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International Standard



692

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Pulps — Determination of alkali solubility

Pâtes — Détermination de la solubilité dans les solutions d'hydroxyde de sodium

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Descriptors : paper pulps, chemical analysis, solubility, sodium hydroxide, volumetric analysis.

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 692 was developed by Technical Committee ISO/TC 6, *Paper, board and pulps*.

This second edition was submitted directly to the ISO Council, in accordance with clause 6.11.2 of part 1 of the Directives for the technical work of ISO. It cancels and replaces the first edition (i.e. ISO 692-1974), which had been approved by the member bodies of the following countries :

| | | |
|---------------------|----------------|-----------------------|
| Australia | Germany, F. R. | Romania |
| Belgium | India | South Africa, Rep. of |
| Brazil | Iran | Spain |
| Canada | Ireland | Sweden |
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| Colombia | Italy | Turkey |
| Czechoslovakia | Japan | United Kingdom |
| Denmark | New Zealand | USA |
| Egypt, Arab Rep. of | Norway | Yugoslavia |
| Finland | Poland | |
| France | Portugal | |

The member body of the following country had expressed disapproval of the document on technical grounds :

Netherlands

Pulps — Determination of alkali solubility

0 Introduction

The object of both this International Standard and ISO 699, *Pulps — Determination of alkali resistance*, is to permit the study of the behaviour of pulps in the presence of alkali solutions, but their fields of application are different : while this International Standard describes the volumetric determination of the alkali-soluble constituents of the pulp and is applied preferably to the control of bleached pulps, ISO 699 describes the gravimetric determination of the alkali-insoluble constituents of the pulp and applies to all categories of pulps.

1 Scope and field of application

This International Standard specifies a method for the determination of the solubility of pulp in cold sodium hydroxide solutions of various and fixed concentrations. The sodium hydroxide concentrations most frequently used are 18 and 10 % (*m/m*).

The method is mainly intended for the investigation of bleached pulps, but may, however, also be used with unbleached pulps, for example in the different stages of manufacture of bleached pulp.

2 Reference

ISO 638, *Pulps — Determination of dry matter content*.

3 Definitions

3.1 *S*-value : Alkali solubility; the soluble fraction expressed as a percentage by mass of the oven-dry pulp.

3.2 S_{18} , S_{10} or S_c : *S*-values in which the indices 18, 10 or *c* refer to the chosen concentration, in grams of sodium hydroxide per 100 g of solution.

4 Principle

Treatment of the pulp with sodium hydroxide solution and oxidation of the dissolved organic matter with potassium dichromate. Titration of the excess potassium dichromate and calculation of the amount of cellulose equivalent to the potassium dichromate consumed.

5 Reagents

Use only reagents of recognized analytical grade and only distilled water or water of equivalent purity.

5.1 Sodium hydroxide, solution of known concentration, containing less than 1 g of sodium carbonate per litre (see the note), for example :

— 5,39 ± 0,03 mol/l solution, containing 18,0 ± 0,1 g of sodium hydroxide per 100 g of solution ($\rho_{20} = 1,197\ 2$ g/ml), equivalent to 215,5 ± 1,0 g of sodium hydroxide per litre;

— 2,77 ± 0,03 mol/l solution, containing 10,0 ± 0,1 g of sodium hydroxide per 100 g of solution ($\rho_{20} = 1,108\ 9$ g/ml), equivalent to 110,9 ± 1,0 g of sodium hydroxide per litre.

NOTE — The sodium hydroxide solution may be conveniently prepared as follows :

Dissolve a quantity of solid sodium hydroxide in an equal mass of water and allow the suspended sodium carbonate to settle. Decant the supernatant liquid and dilute with carbon dioxide-free water to the appropriate concentration. Check by titration with standard acid solution.

5.2 Sulphuric acid, concentrated, not less than 94 % (*V/V*) ($\rho_{20} = 1,84$ g/ml).

NOTE — If the concentration of the sulphuric acid is less than 94 % (*V/V*), the temperature will not reach the 125 to 130 °C required during the oxidation.