Measuring Peroxide Value of Dog Food

Description

Having a pet at home is becoming more and more common for families all over the world. But a pet is more than a live-in animal; many consider pets a part of the family. This has led to feeding our pets better diets and paying a higher price for better quality food. Most pet food consists of rendered protein meal; this provides proteins and amino acids. Rendering is the process of taking the portion of meat, milk, eggs, or fiber that is not used for human consumption and processing it to protein meal used for animal feed. The amount of fat in protein meals is generally between 10-25%. Fat is required in animal diets for energy as well as improving the flavor of the food product.

Accurately determining shelf life is critical when making pet food to avoid costly recalls and unhealthy food. Several parameters can be measured to help determine shelf stability. In products containing fats or oils, peroxide value is a common measurement. As pet food starts to degrade it undergoes changes affecting odor and taste. This is because of lipid oxidation. Not only does this change the flavor and odor of the product, but it also can diminish the nutritional quality.

As oxidation of lipids occurs, peroxides are formed. Oxidation of pet food can be quantified by measuring the peroxide value, or the amount of peroxide oxygen per one kilogram. By measuring the peroxide value of pet food over time, a manufacturer can monitor the oxidation process and determine product stability. In this method, the sample is dissolved in a chloroform and acetic acid mixture. Potassium iodide is then added, which reacts with the peroxides to create iodine. Finally, the iodine created is titrated with sodium thiosulfate using an ORP electrode; this tells us the amount of peroxides present in the original sample. Results are reported as meq peroxide/kg.

Application

A pet food manufacturer contacted Hanna about purchasing an instrument to follow an AOCs method to measure peroxide value. The sales representative worked with applications to present the HI902 Potentiometric Titrator and HI3131B Combination ORP Electrode. The HI902 features customizable methods allowing the customer to adjust sample sizes and titrant concentrations when desired. The dynamic dosing feature of the HI902 made the customer confident that the results they obtained had a high accuracy.

The ability to add more methods as needed appealed to the customer, as they were also interested in automating their free fatty acids method. The customer appreciated how they would only have to purchase an additional burette for this analysis for easy automation, which would save them titrant and time thanks to the Clip-Lock™ burette exchange system. Clip-Lock makes it easy to slide one burette off and replace it with another. Being able to move reports via USB enabled the customer to keep records of each batch they produce. Between the accuracy and flexibility, the customer was confident that the HI902 titrator was able to fit the demands of their quality control program.