




Specific Accreditation Criteria

ISO/IEC 17025 Application Document Materials - Annex

Cement testing

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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 comply with all relevant documents in the NATA Accreditation Criteria (NAC) package for Materials (refer to *NATA Procedures for Accreditation*).

The clause numbers in this document follow those of ISO/IEC 17025 but since not all clauses require interpretation the numbering may not be consecutive.

6 Resource requirements

6.6 Externally provided products and services

6.6.2 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.

6.4 Equipment

6.4.5 Facilities must ensure that where methods writing bodies have included equipment calibration and checking intervals in standard methods that these intervals must be followed if the methods are covered by the accreditation.

Facilities should refer to the *General Accreditation Guidance: General Equipment - Calibration and Checks, General Equipment Table* for guidance when calibration and checking intervals are not specified in standard methods.

The following supplementary information pertains to equipment items having specific application to cement and admixture testing not described within the *General Accreditation Guidance: General Equipment - Calibration and Checks, 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.

7 Process requirements

7.2 Selection, verification and validation of methods

7.2.1 Selection and verification of test methods

7.2.1.5 Refer to NATA's *General Accreditation Guidance: 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.

7.2.1.7 Facilities performing analyses according to standard test methods, must strictly follow the test procedures described in the methods. Only those deviations approved within the method are allowed.

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.

7.2.2 Validation of methods

7.2.2.1 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.

Methods may be validated by comparative validation with other established methods. In developing and validating test methods, the following parameters require consideration:

- selectivity;
- linearity of response;
- sensitivity;
- accuracy (trueness and precision);
- limit of detection and limit of quantitation;
- range;
- ruggedness;
- measurement uncertainty of results; and
- traceability of results.

Note: Reference to *Guidelines for the validation and verification of quantitative and qualitative test methods* is recommended in formulating procedures for validation.

Laboratory-developed methods

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.

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

ISO/IEC 17025	General requirements for the competence of testing and calibration laboratories
AS 2350	Methods of testing Portland and Blended Cement
AS 2350.3	Normal consistency
AS 2350.4	Setting time
AS 2350.5	Determination of soundness
AS 2350.7	Determination of temperature rise during hydration of Portland and blended cements
AS 2350.8	Fineness index of Portland cement by air permeability method
AS 2350.9	Determination of residue on the 45µm sieve
AS 2350.11	Compressive strength
AS 2350.12	Preparation of a standard mortar and moulding of specimens
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

NATA publications

NATA Accreditation Criteria (NAC) package for Materials

General Accreditation Guidance	General Equipment - Calibration and Checks, General Equipment Table
General Accreditation Guidance	Validation and verification of quantitative and qualitative test methods

Amendment Table

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

Section or Clause	Amendment
Whole document	Clauses have been aligned with ISO/IEC 17025:2017. Any criteria included in the previous issue that are now covered by ISO/IEC 17025:2017 have been removed. No new interpretative criteria or recommendations have been included other than editorial changes.