



**Specific Accreditation Criteria
Materials ISO/IEC 17025 Annex**

Cement testing

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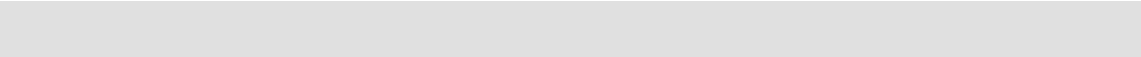
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Cement testing

This document provides interpretative criteria and recommendations for the application of ISO/IEC 17025 for both applicant and accredited facilities conducting testing of cement and cementitious materials.

Applicant and accredited facilities must also comply with ISO/IEC 17025 and the NATA ISO/IEC 17025 Standard Application Document (SAD).

4 Management requirements

4.6 Purchasing services and supplies

4.6.2 Consumable materials must be appropriately stored. Shelf lives of perishable materials must be set, documented and applied.

The following details of standard solutions must be recorded and retained along with other analytical data:

- all raw data relating to preparation (weights, volumes, etc.);
- results of standardisation, if applicable (including standard curves);
- date of preparation and preferably an expiry date; and
- the identity of the preparer.

Each batch of purchased standard solution must be similarly verified before use (and records retained). Each container must be labelled with the date of opening.

5 Technical requirements

5.4 Test and calibration methods and method validation

5.4.2 Selection of test methods

Published test methods must be verified by the facility to demonstrate it can achieve the expected results. Records of the verification must be retained. Refer to NATA's *Validation and Verification of Quantitative and Qualitative Test Methods* for guidance on method verification. For published test methods that do not include precision data, the facility must determine its own precision data based on test data. All methods must include criteria for rejecting suspect results.

Facilities performing analyses according to standard test methods such as those mentioned above, must strictly follow the test procedures described in the methods. Only those deviations approved within the method are allowed. The facility must comply with all quality assurance and within-batch quality control measures stipulated in the method.

Facilities intending to apply a method based on a standard method should discuss the modifications to the standard method with customers, and obtain their agreement to the modifications, prior to testing. Modifications to standard methods must be validated.

5.4.3 Laboratory-developed methods

Methods must be documented, and details of validation studies recorded in a manner to ensure consistent application of the method within its scope and defined performance parameters. Document control must be exercised to restrict unofficial copying and to ensure that only the current versions of authorised methods are used for analysis.

AS 2929: Test methods – Guide to the format, style and content provides guidance on the documentation of test methods. *ISO 78-2-Chemistry-Layouts for standards-Part 2: Methods of chemical analysis* also provides useful guidance. *AS 2706 – Numerical values-rounding and interpretation of limiting values* provides guidance on the presentation of numerical values.

Documentation of laboratory-developed methods must include criteria for rejection of suspect results.

NATA will consider requests for accreditation for a test kit method provided that the facility has records of its own verification and/or validation of the method for all applicable matrices.

5.4.5 Validation of methods

5.4.5.2 Methods may be validated by comparison with other established methods using reference materials, preferably certified reference materials. In developing and validating test methods, the following parameters require consideration:

- a) selectivity;
- b) linearity of response;
- c) sensitivity;
- d) accuracy (trueness and precision);
- e) limit of detection and limit of quantitation;
- f) range;
- g) ruggedness;
- h) measurement uncertainty of results; and
- i) traceability of results.

The facility must have documented procedures for method validation. The procedures need to include details of the statistical analysis to be applied when deriving precision data. Records of the application of these procedures must be retained and will be reviewed at each assessment.

Note: Reference to *NATA's Validation and Verification of Quantitative and Qualitative Test Methods* is recommended in formulating procedures for validation.

5.5 Equipment

5.5.2 The following supplementary information pertains to equipment items having specific application to cement and admixture testing not described within NATA's *General Equipment Table*.

Item of equipment	Calibration interval (years)	Checking interval (months)	Procedures and references
Calorimeter (used for AS 2350.7)		1	
Fineness Index equipment (used for AS 2350.8)		3 or if fluid is lost or new filter papers are used.	Check against NIST (USA) No 114 (refer AS 2350.8 Clause 7.2a). Standard sample (refer AS 2350.9 Clause 4).
		Weekly or every 100 determinations	Calibrate as a single unit with a secondary standard.
Le Chatelier equipment (used for AS 2350.5)		6	Dimensions, split width and extensibility.
		On day of use	Visual check of width of gap and general condition.
'Permeability Cell (used for AS 2350.8)		On day of use	Visual check of general condition.
Temperature/ Humidity Cabinets (used for AS 2350.11)		Initial	Check to determine initial compliance with the requirements.
		On day of use	Monitor temperature and humidity. Record daily when in use.
Vibrating table (used for AS 2350.12)	5		
Vicat apparatus (used for AS 2350.3 and AS 2350.4)		6	Mass and dimensional check.
		On day of use	Visual check of general condition.

References

This section lists publications referenced in this document. The year of publication is not included as it is expected that only current versions of the references shall be used.

Standards

AS 2350	<i>Methods of testing Portland and Blended Cement</i>
AS 2350.3	<i>Normal consistency</i>
AS 2350.4	<i>Setting time</i>
AS 2350.5	<i>Determination of soundness</i>
AS 2350.7	<i>Determination of temperature rise during hydration of Portland and blended cements</i>
AS 2350.8	<i>Fineness index of Portland cement by air permeability method</i>
AS 2350.9	<i>Determination of residue on the 45µm sieve</i>
AS 2350.11	<i>Compressive strength</i>
AS 2350.12	<i>Preparation of a standard mortar and moulding of specimens</i>
AS 2706	Numerical values-rounding and interpretation of limiting values.
AS 2850	Chemical analysis - Interlaboratory test programs - For determining precision of analytical method(s) - Guide to the planning and conduct
AS 2929:	Test methods – Guide to the format, style and content provides guidance on the documentation of test methods.
ISO 78-2	Chemistry-Layouts for standards-Part 2: Methods of chemical analysis also provides useful guidance
ISO/IEC 17043	Conformity assessment - General requirements for proficiency testing

NATA publications

General Accreditation Guidance: *Validation and verification of quantitative and qualitative test methods*

General Accreditation Guidance: *General Equipment Table*

Amendment Table

The table below provides a summary of changes made to the document with this issue.

Section or Clause	Amendment
New Document	This document represents an adoption of the cement and admixture testing equipment table from the former Construction Materials Testing Application Document and sections of the ISO/IEC 17025 Application Document- Chemical Testing relevant to compositional analysis of cement and related products. The document has been reviewed and updated to reflect the new accreditation criteria documentation structure.