HOKLAS Supplementary Criteria No. 22

'Textiles and Garments' Test Category

0 Introduction

(a) This criteria document serves to clarify and supplement the requirements of ISO/IEC 17025:2017 for the accreditation of testing under the test category of 'Textiles and Garments'. This document shall be read in conjunction with ISO/IEC 17025:2017, HKAS Policy Document No. 1 and other relevant criteria documents. In areas not covered in this document, the requirements stipulated in ISO/IEC 17025:2017, HKAS Policy Document No. 1, HKAS 002 and other relevant criteria documents shall apply.

(b) Laboratories should note that complying with this document might not necessarily meet all the requirements of test standards. Individual test standards may have specific requirements which shall be met when conducting the concerned tests.

1 Scope

1.1 HKAS offers accreditation in the following areas:

(a) Care performance test/dimensional stability
(b) Chemical analysis
(c) Colour fastness test
(d) Construction test
(e) Performance test
(f) Feather and down analysis
(g) Fibre analysis
(h) Flammability test
(i) Strength test
(j) Colour measurement
(k) Microbiological test (The specific requirements for the accreditation of this test area are detailed in HOKLAS SC-08.)

2 Normative references

(No additional explanation)

3 Terms and definitions

(a) The terms and definitions given in ISO/IEC Guide 99 and ISO 9000 are applicable to this document.

(b) The term “shall” is used throughout this document to indicate those provisions which are mandatory. The term “should” is used to indicate guidance which, although not mandatory, is provided by HKAS as a recognised means of meeting the requirements.

(c) Appendix A gives a list of selected documents which are useful for laboratory operation.

4 General requirements

(No additional explanation)

5 Structural requirements

(No additional explanation)

6 Resource requirements

6.1 General

(No additional explanation)

6.2 Personnel

(a) Each laboratory shall have at least a member at supervisory level or above who hold at least a higher diploma in science subject in the fields of fashion, textiles and design or a higher qualification conferred by a recognised higher institution in Hong Kong or an equivalent or higher academic qualification and shall have not less than three years relevant working experience. If such staff member does not possess the required academic qualifications but has extensive work experience (e.g. ten years) in his/her responsible testing area, the laboratory shall keep record to substantiate that such staff member has the required technical knowledge and skills to supervise the operation of related test area(s).

(b) Each test operator shall have sufficient technical knowledge of the technology as stipulated in related test standards. He/she shall have satisfactorily completed the required training before he/she is authorised for performing specific tests independently.

(c) The training programme for testing operators shall at least cover the following areas:

i. techniques involved in the tests, including new and infrequent

used techniques, factors that may affect test results and precautions to take for minimising such effects

ii. principles, limitations and operation of the equipment;
iii. understanding equipment calibration and metrological traceability;
iv. understanding measurement uncertainty;
v. recording of test results;
vi. drawing conclusion based on test results; and
vii. understanding the laboratory management system.

(d) When the training provided is for specific techniques rather than specific test methods, laboratories shall define and document which techniques are required for performing what tests, and hence the trained technical personnel have been assessed to be competent in performing what tests.

(e) Each laboratory shall nominate at least one staff member at supervisory level as the signatory for a specific test. The nominated signatory shall have at least six months of supervisory experience in the testing area(s) for which signatory approval is being sought. If a nominated signatory holds a qualification conferred by an education institute outside Hong Kong, the laboratory shall provide supporting evidence to substantiate that such qualification is equivalent to or above the minimum level stated above. In all cases, candidates shall demonstrate to the assessment team that his/her technical competence in the test areas under consideration before signatory approval can be granted.

(f) The staff members responsible for visual assessment of colour difference of textiles, as well as approved signatories for the visual tests concerned, shall have normal colour vision for the colour discrimination test methods. The staff members and approved signatories shall undergo a colour defect check to ensure any deficiency does not affect the quality of the examination results. A list of all qualified technical personnel shall be maintained.

