AS/NZS 1301.011:2018

Australian/New Zealand Standard™

Methods of test for pulp and paper

Method 011: Klason lignin in wood and pulp

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The following are represented on Committee PK-019:

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PREFACE

This Standard was prepared by Standards Australia Committee PK-019, Methods of Test for Pulp and Paper, to supersede AS/NZS 1301.11s:2005, *Methods of Test for Pulp and Paper*, Method 11s: *Klason lignin in wood and pulp*.

This Standard describes a method for determination of acid-insoluble ('Klason') lignin.

This Method is similar in principle to TAPPI T 222 and ASTM D1106.

The objective of this revision is to establish the correct designation for this Standard: 1301.011, not 1301.11s. No technical revisions have been made.

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FOREWORD

Lignin is the aromatic amorphous material found in the cell wall and middle lamella of a wood fibre (1) and (2). Its removal is the main objective of chemical pulping and bleaching processes.

For the purpose of this Standard, Klason lignin is defined as those components of wood or pulp which are insoluble after treatment with 72 per cent m/m sulphuric acid followed by boiling in 3 per cent sulphuric acid. The lignin content should not be less than 1 per cent to provide a sufficient amount of lignin, about 20 mg, for accurate weighing.

Most woods contain some lignin which is rendered soluble by the above treatment and which is not determined by this Standard. In softwoods and sulphate pulps this soluble lignin content is small, about 0.2 per cent to 0.5 per cent, but in hardwoods it can amount to 5 per cent. In semi-bleached pulps about one-half of the total lignin content could be acid soluble. Hardwoods contain appreciable quantities of alkali soluble lignin so hardwood which has had any alkali treatment may give a lower result than would be obtained on the untreated wood. Some eucalypt woods contain polyphenolic substances which are included in the acid insoluble lignin if not removed prior to the test (3).

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Methods of test for pulp and paper

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1 SCOPE

This Standard specifies a method for determination of Klason lignin. This method can be applied to the determination of acid-insoluble lignin in wood and in all grades of unbleached pulps. It is not applicable to bleached pulps containing small amounts of lignin.

2 NORMATIVE REFERENCES

The following Standards contain provisions which, through reference in this text, constitute provisions of this Standard. At the time of publication, the editions indicated were valid. The following documents are referred to in this Standard.

AS/NZS

1301	Methods of test for pulp and paper	
1301.002s	Method 002s:	Preparation of wood samples for chemical analysis
1301.012s	Method 012s:	Organic solvent extractives in wood, pulp and paper
1301.013rp	Method 013rp:	Sampling of woodchips for testing
1301.418s	Part 418s:	Ash content of wood, pulp, paper and board

AS/NZS ISO

7213	Pulps—Sampling for testing

3 PRINCIPLE

The carbohydrates in wood and pulp are hydrolyzed and solubilized by sulphuric acid; the acid-insoluble lignin is filtered off, dried and weighed. The filtrate obtained during performance of this test may be used for determination of acid-soluble lignin.

4 APPARATUS

4.1 Filtration apparatus

Consisting of a 2-litre filtering flask, an adaptor, and a filter crucible as shown in Figure 1. For the crucible, any acid washed filter medium may be used provided a clear filtrate is obtained. The most common mediums are sintered glass discs of either fine or medium porosity. If desired, a siphon tube may be fitted as shown in the figure; if a siphon tube is used, stand the flask in an inclined position as shown in Figure 1.