

Exercises for Chem 2990 – Analysis of Food Additives, Drugs, and other Goodies

1. A sodium benzoate sample was received for analysis. 24.921g of the solid was heated at 110°C for 24 hours, reducing the mass to 24.773g. A 623.1 mg portion of the dried sample required 42.98 mL of 0.1000N perchloric acid to titrate it.

Report the moisture content of the sample.

Report the % sodium benzoate as determined by titration.

Does this sample meet release specifications according to these two criteria?

2. Caffeine was analyzed for food use. 48.213g of the sample was dried for 8 hours at 115°C, reducing the mass to 45.370g. 775.1mg of this dried sample required 40.11mL of 0.1000N HClO<sub>4</sub>. One gram of the sample dissolved in 55 mL of water. Can this lot of caffeine be used in the manufacturing of foods?

Report the moisture content of the sample.

Report the % caffeine as determined by titration.

Does this sample meet release specifications?

3. Citric acid was tested by titration with 1.25N NaOH. A 3.0251g sample of citric acid required 37.79mL of this sodium hydroxide solution for titration.

Calculate the % citric acid.

Explain your correction factor for 1.25N NaOH as opposed to using 1.00N NaOH.