

CHLORIDE

PRINCIPLE

Inorganic chloride in corn syrup is determined by direct titration with a standard silver nitrate solution, using potassium chromate as the indicator.

SCOPE

The method is applicable to all corn syrups, finished sugars and other clarified starch hydrolyzates, containing more than 10 ppm chloride.

REAGENTS

1. Silver Nitrate Solution, 0.05N : Dissolve 8.495 g of reagent grade silver nitrate (AgNO₃) in purified water. Dilute to 1 L and mix thoroughly.
2. Potassium Chromate Indicator: Dissolve 10 g of potassium chromate (K₂CrO₄) in purified water, dilute to 100 mL and mix thoroughly.

PROCEDURE

Conduct a blank titration on 150 mL of water used for sample dilution.

Weigh accurately about 20 g of corn syrup (Note 1) into a beaker or flask. Dissolve sample in 150 mL of purified water. Add 1 mL of potassium chromate indicator and titrate with standard silver nitrate solution until a faint reddish coloration is perceptible (Note 2).

CALCULATION

$$\text{ppm Chloride (as is)} = \frac{[(\text{mL of Titrant Consumed} - \text{Blank}) \times (\text{N of Titrant}) \times (\text{Milliequivalent Weight of Cl}^-) \times 10^6]}{\text{Sample Weight (g)}}$$

Where: N (Normality) of the AgNO₃ Titrant = 0.05

Milliequivalent Weight of Cl⁻ = (35.457 / 1,000) = 0.035457

$$\text{ppm Chloride (as is)} = \frac{[(\text{mL Titrant} \times 0.05) - \text{Blank}] \times 0.035457 \times 10^6}{\text{Sample Weight (g)}}$$

CHLORIDE — continued**NOTES AND PRECAUTIONS**

1. Sample weight selected for analysis should be such that the sample titrated contains not more than 0.035 g of chloride ion. Suggested sample weights for crude and refined corn sugars are 10 and 50 g, respectively.
2. Since the end point is difficult to detect it is expedient to observe it over a white surface.

METHOD HISTORY

Corn Syrup, Chloride (E-14), Date of Acceptance 4-05-1954, Revised 3-28-2006.