6.3 Facilities and environmental conditions

(a) Where a conditioning room or chamber is used for conditioning and testing of textiles and textile products, the standard atmospheric conditions defined in the test standards shall be maintained throughout the room or chamber. Appropriate devices for measuring and recording the temperature and relative humidity in the room or chamber shall be used. Multiple measuring devices may be required to ensure adequate monitoring of the atmospheric conditions throughout the room or chamber, appropriate monitoring position(s) shall be properly

selected and recorded. In order to determine the standard atmospheric conditions within the room or chamber are within the tolerances given in the test standards, the measurement uncertainty of the temperature and relative humidity measuring devices being used shall be taken into account. The resolution and the measurement uncertainty of the measuring device should meet the requirements stipulated in the test standards, if any. Atmospheric conditions records shall be kept. Any measuring device used shall be calibrated regularly, and the results shall be recorded. Cases where atmospheric conditions fall outside the acceptable ranges shall be recorded and the effects on test results shall be evaluated. Appropriate actions shall be initiated if the cases are identified as nonconforming work. In addition, laboratories shall maintain the records of start and end time of conditioning when a sample is placed in a conditioning room or chamber. Laboratories shall ensure that the sample is fully conditioned to the stated environmental conditions before the test.

(b) A dedicated space, if not a separate room, shall be used for visual assessment of colour differences or determining appearance of textiles after tests (e.g. colour fastness, pilling, smoothness and wrinkle, etc.). The space or room shall be so constructed such that the rating results will not be affected by the lighting of neighbouring areas, the reflection of the clothing of technical personnel on the test specimen and reflection from surrounding surfaces. Laboratories shall be equipped with viewing boards and viewing cabinets specified by corresponding test standards. The colours of the boards and cabinets shall be checked regularly for conformity with test standards. The checking records shall be maintained.

(c) Laboratories shall take necessary precautions to prevent contamination from the environment when performing chemical analysis, feather and down analysis and fibre analysis.

6.4 Equipment

(a) Each laboratory shall assign at least one staff member at supervisory level to be responsible for ensuring that its equipment is properly calibrated or verified against the tests standard’s requirements.

(b) Upon completion of calibration, the responsible staff member shall evaluate the equipment’s calibration results against a set of documented criteria to determine whether the equipment is still acceptable for performing specific tests.

6.5 Metrological traceability

(a) If a laboratory establishes metrological traceability of measurement results through its in-house calibrations, the competence of staff member(s) performing in-house calibrations, the associated reference standards, related calibration procedures, the evaluation of measurement uncertainty for each calibration activity and the corresponding calibration records will be assessed by HKAS assessment team. HKAS Executive may require the laboratory to provide the in-house calibration procedures and related technical records to HKAS assessment team for preparation.

(b) Evaluation tests

Evaluation tests here refer to assessments of change in properties of a sample, such as colour, pilling, smoothness, etc., after it has undergone the testing steps. Usually, a numerical grade, such as 1 to 5 for the change is given as the evaluation result. Results shall be traceable to reference standards or materials specified in test standards. Typical examples of acceptable traceability are listed below:

i. Gray Scale or Chromatic Transference Scale for colour change and colour staining of colourfastness tests;
ii. durable press replicas for appearance of durable press after repeated home laundering;
iii. photographic comparative ratings for single and double needle seams for appearance of seams after repeated home laundering;
iv. photographic comparative ratings for crease retention for appearance of crease after repeated home laundering;
v. photographic pilling standards for pilling tests;
vi. spray test rating chart for water repellency test; and
vii. wrinkle recovery replicas for wrinkle recovery of fabrics.

(c) Chemical tests

i. Reference materials used for calibration shall provide the necessary metrological traceability. The requirements given in HOKLAS Supplementary Criteria No. 1 ‘Acceptability of chemical reference materials and commercial chemicals used for the calibration of equipment’ shall be followed.

ii. Calibration curves shall be constructed as specified in the test standards. As a general guideline, at least three standards (excluding blank) shall be used to establish a linear calibration graph. The standards used shall cover the range of concentration found in test samples. The lowest standard shall be at a level at or below the reporting limit of the test method.

Criteria for the correlation coefficient of linear calibration graph should be set and implemented. Guidelines given in 'ISO 11095: 1996 - Linear calibration using reference materials' should be consulted for further details.

iii. Calibration graphs shall be checked using mid-point calibration standard. The frequency of such check depends on the stability of the equipment. A frequency of around 5 per cent is normally considered as adequate, except otherwise specified in the test standards or the stability of the equipment merits more frequent checking. Acceptance criteria shall be established and the criteria shall commensurate with the testing uncertainty.

