Mode pro. El juego de electrodos y la licencia **viva** se deben pedir por separado.