



Application Note AN-T-224

Aluminum content in coagulants and flocculants for wastewater treatment

Fast and accurate thermometric determination based on ABNT NBR 11176

Coagulation and flocculation are an essential part of treating both drinking water and wastewater. A common practice in overloaded wastewater treatment plants is chemically enhancing pre-cleaning to reduce suspended solids and organic loads from the primary clarifiers. Aluminum salts such as aluminum sulfate and polyaluminum chloride (PAC) are often used for this purpose. For the precise application and exact dosage of

the flocculant, it is important to accurately determine its aluminum content. The Al content, expressed as aluminum oxide (Al_2O_3), is additionally a parameter for calculating the precipitation capacity.

In this Application Note, the aluminum content is accurately and reliably analyzed based on ABNT NBR 11176 using the 859 Titrotherm equipped with a Thermoprobe HF and sodium fluoride as titrant.

SAMPLE AND SAMPLE PREPARATION

This application is demonstrated on PAC (polyaluminum chloride) and aluminum sulfate.

EXPERIMENTAL

An appropriate amount of sample is weighed into the sample beaker. Deionized water, hydrochloric acid, and acetate buffer solution are added.

While stirring, the solution is titrated until after the first endpoint with standardized sodium fluoride solution.

The determination is carried out with an 859 Titrotherm equipped with a Thermoprobe HF.

No sample preparation is required.



Figure 1. The 859 Titrotherm equipped with a Thermoprobe HF.

Table 1. Summarized results for aluminum in PAC (polyaluminum chloride) and aluminum sulfate samples expressed as Al_2O_3 .

Sample (n = 5)	Mean value Al_2O_3 in %(m/m)	SD(rel) in %
PAC (polyaluminum chloride)	10.7	0.8
Aluminum sulfate	7.7	0.5

CONCLUSION

Thermometric titration is an accurate and precise method to determine the aluminum content in different flocculants quickly.

Using the 859 Titrotherm equipped with a

Thermoprobe HF allows a reliable determination of aluminum. The system offers fast analyses and user-friendly handling.

Internal reference: AW TI BR8-0003-052014

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CONFIGURATION



859 Titrotherm tiamo™

用于温度滴定的计算机控制的滴定。包括用于滴定的完整附件(10 mL 滴定管、螺旋拌器的滴定台、温度探、滴定容器和 tiamo™ light)。



HF

用于在含 HF 介中 859 Titrotherm 行温度滴定的高敏感性温度传感器。

Thermoprobe 温度具有短的和高的分辨率,能精最小的温度化。

传感器可用于含有化物的酸性溶液,但不耐有机溶。用于:

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