



## Application Note AN-V-209

# Carbonyl test methods for alcohols

Simultaneous determination of acetaldehyde, acetone, formaldehyde, and propionaldehyde with the Multi-Mode Electrode pro

Determination of carbonyl impurities, such as aldehydes and ketones, in alcoholic organic solvents is essential for ensuring product quality and stability.

This Application Note describes a polarographic method that employs the Multi-Mode Electrode pro for the simultaneous determination of different carbonyl compounds in alcohols. It offers a simple and sensitive tool for industries

requiring rigorous alcohol quality control.

This technique involves the formation of hydrazone derivatives through the reaction of carbonyl compounds with hydrazine sulfate. Its advantage lies in its multi-analyte determination, detection of low-concentration carbonyl compounds and applicability to a broad range of alcohols, e.g., methanol or propanol, enabling precise quality assessments.

## SAMPLE

Methanol Isopropanol

## EXPERIMENTAL

Add ultrapure water, the sample, and electrolyte solution into the measuring vessel and degas it for 5 min. Determination is carried out with the 884 Professional VA manual for MME (Figure 1) using parameters listed in Table 1. Quantification is done using two standard additions with respective standard addition solutions.



Figure 1. 884 Professional VA manual for MME

Table 1. Parameters

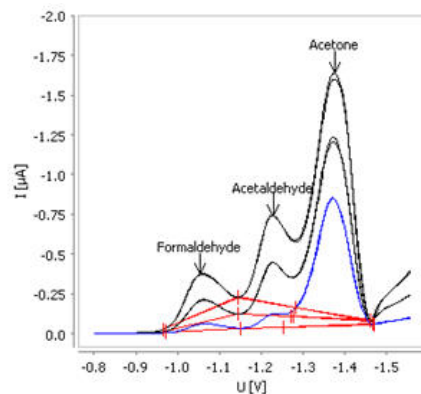
Parameter	Setting
Mode	DME
Start potential	-0.8 V
End potential	-1.6 V
Sweep rate	20 mV/s
Peak potential acetaldehyde	-1.22 V
Peak potential formaldehyde	-1.08 V
Peak potential acetone	-1.38 V
Peak potential propionaldehyde	-1.22 V

## ELECTRODES

- Multi-Mode Electrode pro

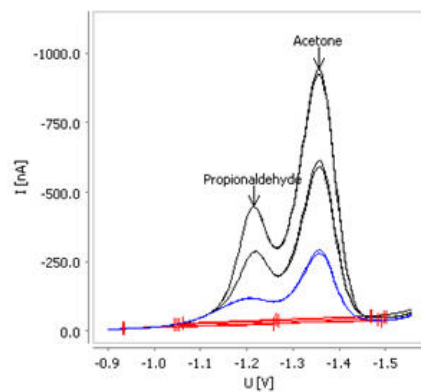
## RESULTS

Figure 2 shows the results of formaldehyde, acetaldehyde, and acetone determination in methanol.



**Figure 2.** Determination of formaldehyde, acetaldehyde, and acetone in methanol

Figure 3 shows the results of propionaldehyde and acetone determination in isopropanol.



**Figure 3.** Determination of propionaldehyde and acetone in isopropanol

**Table 2.** Result

Analyte	Methanol	Isopropanol
$\beta$ (Formaldehyde) mg/L	8.22	-
$\beta$ (Acetaldehyde) mg/L	7.08	-
$\beta$ (Propionaldehyde) mg/L	-	5.95
$\beta$ (Acetone) mg/L	45.21	4.02

Internal references: AW VA CH4-0634-042024

## CONTACT

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## CONFIGURATION



### (MME) 884 Professional VA manual

用于多模式 (MME) 的 884 Professional VA manual 是借助多模式 pro 或 scTRACE Gold 或液滴使用伏安法和法行高端痕量分析的入器。此已的瑞士万通技与高效位/恒位以及外接的活 viva 件用,在重金属领域中展了新的前景。有的校准器的恒位在每次量之前均自冲洗行校准,保可能的高精度。

通此器也可使用旋行定,例如借助«循伏安溶出法»(CVS)、«循脉冲伏安溶出法»(CPVS)和位法(CP)定池中的有机添加。借助可更的量,可在使用不同的各用之快速切。

使用 viva 件行控制、数据采集和估。

用于 MME(多模式)的 884 Professional VA manual 供配大量附件,包括用于多模式 pro 的量。和 viva 可独。

### Multi-Mode-Electrode pro

用于伏安法的汞。可作 DME、SMDE 或 HMDE 使用。

