AS/NZS 1301.422s:2007

Australian/New Zealand Standard™

Methods of test for pulp and paper

Method 422s: Determination of the pH value of aqueous extracts of paper, board and pulp—Hot extraction method

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee PK-019, Methods of Test for Pulp and Paper. It was approved on behalf of the Council of Standards Australia on 5 November 2007 and on behalf of the Council of Standards New Zealand on 23 November 2007.
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The following are represented on Committee PK-019:

Australian Institute of Packaging
Australian Plantation Products and Paper Industry Council (A3P)
Appita
Ensis Papro, SCION
National Association of Forest Industries

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Foreword

This standard was prepared by Joint Technical Committee PK-019, Methods of Test for Pulp and Paper, as part of AS/NZS 1301, *Methods of test for pulp and paper*.

This edition cancels and replaces AS/NZS 1301.422s:1998.

The term ‘informative’ has been used in this Standard to define the application of the annex to which it applies. An ‘informative’ annex is only for information and guidance.

Introduction

This method applies to an extract of the whole paper or board. Surface-treated papers or boards may yield quite a different pH for an extract of the surface layer from that of the whole paper or board.

The determination of the pH value of distilled water extracts of paper is a test commonly used by paper manufacturers and paper users, when a knowledge of the degree of acidity or alkalinity of the paper is considered desirable for assessing whether the paper will be satisfactory for a particular purpose. Papers requiring a high degree of permanence, or intended for hygienic purposes, or for the wrapping of foods and metals, are examples of papers that may be subjected to this test.

This standard prescribes a hot water extraction of the paper. AS/NZS 1301.421s prescribes cold extraction; but, as this does not necessarily give the same results, it should be regarded as a different method. The difference is due to heat-induced hydrolysis of materials in the paper. The choice of method is determined by the use to which the results are to be put, and the references listed in Annex A should be consulted.

This method conforms to ISO 6588-2, *Paper, board and pulps—Determination of pH of aqueous extracts,* Part 2: *Hot extraction*.

Other similar standards are TAPPI T435om and PAPTAC G.25P.

Determination of the pH value of aqueous extracts of paper, board and pulp—Hot extraction method

1 Scope

This Standard sets out a method to determine the pH of an aqueous extract of paper, board or pulp, which is obtained by using a hot extraction method.

2 Normative references

The following document is referred to in this standard.

AS 1301.417s Sampling paper, board and pulp for testing

3 Principle

A 2.0 g sample of paper, board or pulp is extracted for 1 hour with 100 mL of hot, distilled water and the pH of the extract is then measured at 20°C to 25°C.

4 Apparatus

4.1 Glassware of chemically resistant glass, fitted with inert, leakproof stoppers. A 250 mL conical flask is required. All equipment shall be carefully rinsed with boiling distilled water and allowed to dry before use.

4.2 pH meter, fitted with glass and calomel or combined electrodes, capable of being read to at least 0.05 in pH. It is recommended that the pH meter be fitted with an automatic temperature compensation (ATC) probe.

5 Reagents

5.1 Distilled or deionized water

The distilled water used for making the aqueous extract may contain small amounts of carbon dioxide, but not more than corresponds to a pH of 5.9.

A sample of the water shall be tested for alkaline impurities, by boiling for a few minutes, cooling, then measuring its pH. If this is higher than 7.3 the water shall be redistilled with the addition of approximately 1 g potassium permanganate and 1 g caustic soda per litre, using a double still head. Deionized water may be used but the conductivity of the water shall not exceed 0.2 mS/m after boiling and cooling.

5.2 pH standards

(a) **pH 4.00 at 20°C** A 0.05 M solution of potassium hydrogen phthalate, $KHC_8H_4O_4$ (10.20 g/L).

(b) **pH 6.87 at 20°C** A solution of potassium di-hydrogen orthophosphate, KH_2PO_4 (3.39 g/L) and disodium hydrogen orthophosphate, Na_2HPO_4 (3.54 g/L).

(c) **pH 9.23 at 20°C** A 0.01 M solution of disodium tetraborate decahydrate, $Na_2B_4O_7.10H_2O$ (3.81 g/L).

6 Preparation of sample

Considerable care shall be taken in the storage and handling of the samples to be tested to avoid contamination. If excessive handling of the samples is necessary, wear clean protective gloves.