# Specific Accreditation Criteria

# Manufactured Goods ISO/IEC 17025 Annex

## Physical performance testing - General

**January 2018**

# Table of Contents

# Physical performance testing - General

This document provides interpretative criteria and recommendations for the application of ISO/IEC 17025 to physical performance testing.

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

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.

## 4 Management requirements

### 4.1 Organisation

**4.1.3** The accreditation requirements apply equally for all activities covered by the scope of accreditation performed away from the base facility.

**4.1.5g** The individual within the organisation defined as having overall technical responsibility for testing operations must demonstrate the following competencies:

i) sufficient depth of technical knowledge in relation to the type of testing and its performance to approve the operational practices under their responsibility including:
   - understanding relevant national legislation and regulations;
   - ability to develop and apply testing and verification procedures;
   - understanding of the properties of applicable materials and/or design principles and configurations for applicable products.

ii) ability to manage staff training and the formal assessment of staff technical competencies.

iii) ability to manage the authorisation of the facility's staff to sign test reports.

iv) ability to establish and implement ongoing quality assurance activities, including proficiency testing and the analysis of the results and actions taken.

v) ability to establish and maintain the equipment assurance program.

vi) ability to technically review contract specifications and to select appropriate test methods and/or develop inspection and test plans, as appropriate.

Personnel providing local technical supervision of testing staff must be able to:

i) effectively supervise the technical operations under their control, including field testing if applicable.

ii) effectively review incoming work requests in order to provide appropriate instruction to testing staff as well as identifying the need to seek technical advice where warranted

iii) critically review the content of reports and associated test data in order to ensure appropriate reporting standards are maintained.

Where testing is carried out in the field, the facility must have controls in place to ensure the technical validity of the testing is not compromised and must

demonstrate the adequacy of the supervisory arrangements in place for such activities.

### 4.5 Subcontracting

**4.5.1** Facilities using subcontractors to produce machined test pieces must be able to demonstrate the means by which the subcontractor's technical competence has been determined. This extends beyond the visual and dimensional checking of machined test pieces to checking that the subcontractor complies with the rules defined in individual standards for the sectioning of test pieces from bulk samples. Review of the subcontractors' arrangements by the facility would normally include a field assessment of the subcontractor's work.

## 5 Technical requirements

### 5.2.1 Personnel

All facilities accredited in mechanical testing must ensure that the following processes are in place prior to commencing approval for any personnel to release results.

1. Facilities must document a policy and procedure for the approval of staff to release test results for work covered by the scope of accreditation.
2. It must be clear for which tests an individual staff member holds approval to release test results. It must also be clear which staff members are authorised to grant such approval.

   **Note:** These authorising personnel, regardless of whether they are employed staff or contractors, are considered to be key technical personnel and are expected to be present for initial assessments and reassessments.
3. Staff releasing test results are responsible for exercising independent scientific oversight over these results. Accordingly, this will require the staff to demonstrate sufficient familiarity with the testing standards to ensure that test reports satisfy requirements of the particular method and/or specification in all cases.

   **Note:** For specific methods, staff academic qualifications and/or duration of practical experience, commensurate with the complexity of the testing, may provide adequate understanding of the science involved.
4. Approval for individuals to release results must be based on recorded evidence for one or more competency assessments including, but not limited to, the following elements:
   - the principles of the relevant measurements, tests or calibrations;
   - the relevant standards or specifications;
   - requirements for performance checking and/or calibration of equipment;
   - characteristics and peculiarities that may pertain to any relevant instrumentation or equipment used by the facility including, where applicable, instrument base line (or zero) settings;

- the principles and application of measurement uncertainty where applicable;
- the ability to precisely define and report any deviations from standard test methods;
- NATA requirements relating to the content and issue of reports and use of the NATA endorsement;

5. Where a facility's approval process for assigning staff to release test results (for work covered by the scope of accreditation) is found to not satisfy the requirements for accreditation the facility will be required to review and determine the validity of all affected reports issued since the time it was determined not to comply and, if necessary, withdraw and/or issue replacement reports. The accreditation status of the facility may also be reviewed.

### 5.2.5 Records

Records of staff approved to release test results and the information on which this approval was made must be maintained and must be current. Records of approval shall be retained for at least 3 years after the departure of any approved person.

Records of approval shall include verification and acceptance of:

- qualifications held and practical experience;
- competency assessment records;
- specific identification of the tests, measurements and/or calibrations for which approval has been issued;
- the date of approval and the name and authority of the person issuing the approval;
- any changes to the approval including the date of an approval ceasing.

