

STARCH, APPARENT

PRINCIPLE

The determination of apparent starch is based on the reaction of iodine with starch which results in the production of a blue color when the amylose component is present. It is known that this reaction, development of a blue color, occurs with dextrose polymers as low as DP-45.

SCOPE

The procedure is applicable to corn syrup, refined sugar, and crude sugar.

REAGENTS

1. Iodine Solution, 0.02 *N*: Prepare 0.1 *N* Iodine solution by dissolving 12.7 g of reagent grade iodine (I₂) in a solution of 40 g of potassium iodide in 25 mL of deionized water. Transfer to a 1 L volumetric flask, dilute to volume with deionized water and mix.

Dilute one part 0.1 *N* iodine solution with 4 parts of deionized water. Standardization is not required.

PROCEDURE

Weigh 25 g of sample and add 25 mL of deionized water to corn syrup or 50 mL to refined or crude sugar. Mix to form a solution, heat to a boil, then cool to 5°-10° C.

Add 0.02 *N* iodine solution in 0.25 mL increments to the sample under agitation. Observe any color change by viewing the sample under light from a daylight fluorescent lamp mounted on the titration assembly. Note the volume of iodine solution consumed for the appearance of the first permanent color change (Note 1). Now add 1 mL of the 0.02 *N* iodine solution in 0.25 mL increments noting the color change or development after each addition.

Rate any distinct blue color developed during the titration as a "Positive" test for apparent starch (Note 2). In the absence of the development of a blue color, rate any other color such as yellow, green, or purple, etc., as a "Negative" test for apparent starch (Note 3).

STARCH, APPARENT — continued**NOTES AND PRECAUTIONS**

1. The quantity of iodine solution added, especially in the development of the first permanent color, is primarily dependent upon the sulfur dioxide content of the sample.
2. A positive rating under the conditions of the test usually indicates the presence of 50 ppm or more of starch. Dextrose polymers as low as DP-45 yield a blue color with iodine. No attempt should be made to assign specific values to the different hues of blue.
3. Colors other than blue may be caused by an excess of iodine, traces of starch or dextrose polymers when the latter are present in amounts not normally considered objectionable.

METHOD HISTORY

Corn Syrup, Starch, Apparent (E-60), Date of Acceptance 3-31-1967, Revised 10-09-2009.