

MOISTURE IN SWEET FEED (Oven Method)

PRINCIPLE

Moisture in sweet feed samples is removed by heating in an oven under specified conditions of temperature, vacuum and time. The loss is calculated as moisture content.

SCOPE

This procedure is applicable to high moisture (30% to 50%) corn gluten feed to which nutritive sweetener or alcohol production residue has been added (Note 1).

SPECIAL APPARATUS

1. Vacuum Oven: Capable of operation at 60 °C or higher and 100 mm pressure or better.
2. Vacuum Pump: Capable of maintaining an oven vacuum of a minimum of 100 mm pressure with a dry air flow rate of a minimum of 1 L/min.
3. Air Drying Train: A drying column filled with indicating-type silica gel desiccant in series with a gas scrubber containing concentrated sulfuric acid (Note 2). Alternately, an efficient gas drying tube can be used, such as Perma Pure Dryer (Perma Pure Inc., Toms River, N.J.).
4. Desiccator, containing an efficient desiccant.
5. Aluminum Moisture Dishes: With covers, approximately 50 mm diameter.
6. Analytical balance capable of weighing to 0.1 mg.

PROCEDURE

Mix the sample thoroughly to ensure homogeneity. Weigh accurately about 5 g of unground ("as is") sample into a predried, tared moisture dish. The lid should have been tared with the dish.

MOISTURE IN SWEET FEED (Oven Method) – continued

Place the dish and cover separately in the vacuum oven. Operate the oven at 60 °C with a pressure of 100 mm and a dry air flow of 1 L/min. for 20 hrs. (Note 3).

At the end of the drying period, shut off the vacuum line and slowly fill the oven with air drawn through the drying train. Open the oven and quickly cover the dish with its own cover. Immediately place the covered dish into the desiccator to cool.

Weigh dish and sample after they have reached room temperature.

CALCULATIONS

$$\% \text{ Moisture} = \frac{(\text{Sample Wt.} - \text{Dry Sample Wt.})(100)}{\text{Sample Wt.}}$$

$$\% \text{ Dry Matter} = 100 - \% \text{ Moisture}$$

NOTES AND PRECAUTIONS

1. In the case of high moisture corn gluten feed, to which no sweetener has been added, a drying temperature of 80 °C should be used. See CRA Analytical Method G-16.
2. When handling concentrated sulfuric acid, safety goggles, face shield, apron and chemical protective gloves must be worn. Sulfuric acid is corrosive; avoid contact with skin, eyes and respiratory tract.
3. Temperatures in excess of 60 °C will drive off volatile organics (in addition to water) present in the added sweetener, thus causing apparently high moisture values.

METHOD HISTORY

Feedstuffs, Moisture in Sweet Feed (G-17), Date of Acceptance 9-30-1997, Revised 4-09-1998.