



Method 1.8 - Official Methods: mixed juice Brix

1. Rationale

Juice samples should be analysed immediately after they are received in the laboratory or, if composited, preserved. This is important especially with juices that have not been heated. Heating under normal processing conditions destroys enzymes and microorganisms, thus reducing the rate of deterioration.

2. Principle

Refractometer Brix measurements are significantly influenced by the presence of turbidity in the solution, and to obtain data for purposes of payment or factory balance it is essential that turbidity be removed. Products specifically involved are bagasse and cane extracts, mixed juice and final molasses. Removal of turbidity is best achieved by filtration with Celite 577 through a Whatman No. 6.

3. Apparatus

- 3.1 Refractometer
- 3.2 Stoppered bottle (225 cm³)
- 3.3 Filter paper: Whatman No. 6 or equivalent (150 mm ϕ)
- 3.4 Stemless funnel (100 mm ϕ)
- 3.5 Squat beaker (100 cm³)
- 3.6 Watch glass (100 mm ϕ)

4. Reagents

- 4.1 Filter aid - Celite 577 or equivalent

Celite is an inert powder and inhalation may cause asbestosis of the lungs. Wear a dust mask during use.

5. Procedure

The measurement is affected by the presence of suspended matter which must therefore be removed by filtration or by centrifuging. Temperature changes have a predictable effect on the refractometer readings of pure sucrose solutions and the temperature corrections which apply to pure sucrose solutions may be used for juices without introducing serious errors.

However, it is recommended that the measurements be carried out at 20°C.

To 100 cm³ juice in the bottle, add about 1 g filter aid, stopper and shake to disperse the filter aid. Filter through a fluted filter paper supported in the funnel which rests directly on the mouth of the squat beaker. Cover the funnel with a watch glass to minimize evaporation.

Discard the first 10 cm³ of filtrate using it to rinse the beaker. Collect sufficient filtrate to measure its refractometer Brix. Note the reading. Also record the temperature reading of the thermometer located on the prism mount if this differs from 20.0 ± 0.1°C.

If necessary, convert the instrument reading to Brix using the table supplied with the instrument.

6. Expression of Results

Express the refractometer reading to two decimal places as °Bx.

7. Precision

The tolerance associated with the Brix analysis is ± 0.05°Bx.

8. References

SASTA (1985). *Laboratory Manual for South African Sugar Factories*. 3rd Edition: 244 - 245.