



Method 8.15 – Refined sugar: test tube caking

1. Rationale

This method is applicable to granulated refined and white sugars.

2. Principle

A test tube is filled with sugar, stoppered and subjected to temperature changes. The sugar is then poured out on to a strip of paper and inspected for its texture and the presence of any cake formations.

3. Apparatus

- 3.1 **Test tubes and test tube holder/rack:** 25 mm internal ϕ \times 200 mm length
- 3.2 **Rubber stoppers:** tight fitting to seal the test tubes.
- 3.3 **Masking tape**
- 3.4 **Water bath** at 4°C (an ice-water mixture in a bucket will suffice)
- 3.5 **Water bath** controlled at approximately 70°C

4. Procedure

- Ensure that all test tubes and rubber stoppers are clean and dry.
- Fill the test tube with sugar to about 10 mm from the top.
- Seal the tube with a rubber stopper, ensuring that it fits tightly into the tube.
- Wrap a few turns of masking tape around the tube at the junction of the stopper and mouth of the test tube.
- Immerse the bottom 10 mm of the test tube in the water bath at approximately 4°C for at least 3 hours.
- Transfer and immerse the bottom 10 mm of the test tube in the water bath operating at 70°C for at least 3 hours.
- Pour the sugar carefully from the test tube on to a piece of paper to form a strip as long as the length of the tube *i.e.* 200 mm.

5. Expression of results

Inspect the sugar, noting its texture and the presence of any cake formation.

6. References

Excell TL (1984). Conditioning and caking experiments on refined sugar. *Proc S Afr Sug Technol Ass*, **58**: 56-60.

SMRI (1997). The caking of white sugars by the test tube method. *SMRI Test Methods*, TM009.