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AUSTRALIAN STANDARD
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DETERMINATION OF STOCK CONCENTRATION

This Standard prescribes procedures for the determination of the solids in papermaking stocks.

The term 'stock' is used to mean a mixture, with water, of papermaking fibre together with other substances such as filler, loadings and additives, present at any stage of the pulping or papermaking process.

Stock concentration (Note 6.1) is defined as the number of parts by mass of oven-dry material which can be filtered from 100 parts by mass of stock, expressed as a percentage. When filler or other insoluble additives are known to be present in the stock, this should be stated in the report.

1. APPARATUS

1.1 Balances capable of weighing the dried fibre mat and, if required by Section 2, Procedure, the stock sample to an accuracy of 0.1% of the mass to be weighed.

1.2 Stock divider of any convenient design which maintains the fibres in a uniform suspension may be used (Note 6.2).

1.3 Means of filtering the stock so that a clear filtrate is obtained. Apparatus which has been found suitable includes:

(a) A Buchner funnel, 90 to 150 mm in diameter, mounted on a filter flask.

(b) Suction filters equipped with wire cloth such as those described by the Pulp Evaluation Committee of the Technical Section P.M.A. (Reference 7.1) and by Somerville and Pearson (Reference 7.2).

(c) Tared filter crucibles.

1.4 A means of drying the filter pad, which may be either:

(a) Ventilated drying oven, in which an air temperature of 105 ±2°C is maintained. A balance of appropriate capacity and accuracy (see 1.1) may be mounted over the oven and an extension to the pan provided, so that the dried mat may be weighed in the hot oven without the use of a tared container. When properly carried out, this method of weighing is rapid and accurate. If the oven is not fitted with an extension to the balance pan, a desiccator and tared containers with air-tight lids are required.

or

(b) Hot plate, the surface of which is maintained at a temperature in the range 150 ± 15 °C, with a pressing iron which is kept hot by standing it on the hot plate. The iron and hot plate must be large enough to cover the whole of the fibrous mat being dried. A hot plate with a top and bottom plate both heated can also be used.

1.5 Dippers, the design and volumes of which will depend on the nature and concentration of the stocks to be tested. The diameter of the opening in the top shall be such as to allow unrestricted entry of stock in order to avoid any separation of solids from water during the filling operation. It is necessary that the volumes of these dippers be accurately determined before use if the volume of the dipper itself is used as a measure of the amount of stock taken.

2. PROCEDURE

A representative portion of the sample is taken, the bulk of the water is removed by filtration and the remaining fibrous mat is dried to constant mass. For dilute (less than 1%) and cool (less than 30 °C) stock the error involved in measuring the volume of the representative portion, and assuming a density of 1 kg/L, can be neglected, in which case the stock sample need not be weighed.

2.1 Sampling and dilution Great care is necessary to obtain a sample which accurately represents the stream or the contents of the vessel being sampled (Reference 7.3). This Section pre-supposes that a representative sample has been obtained.

Whenever a sub-sample is taken from a sample, whether for weighing or for further dilution, use a dipper and fill it to overflowing. If a measuring cylinder is used to determine volume do not at any time attempt to adjust the volume of stock by adding or removing stock.

If the sample is in a stock divider, as for example after dilution during the preparation of laboratory handsheets (AS 1301.203), proceed to 2.2.

2.1.1 *Low stock concentration.*

2.1.1.1 If the stock concentration is less than about 0.5%, proceed to section 2.2.

2.1.1.2 If the stock concentration is higher than about 0.5%, stir the sample vigorously and by means of a dipper transfer a known volume or known mass to a stock divider, bucket or other suitable container (Note 6.3). If a graduated cylinder is used to determine the volume, the dipper of stock must be emptied completely into the cylinder after each dip without making any attempt

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