



Application Note AN-T-090

Determination of zinc sulfate

Photometric analysis according Ph.Eur. and USP

The inorganic compound zinc sulfate is used for various applications. It is often utilized as a dietary supplement to nourish both humans and animals with zinc, an essential mineral for our health, since we cannot produce nor store it naturally. Zinc is also often used in medicine because of its antibacterial properties. Additionally, it can be applied on roofs to prevent extended moss growth, used as precursor of the white pigment «lithopone», or

in zinc electroplating. Due to its versatile applications, the determination of its purity is important.

This Application Note describes the photometric determination of zinc sulfate using the Optrode at a wavelength of 610 nm. Complexometric titration of zinc requires EDTA as titrant and Eriochrome Black T as indicator. The method fully complies with Ph. Eur. and USP.

SAMPLE AND SAMPLE PREPARATION

The analysis is demonstrated on a zinc sulfate heptahydrate sample. No sample preparation is

required.

EXPERIMENTAL

An appropriate amount of sample is weighed into a beaker and is dissolved in deionized water. Ammonia buffer pH 10 and a small amount of Eriochrome Black T indicator is then added to the beaker. The sample is titrated photometrically with standardized EDTA until after the break point.



Figure 1. 907 Titrando with tiamo. Exemplary setup for the photometric determination of zinc sulfate purity.

RESULTS

The analysis demonstrates a distinct color change which results in reliable and reproducible results. In this study, the zinc

sulfate content was determined as $w(\text{ZnSO}_4) = 57.61\%$ ($\text{SD}(\text{rel}) = 0.03\%$, $n = 6$). An example titration curve is shown in **Figure 2**.

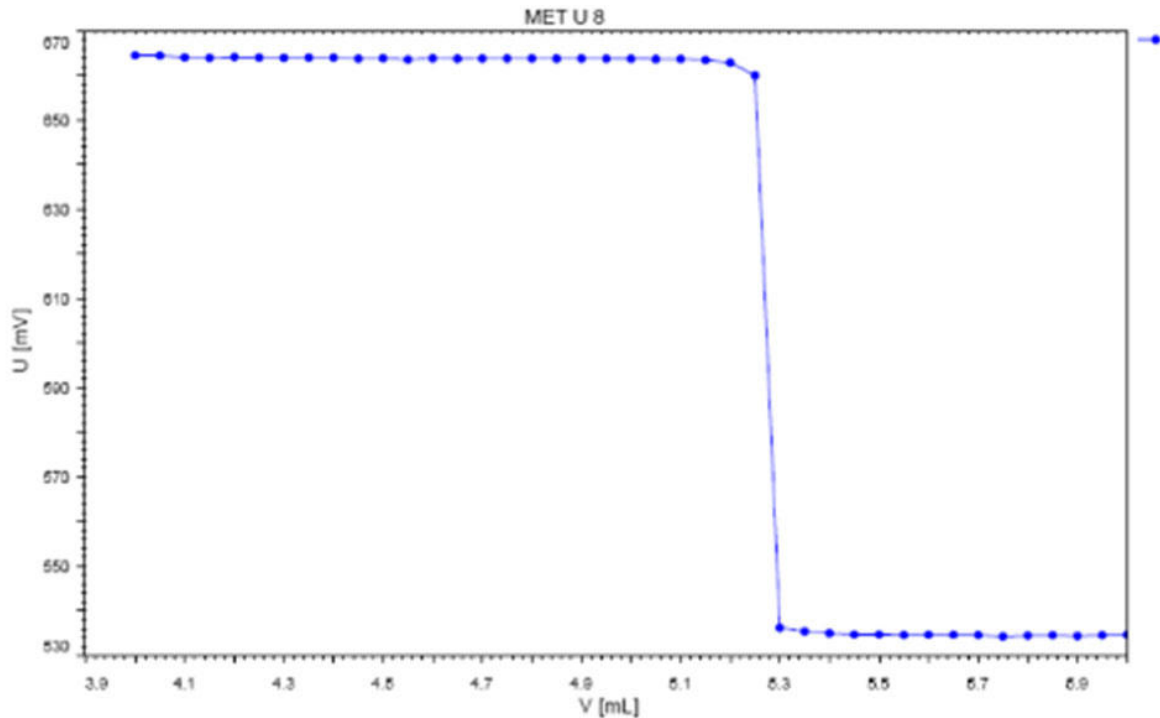


Figure 2. Example titration curve for photometric zinc sulfate determination. The break point is quite obvious in this chart.

CONCLUSION

The purity of zinc sulfate can easily be assessed using photometric titration. To reliably indicate the color change, a sensor such as the Optrode should be used. This has the advantage that the analysis is performed objectively, and the endpoint is always designated at the same color

change. The use of a Metrohm autotitrator and software in place of manual titration allows completely automated documentation for full traceability according to various regulations.

The analysis fully complies with Ph.Eur. and USP.

Internal reference: AW TI CH1-1311-012012

CONTACT

瑞士万通中国
北京市海淀区上地路1号院
1号楼7702
100085 北京

marketing@metrohm.com.cn

CONFIGURATION



907 Titrando

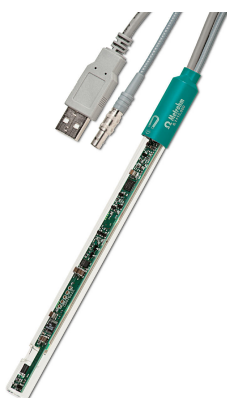
用于使用一个量接口和 Dosino 加液元位分析和容量-休滴定法滴定的高端滴定。

- 多四套 800 Dosino 加液系
- (DET)、等量(MET)和点滴定(SET),和 pH-STAT 滴定(STAT)、·休容量滴定(KFT)
- 使用子性量(MEAS CONC)
- 智能“iTrode”
- 控的加液功能,LQH
- 用于其他拌器或加液器系的四个 MSB 接口
- USB 接口
- 使用 OMNIS-Software、*tiamo*-件或 Touch Control
- 如果需要,足 GMP/GLP 和 FDA 要求,比如 21 CFR 第 11 部分



804

滴定台及802杆式螺旋拌器的控制器,如果与802型杆式螺旋拌器用,可在磁力拌器之外提供一。Ti Stand工作台有底板、支杆与固定器。



Optrode

有 8 可用波的光度滴定用光学传感器。可以通件控制 (*tiamo* 2.5 及以上版本)或通磁来行波切。玻璃鞘溶完全耐受,并且易于清。省空的传感器用于,例如:

- 按照 USP 或 EP 的非水溶性滴定
- 基端基的定
- TAN/TBN 根据 ASTM D974
- 硫酸定
- 混凝土中的 Fe、Al、Ca
- 水硬度
- 根据 USP 的硫酸骨素

传感器不合通量色度(比色法)来定度。