## 5.4 Test and calibration methods and method validation

### 5.4.1 General

When the facility is performing 'type' tests (i.e. tests that demonstrate the typical performance of a design, model or version) the following requirements apply, where possible:

a) manufacturer's drawings must be supplied with the item and compliance of the item with these drawings must be established;

b) the item under test must be described in sufficient detail to distinguish it from possible variants. The use of photographs, blueprints, drawings or electronic files is recommended (preferably annexed to the test report);

c) the provenance of the item (e.g. 'supplied by importer') must be reported**.**

### 5.4.6 Estimation of uncertainty of measurement

**5.4.6.2** Estimation of uncertainty of measurement only applies, at present, to quantitative tests.

Where results of tests are not numerically derived i.e. qualitative, estimates of uncertainty are not required. This should not however preclude the facility from developing an understanding of the components that contribute significantly to the variability of results of such tests.

## 5.9 Assuring the quality of test results

### Proficiency Testing (PT)

NATA's *Proficiency Testing* specifies the frequency of participation in proficiency testing as 'at least once every two years for each major area of test or measurement, where such programs are available'.

Each facility should ensure participation in suitable activities with regard to their scope of accreditation. This can be done by:

- Participating in a PT program provided by a commercial PT provider;
- Participating in international (e.g. APLAC) PT programs where available; or
- Arranging inter-laboratory comparisons with other accredited facilities

Facilities are responsible for checking the availability of appropriate PT programs and the selection of programs. Where applicable, they should consider the accreditation status of PT providers as well as the program coverage.

Facilities should consult the *"NATA Proficiency Testing Directory"* on the NATA website for information regarding PT programs and providers.

It may be difficult to produce a transportable test artefact for certain *in-situ* testing activities, such as controlled environment testing, and so proficiency testing may not be feasible in such cases. In the areas where proficiency testing programs are not available or relevant, facilities are expected to demonstrate how they assure the quality of their test results by other means, as per section 5.9.1 of ISO/IEC 17025.

**Note:** Proficiency testing may be of limited value for tests for which there is no numerical result reported (such as for proof load testing) and alternative forms of assurance may be preferable in such cases.

## 5.10 Reporting the Results

### 5.10.5 Opinions and interpretations

Facilities must define the circumstances, limitations and authority for the inclusion of opinions on behalf of the facility in reports covering testing within the scope of accreditation.

# Annex A: Classification of testing machines

This document provides interpretative criteria and recommendations for the application of ISO/IEC 17025 for both applicant and accredited facilities conducting classification of testing machines

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

Published standards for calibration of force-measuring systems of testing machines classify testing machines into various levels. This classification is based on the readability, accuracy and repeatability of the testing machine.

| TEST ON | CLASS OF MACHINE REQUIRED |
|---|---|
| Metals; metal powders and products; breaking tests upon lifting gear, welded chain, wire rope and fittings; springs; threaded fasteners; timber; fibre building boards; plywood; seat belts (assembly tests). | A<br>1.0% Repeatability, ±1.0% Accuracy |
| Fibre ropes and cordage; gypsum and gypsum products; glass; textiles; paper and paperboard; rubber; plastics; leather; gaskets; seals and packing; adhesives and sealers; adhesive tapes, moisture barrier materials; proof tests on welded chain; cargo (webbing load) restraint systems (AS 4380). | B<br>2.0% Repeatability, ±2.0% Accuracy |
| Proof tests upon lifting gear, wire rope and fittings. | C<br>5.0% Repeatability, ±5.0% Accuracy |

ASTM standards require calibration of force measuring systems to ASTM E4. This standard differs slightly from AS 2193. Other standards may also vary from these classifications.

# 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 2193 | *Calibration and classification of force-measuring systems* |
| AS/NZS 4380 | *Motor vehicles – Cargo restraint systems – Transport webbing and components* |
| ASTM E4 | *Standard practices for force verification of testing machines* |

### NATA Publications

| | |
|---|---|
| General Accreditation Criteria | Proficiency Testing |
| General Accreditation Form | Selection of PT Providers checklist |

NATA Proficiency Testing Directory

### Other references

Guidance documents covering the implementation of specific accreditation requirements are also available from the ILAC (www.ilac.org) and APLAC (www.aplac.org) websites.

# 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 is based on the former Mechanical Testing ISO/IEC 17025 Application document combined with Mechanical Testing Annex A. The technical content is unchanged.<br><br>The document has been reviewed and updated to reflect the new accreditation criteria documentation structure. |