AUSTRALIAN STANDARD

Prepared by the Appita Testing Committee. Endorsed as part of AS 1301 by the Standards Association of Australia—February 1986. Endorsed as suitable for use in New Zealand by the Standards Council of New Zealand.

Appita P201m—86

Tentative Standard — January 1959
Standard — January 1962
Revised— October 1968
Revised— September 1977
Revised —February 1986

KAPPA NUMBER OF PULP

The Kappa Number is the number of millilitres of 0.02 M potassium permanganate solution which would be consumed by 1 gram of moisture-free pulp under the conditions specified in this standard. The results are corrected to 50 per cent consumption of the permanganate.

1. SCOPE AND SIGNIFICANCE

This method provides an indirect measure of the relative bleachability, or residual lignin content of pulp. It may be used for all types and grades of chemical and semi-chemical unbleached and semi-bleached wood pulps obtained in yields under 60 per cent. The method may also be used as a laboratory control technique for well screened pulps obtained in higher yields up to 70 per cent. It should be noted that reproducibility is less for high yield pulps than for low yield pulps.

2. APPARATUS

2.1 Mechanical stirrer. A propeller-type agitator made of glass or other non-corrosive material (a plastic-covered, or glass-covered magnetic stirrer may be used instead).

2.2 Reaction vessel. A container of 1500 to 2000 mL capacity. It may be a glass beaker, or a container made of other non-corrosive transparent or white material, e.g. Porcelain.

2.3 Wet disintegration apparatus, e.g. British Standard disintegrator, Waring blender or Turmix or similar apparatus suitable for disintegrating pulp until fibre clots or bundles are completely broken down.

2.4 Heating device, e.g. constant temperature bath.

2.5 Burette. 50 mL, graduated to 0.1 mL.

3. REAGENTS

3.1 Potassium permanganate solution, standardized, 0.0200 ±0.0001 M (3.161 g/L) (Notes 8.1, 8.3).

3.2 Sodium thiosulphate solution, approximately 0.2 M, standardized to within ±0.0005 M (Notes 8.2, 8.3).

3.3 Potassium iodide solution, 1.0 M (166 g/L) (Note 8.4).

3.4 Sulphuric acid, 2.0 M (196.2 g/L) (Note 8.5).

3.5 Starch indicator solution, 0.2 per cent (Note 8.6).

4. SAMPLE PREPARATION

4.1 Slush pulps. If the sample is taken from unscreened pulp which is normally screened before bleaching or other processing, then the shives and knots should be removed from the sample by screening. The method of screening must be stated along with the test results and should be chosen to give results similar to those obtained by the industrial screening of the pulp.

For slush screened pulps make a pad using sufficient pulp to conduct the test by filtering on a Buchner funnel without the use of any organic solvents. Do not use a filter paper on the Buchner funnel. Return the first filtrate through the pad to avoid loss of fines (Note 8.8). Tear the pad into small pieces and then air-dry.

4.2 Air-dried pulp sheets. Tear sufficient pulp to conduct the test into small pieces, do not grind in a Wiley mill or in a similar apparatus (Note 8.7).