

2.3 Determination of pH in Meat and Poultry Products

Potentiometric measurements should be used to determine the pH of a food product. The accuracy of most pH meters is approximately 0.1 pH units and reproducibility should be approximately ± 0.005 pH units. Both the glass and reference electrode are usually housed in a single tube, called the combination electrode. To obtain accurate results the same temperature should be used for standardization with the buffers and the sample. Measurements should be taken within the temperature range of 20 to 30°C.

2.31 Equipment and Reagents

- a. Blender
- b. Beaker, 100 ml
- c. Separatory funnel
- d. pH meter, suitable for reading pH from 0 to 14 in 0.1 unit increments. A rugged, designated combination electrode should be used for pH measurement of meats and poultry. A flat combination electrode works well for determining the surface pH of canned foods.
- e. Distilled water
- f. Certified buffer solutions of pH 7.00, and either pH 4.00 or 10.00. The buffers chosen should bracket the desired pH.

2.32 Procedure

- a. Calibrate the pH meter, according to manufacturer's instructions, using certified buffers pH 7.00 and either pH 4.00 or 10.00.
- b. Most products will be solid and require blending. A 1:5 or 1:10 dilution should be made with distilled water in a clean blender jar. Blend to a thin uniform consistency and perform the pH measurement. If fat or oil causes fouling of the electrode, transfer a portion of the homogenate to a separatory funnel and draw off a portion of the aqueous phase. On certain products centrifugation may be required in order to recover a measurable aqueous phase.
- c. Adjust the temperature control on the pH meter to that of the sample (ideally 25°C) and immerse the pH electrode into the liquid phase.
- d. A surface electrode may be used with certain low fat products that present a flat, solid core surface. If a surface measurement is taken, ensure that the electrode has good contact with the product surface.
- e. Record pH to the nearest 0.1 unit.

Reference:

USDA/FSIS Microbiology Laboratory Guidebook

Chapter 2. PHYSICAL EXAMINATION OF MEAT AND POULTRY PRODUCTS

https://www.fsis.usda.gov/sites/default/files/media_file/2021-03/MLG-2.pdf