AS 1301.402:2019

Australian STANDARD®

Methods of test for pulp and paper

Method 402: Statistical monitoring of test systems for paper and paper board

STANDARDS Australia

AS 1301.402:2019

This Australian Standard® was prepared by PK-019, Methods of Test for Pulp and Paper. It was approved on behalf of the Council of Standards Australia on 21 November 2019.

This Standard was published on 13 December 2019.

The following are represented on Committee PK-019:
Appita
Monash University

This Standard was issued in draft form for comment as DR AS 1301.402:2019.

Keeping Standards up-to-date

Ensure you have the latest versions of our publications and keep up-to-date about Amendments, Rulings, Withdrawals, and new projects by visiting:
www.standards.org.au

ISBN 978 1 76072 669 0

Australian STANDARD®

Methods of test for pulp and paper

Method 402: Statistical monitoring of test systems for paper and paper board

Originated as AS P1.P402m—1963.
Previous edition AS/NZS 1301.402rp:2005.
Revised and redesignated as AS 1301.402:2019.

Preface

This Standard was prepared by the Australian members of Joint Standards Australia/Standards New Zealand Committee PK-019, Methods of Test for Pulp and Paper, to supersede AS/NZS 1301.402rp:2005, *Methods of test for pulp and paper, Method 402rp: Statistical monitoring of test systems*.

After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian Standard rather than an Australian/New Zealand Standard.

The objective of this Standard is to provide statistically robust procedures for monitoring the performance of test systems used in determining the properties of paper and paper board.

The major changes in this edition are as follows:

(a) The title of this Standard has been amended to clarify that the test systems are used to monitor paper and paper board properties.

(b) The Introduction expresses more accurately the procedures described in this Standard.

(c) A technical error in one expression has been corrected.

(d) Appendix A has been classified as "informative" as the randomization procedures are presented as an example only.

(e) A procedural error in Appendix A has been corrected.

At the time of publication of this Standard there was no corresponding ISO Standard.

The terms "normative" and "informative" are used in Standards to define the application of the appendices to which they apply. A "normative" appendix is an integral part of a Standard, whereas an "informative" appendix is only for information and guidance.

Contents

Introduction

The objective in standardizing a test method is to define the apparatus and procedure sufficiently well to ensure that different laboratories in different locations can achieve and maintain adequately reproducible results for a particular test. It is important to recognize that, if a laboratory performs the test strictly in accordance with the standard test method, then its result is as valid as that achieved by any other laboratory which also tests strictly in accordance with the standard method. If, under these circumstances, the agreement between laboratories is not satisfactory for the technical or commercial purposes for which the test is applied, then the standard method does not adequately define the conditions of the test and needs to be revised.

Once the adequacy of a standard test method is established, it is necessary for each laboratory, in order to produce reliable results, to ensure that all of the requirements of the Standard are being satisfied. For a laboratory to be confident of its results, it is desirable to have some convenient performance check on whether the laboratory continues to achieve results that are sufficiently accurate.

This Standard describes procedures for preparing reference material for monitoring test systems. For a single test system, the assigned value for a reference material is likely to be less accurate than the value obtained when multiple test systems are used to obtain an assigned value. Thus for a single test system, the monitoring procedures in this Standard will provide a measure of its constancy but not necessarily of its accuracy. The procedure described for multi test system monitoring provides a measure of both constancy and accuracy, the effectiveness of the latter depending on how close the assigned value is to the true value. However, neither procedure actually determines directly whether the test is being done strictly in accordance with this Standard because, even if the test results appear satisfactory, there may be some consistent departure from this Standard, or several departures which fortuitously compensate each other.

As the properties of a given sample of paper vary from one location on the sample to another, including when these locations are close together, mean values obtained from a limited number of tests will vary from one set of tests to another even when the test system has not changed. This is particularly true for destructive tests such as tensile strength.

If the results of the testing are not satisfactory, it is necessary to ascertain and correct the error. The monitoring procedure cannot be regarded as a calibration procedure and the adjustment of any test variable within the permitted range of reference is prohibited if that adjustment is done with the objective of changing the test level to the desired level. Normally the procedures either verify the performance of the test system on a particular sample, providing confidence for the testing of similar samples, or they indicate the need for equipment maintenance, operator training, or that the test atmosphere is outside specification and needs to be corrected, or that the properties of the reference specimens kept in the test room have changed and a new set of specimens needs to be conditioned or all the reference material has deteriorated and the procedures in this Standard need to be followed to establish a new batch of the reference material.

Australian Standard®

Methods of test for pulp and paper

Method 402: Statistical monitoring of test systems for paper and paper board

1 Scope

This Standard sets out procedures for the statistical monitoring of the performance of test systems used to determine the properties of paper and paper board where stable reference material is available.

The procedures are not a replacement for calibration of equipment, although the frequency of calibration may be reduced if the monitoring procedures in this Standard indicate the system is stable.

NOTE The procedures described are specific to paper and paper board testing, but some of the principles could be applicable in other industries where the material being tested is other than paper or paper board.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document.

AS/NZS 1301.415s, *Methods of test for pulp and paper, Method 415s: Standard atmosphere for testing paper and board and procedure for monitoring the atmosphere*

3 Terms and definitions

For the purpose of this document, the following terms and definitions apply.

3.1
accuracy
closeness of agreement between the test result obtained by a particular test system combination of one operator, one apparatus and one laboratory and the true value of the property being measured for the particular test pieces tested

3.2
assigned value
best estimate of the mean true value of a property which can be determined from the available test systems using the procedures in this Standard

3.3
constancy
degree to which the test result on a particular sample by a particular test system remains constant over time

3.4
may
indicates the existence of an option

3.5
repeatability
degree of agreement between two results obtained on a particular sample by a particular test system at a particular time

3.6
replicate test
single performance of the procedure of the test on a single test piece