

ACIDITY

PRINCIPLE

Acidity of the sample is determined by titration of the diluted sample with sodium hydroxide solution to a pH value of 6.0. The acidity is calculated as milliequivalents of acid per unit sample weight.

SCOPE

The method is applicable to all corn syrups and starch hydrolyzates.

SPECIAL APPARATUS

1. pH Meter
2. Buret: A precision 10 mL buret with subdivision of 0.05 mL or less

REAGENTS

1. Sodium Hydroxide Solution, 0.05 *N*: Standard
2. Standard Buffers: Two buffer solutions having known pH values of about 7 and 4 are necessary (Note 1).

PROCEDURE

Follow manufacturer's instructions in standardizing pH meter with standard buffer solutions at about pH 7 and 4.

Analysis: Weigh 100 g (± 1 g) of corn syrup in a 400 mL beaker and dilute with 150 mL of purified water. Immerse the pH electrode in the solution and, while stirring gently, titrate with the standard sodium hydroxide solution to a pH of 6.0.

Perform a blank determination on 150 mL of purified water, titrating with the standard sodium hydroxide solution to a pH of 6.0 (Note 2).

ACIDITY — continued**CALCULATION (Note 3)**

$$\text{Acidity (Meq/g, as is)} = \frac{[\text{Sample titer (mL)} - \text{Blank titer (mL)}] \times \text{Normality}}{\text{Sample Wt. (g)}}$$

NOTES AND PRECAUTIONS

1. Both liquid and dry stock buffers are commercially available and can be used with confidence when handled according to suppliers' instructions.
2. The blank determination is used to correct for dilution and impurities in the water. This correction is especially significant for ion-exchanged syrups.
3. Acidity is often expressed as percent hydrochloric acid, calculated as follows:

$$\% \text{ Acidity (as HCl)} = \text{Acidity (meq/g)} \times 0.0365 \times 100$$

The International Society of Beverage Technologists (ISBT) defines titratable acidity as the volume of standard 0.05 *N* sodium hydroxide solution per 100 g of sample.