Method 1.16 - Official Methods: press water clarifier mud pol, Brix and purity

1. Rationale

This method is applicable to press water clarifier mud and is used to obtain data for cane payment purposes. All measurements must be made at 20.0 ± 0.1°C.

2. Principle

The well-mixed press water clarifier mud sample is filtered with the help of a filter aid and used to determine the pol of the solution.

3. Apparatus

3.1 Light duty balance
3.2 Saccharimeter and 200 mm Pol tube
3.3 Kohlrausch flask (200 cm^3)
3.4 Filter paper, Whatman No. 91 or equivalent (185 mm ϕ)
3.5 Beaker (200 cm^3)
3.6 Funnel with stem, glass (100 mm ϕ)
3.7 Funnel stemless, glass or stainless steel (100 mm ϕ)
3.8 Watch glass (100 mm ϕ)

4. Reagents

4.1 Lead sub-acetate powder

Lead sub-acetate trihydrate [$Pb(OAc)_2 \cdot 3H_2O$], also called basic lead acetate, is poisonous and will accumulate in the human body. Direct contact through the skin, inhalation (powder dust) or swallowing must be avoided. Wear a dust mask, gloves and safety glasses during use.

5. Procedure

Tare a 200 cm^3 beaker on the light duty balance. Vigorously stir the sample of press water mud to ensure that insoluble matter is uniformly dispersed throughout the sample. Quickly weigh out 51.0 g of the agitated sample into the beaker.

Place the glass funnel with stem in the mouth of the Kohlrausch flask and wash the sample into the flask with distilled water. Complete to volume with distilled water.

Add 0.5 g lead sub-acetate powder and shake vigorously, keeping the mouth of the flask closed. Allow to stand for about 30 seconds to permit flocculation of the precipitate.

Place a fluted filter paper in the stemless funnel which has been placed in the mouth of the beaker so that it is supported by the rim of the beaker.

Pour the leaded sample, in one operation, into the funnel, taking care not to overflow the upper edge of the filter paper. Cover with the watch glass.

Discard the first 25 cm^3 of filtrate.

Swirl the filtrate in the beaker and then rinse the Pol tube three times with a portion of the filtrate.

Fill the tube with the remaining filtrate and read the polarization.

The saccharimeter reading gives the pol percent press water mud.

6. Expression of Results

Report pol in °Z to two decimal places.

7. Precision

The tolerance associated with the pol analysis is ± 0.05°Z.

8. References

SASTA (1985). *Laboratory Manual for South African Sugar Factories.* 3rd Edition: 276.