SCAN-CM 68:05
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SCANDINAVIAN PULP, PAPER AND BOARD
TESTING COMMITTEE

Mechanical and chemical pulps

Standard water for physical testing

Conductivity (40 – 150) mS/m

0 Introduction

Even small amounts of electrolytes (salts) influence the drainability properties of a pulp suspension (8). Since many pulps contain some electrolytes, it is not satisfactory in pulp testing to prepare pulp suspensions with distilled water, since this means that the salt concentration in the suspension may vary with the pulp under test.

If water containing a specified amount of electrolytes is used when preparing the pulp suspension, the influence of salts added with the pulp is greatly reduced. If the salt concentration is raised to such a level that the electrical conductivity of the pulp suspension is in the range of (40–150) mS/m, the influence of small variations becomes negligible. This means that, in many locations, tap water can be used when preparing the standard water.

1 Scope

This SCAN-test Method describes the specification and preparation of standard water to be used when preparing suspensions for the physical testing of pulp. It should be used for the determination of drainability properties (SR and CSF) and WRV and in the disintegration and beating procedures.

> *Note* – It can also be used for McNett classification, acc. to SCAN-CM 6, and for the determination of fines content, acc. to SCAN-CM 66.

The method is applicable to all kind of pulps.

2 References

ISO 5687 Paper, board and pulps – Determination of conductivity of aqueous extracts

> *Note* – SCAN-test has withdrawn a number of test methods and refers instead to the corresponding ISO and/or EN Standards.

3 Definitions

For the purpose of this Method, the following definitions apply:

3.1 *Standard water for physical testing of pulp* – Distilled or deionised water or tap water having a conductivity of (40–150) mS/m achieved by adding a magnesium salt to the water.

4 Principle

The standard water is prepared by adding a prescribed amount of magnesium sulphate to distilled water, deionised water or any other type of water that meets certain specified requirements, see 5.1.

5 Reagents for preparation of standard water

5.1 *Distilled or deionised water or tap water,* having a conductivity of < 20 mS/m, measured in accordance with ISO 5687. If tap water is used, this shall be potable water of good quality, having a concentration of iron or aluminium not exceeding 1 mg/l.

5.2 Magnesium sulphate, $MgSO_4$, *or magnesium sulphate heptahydrate*, $MgSO_4\ 7H_2O$, of such a grade, pro analysi, technical or puriss, that the requirements regarding aluminium and iron in 5.1 are met in the standard water after preparation.

6 Preparation of the standard water

The standard water shall have a conductivity of (40–150) mS/m. This is achieved at a magnesium sulphate concentration of $c(MgSO_4) = 0{,}5$ g/l.

Prepare a stock solution, e.g. 100 g/l of $MgSO_4$ (or 204 g/l of $MgSO_4\ 7H_2O$), by dissolving a known amount of the magnesium sulphate (5.2) in a known amount of the water (5.1) to be used. The concentration of the solution may be chosen with regard to the procedure for preparation of the standard water.

Then prepare the standard water, for example, by adding 5 ml of a 100 g/l stock solution per litre of water (5.1).

> *Note* – In laboratories where large volumes of standard water are used, it may be convenient to add the magnesium sulphate stock solution by means of an automatic device. Such a device may be controlled using an on-line conductivity meter, in which case the actual concentration of magnesium sulphate is not critical.

Check that the conductivity of the standard water prepared is (40–150) mS/m, using the procedure described in ISO 5687.

7 Report

When reporting test results obtained with pulp suspensions in standard water or with laboratory sheets prepared from such suspensions, state clearly that standard water in accordance with SCAN-CM 68:05 has been used.

8 Literature

8.1 Greve T, Pachniewski J, Göttsching L, Shopper-Riegler- Messung und Wasserqualität. *Wochenblatt für Papierfabrikation* **115** (1987): 11/12, pp. 493-498

8.2 Cohen W E, Farrant G, Watson, A J, The Influence of Electrolytes on Pulp and Paper Properties. *APPITA Proc*. **3** (1949), 72-104.

SCAN-test Methods are issued and recommended by KCL, PFI and STFI-Packforsk for the pulp, paper and board industries in Finland, Norway and Sweden.
Distribution: Secretariat, Scandinavian Pulp, Paper and Board Testing Committee, Box 5604,
SE-114 86 Stockholm, Sweden.