AOAC Official Method 925.05
Sucrose in Animal Feed

First Action 1925
Final Action 1958

Place 10 g test portion in 250 mL volumetric flask. If material is acid, neutralize by adding 1–3 g $CaCO_3$. Add 125 mL 50% alcohol by volume, mix thoroughly, and boil on steam bath or by partially immersing flask in water bath 1 h at 83 –87°C, using small funnel in neck of flask to condense vapor. Cool and let mixture stand several h, preferably overnight. Dilute to volume with neutral 95% alcohol, mix thoroughly, let settle or centrifuge 15 min at 1500 rpm, and decant closely. Pipet 200 mL supernate into beaker and evaporate on steam bath to 20–30 mL. Do not evaporate to dryness. Little alcohol in residue does no harm.

Transfer to 100 mL volumetric flask and rinse beaker thoroughly with H_2O, adding rinsings to flask. Add enough saturated neutral $Pb(CH_3COO)_2$ solution (ca 2 mL) to produce flocculent precipitate, shake thoroughly, and let stand 15 min. Dilute to volume with H_2O, mix thoroughly, and filter through dry paper. Add enough anhydrous Na_2CO_3 or potassium oxalate to filtrate to precipitate all Pb, again filter through dry paper, and test filtrate with little anhydrous Na_2CO_3 or potassium oxalate to make sure that all Pb has been removed.

Place 50 mL prepared test solution in 100 mL volumetric flask, add piece of litmus paper, neutralize with HCl, add 5 mL HCl, and let inversion proceed at room temperature as in 925.48(**c**) (*see* 44.1.09). When inversion is complete, transfer solution to beaker, neutralize with Na_2CO_3, return solution to 100 mL flask, dilute to volume with H_2O, filter if necessary, and determine reducing sugars in 50 mL solution (representing 2 g test portion) as in 906.03B (*see* 44.1.16). Calculate results as invert sugar.

$$\text{Sucrose, \%} = [\text{percent total sugar after inversion} - \text{percent reducing sugars before inversion (both calculated as invert sugar)}] \quad 0.95$$

Because insoluble material of grain or cattle food occupies some space in flask as originally made up, correct by multiplying all results by factor 0.97, as results of large number of determinations on various materials show average volume of 10 g material to be 7.5 mL.

References: *USDA Bur. Chem. Circ*. **71**.
JAOAC **41,** 276(1958); **42,** 39(1959).

CAS-57-50-1 (sucrose)