AUSTRALIAN STANDARD
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STATISTICAL AUDIT OF TEST RESULTS

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

Once the adequacy of the standard test method is established it is then 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 check on whether the laboratory fully meets the requirements of the test.

This recommended practice describes a procedure for determining whether the results of a particular laboratory are sufficiently accurate and whether that accuracy is maintained with time. However it must be recognized that the procedure does not directly determine whether the test is being done strictly in accordance with the standard because it is possible that, in particular circumstances, the test accuracy may be satisfactory even though there may be a departure from standard procedure, or several departures which fortuitously compensate for each other.

If the test accuracy is less than satisfactory it is necessary to ascertain and correct the cause of the error. The check procedure cannot be regarded as a calibration procedure. Normally it merely verifies the accuracy of the test for a particular sample, enabling test results of other similar samples to be interpreted with additional confidence.

The procedure described below is specific to paper and board testing but it could be made applicable to other testing where the reference material is not paper or board.

1. OBJECTIVE

The principal objective of this procedure is to verify the accuracy for a particular test, of a test system. Normally the test system will consist of an operator, a test apparatus and a test environment (e.g. conditioned test room) and this recommended practice assumes that verification of this whole system is the objective.

A secondary objective is to verify only the constancy of a test system in those cases where verification of accuracy is not important.

2. DEFINITIONS

2.1 Accuracy. Closeness of agreement between the test result obtained by a particular test system (combination of one operator, one apparatus, one laboratory) and the true value of the sample.

2.2 True value. The correct value of the test result which would be obtained if every source of error and variability could be eliminated. In most cases the true value can never be known but can be estimated with varying degrees of accuracy.

2.3 Test system. The combination of operator, apparatus and test environment which produces the test result.

2.4 Test result. The mean of the required number of results of replicate tests performed in accordance with the standard method.

2.5 Repeatability. The degree of agreement between the results of replicate tests on a particular typical sample performed by a particular test system at a particular time.

2.6 Reproducibility. The degree of agreement between the test results of different test systems testing a particular typical sample.

2.7 Constancy. The degree to which the test result of a particular test system on a particular sample will remain constant.