Supelco®
Analytical Products

MERCK

Fast and efficient water determination in aldehyde and ketone samples

With Aquastar® Coulometric Reagents

Specific reagents are required to achieve accurate water determination results with the Karl Fischer method in samples containing aldehydes or ketones.

Without these special reagents, the methanol in the standard coulometric Karl Fischer reagent reacts with aldehydes and ketones and forms Ketals or Acetals. This reaction releases water, which adds to the water in your sample and leads to incorrect results that are too high. A second side reaction, the so-called bisulfite addition, leads to incorrect lower water content results. Especially the reactive aldehydes tend more to this side reaction, because it reacts with the sulfur dioxide from the reagent and the water in the sample. Therefore, a fast titration is always important to suppress the bisulfite addition.

With the new anode a cathode reagent for aldehyde & ketones the side reactions can be avoided. The reagents are methanol free and favor a fast titration to get accurate and correct results.

Benefits:

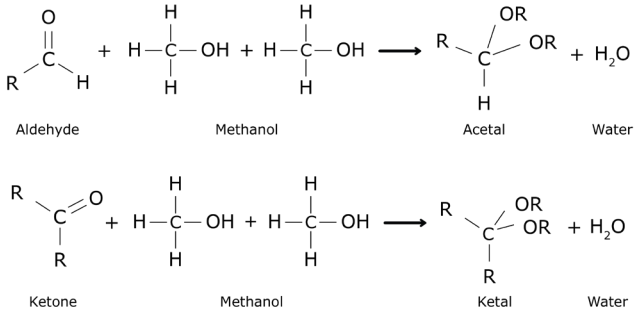
- Methanol free
- Avoids side reaction with methanol – no formation of acetals or ketals and water
- Suppress bisulfite addition because of a fast titration
- High accuracy and reproducibility
- Excellent precision

Determination of the water content in aldehyde or ketone samples with standard coulometric reagents causes both side reactions.

The bisulfite addition is more pronounced with aldehydes.

Side reaction: with methanol

Reaction producing water

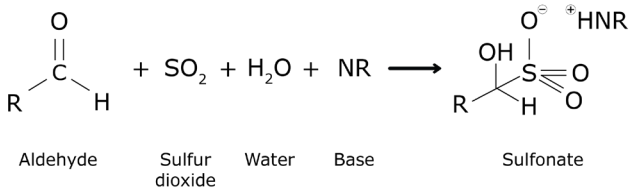


Reaction with methanol:

- Formation of acetals or ketals and water
- Endpoints are declining
- Tirtration curves are sluggish
- Leads to wrong results which are too high

Side reaction: bisulfite addition

Reaction consuming water



Bisulfite addition:

- Aldehydes & ketones react with water from the samples and the sulfur dioxide from the reagent
- Formation of a Sulfonate
- Leads to wrong results which are too low

For correct and reproducible results, we recommend using our new methanol free coulometric reagents

Order Information

Cat. No	Name	Content	Packaging
1880620500	Anolyte K for Coulometry	500 ml	glass bottle
1880630010	Catholyte K for Coulometry	10 x 5 ml	glass vials
Used with standards			
1880500010	Water standard 0.01 %; 0.1 mg/g	10 x 8 ml	glass ampules
1880510010	Water standard 0.1 %; 1 mg/g	10 x 8 ml	glass ampoules
Used with molecular sieve			
1057410250	Molecular sieve 0.3 mm rods	250 g	PE bottle
1057340250	Molecular sieve 0.3 mm beads with indicator	250 g	PE bottle
1057040250	Molecular sieve 0.3 mm beads	250 g	PE bottle

Contact:

Applications: **SigmaAldrich.com/application-note**
Application support: **aquastar@merckgroup.com**

To know more about our Aquastar® Karl Fischer Reagents, visit **SigmaAldrich.com/titration**

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To place an order or receive technical assistance

Order/Customer Service: **SigmaAldrich.com/order**
Technical Service: **SigmaAldrich.com/techservice**
Safety-related Information: **SigmaAldrich.com/safetycenter**

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