6.6 Externally provided products and services

(No additional explanation)

7 Process requirements

7.1 Review of requests, tenders and contracts

(No additional explanation)

7.2. Selection, verification and validation of methods

(a) General

i. Each laboratory shall ensure that all test standards which are shown in the scope of activities accredited or seeking accreditation including all normative references mentioned in those standards are readily available to its personnel.

ii. Each laboratory shall have a mechanism to monitor the release of a new or revised test standards and to implement the new or revised standard accordingly. If only electronic version of the test standards including the standard amendment sheets is used, the laboratory shall demonstrate how its test operators can get a holistic view of the amended test standards at the test locations.

iii. Many national and international standards specify similar tests. However, the detailed requirements may vary. If a test standard does not specify the detailed test procedures, the laboratory should prepare step-by-step test procedures as well as work sheets for its test operators.

iv. Where there are ambiguities in the test standard such that there are various ways to perform a test to achieve the required performance, the laboratory shall document the appropriate way to perform the test.

(b) For visual assessment results, such as the grade of the test results of colourfastness, pilling, smoothness, wrinkle, etc., laboratories shall define a verification system. The verification system shall define the minimum number of raters or assessors and the maximum allowable differences between their assessment results. Laboratories shall take corrective actions when the difference is higher than the documented defined limit.

(c) Chemical tests

i. For chemical tests such as pH and formaldehyde, it is essential to avoid contamination of test samples and/or standard solutions by labware. Laboratories shall have documented procedures for washing labware and selecting the types of labware to be used (glass, PTFE, etc.) for specific tests. Attention shall also be given to the possible presence of analytes in commercial detergents. In most cases, laboratories are expected to have different washing, storage and segregation procedures for labware used for different analyses.

ii. The grade of reagents used (including water) shall be stated in the procedure together with guidance on precautions to be observed in their preparation or use. Laboratories shall ensure that reagents used are suitable for the applications. Reagents, where critical, prepared in the laboratory shall be labelled to identify their substance, strength, solvent (other than water), date of preparation and/or date of expiration and any special precautions and restrictions of use. The person responsible for the preparation of the reagent shall be identifiable from records.

iii. Water is one of the most widely used reagents in chemical and colourfastness tests. Hence, means to ensure that reagent water is of the required quality is necessary. The performance of any water purification system shall be checked regularly to confirm that the water produced continues to meet testing requirements. Records of such checks shall be kept.

iv. For compliance testing for a chemical parameter, it is essential to select a method which gives a limit of detection well below the compliance limit and that it gives reliable results at the limit.

(d) Selection of test methods

i. If test methods are stipulated in legislation, the specified methods shall be used for compliance testing against the legislation.

7.3 Sampling

(a) Sampling from sample lot or site is not covered in this document. Customers taking their own samples should be made aware of proper storage, sampling and transportation procedures.

(b) Preparation of laboratory samples and test portions shall be based on the relevant test standards. Procedures for taking test portions from laboratory samples shall be documented.

7.4 Handling of test or calibration items

(a) Frequently, it is necessary to split the sample for testing of different properties. It is essential that such sub-samples represent the original samples and their identities are maintained at all times. A system for identifying the test portions for colourfastness tests, dimensional stability to washing tests, etc. shall be documented.

7.5 Technical records

(No additional explanation)

7.6 Evaluation of measurement uncertainty

(a) Each laboratory shall have and shall apply procedures for evaluation of measurement uncertainty for all tests having a numerical value as the final result or as an intermediate result.

(b) In general, the measurement uncertainty for tests covered in this test category shall be evaluated in accordance with ISO/IEC Guide 98-3 and EURACHEM/CITAC document “Quantifying Uncertainty in Analytical Measurement”.

7.7 Ensuring the validity of results

(a) The quality control plans for monitoring the validity of tests undertaken shall define the frequency of performing different programmes (e.g. proficiency testing programmes, inter-laboratory comparison, etc.). The plans shall also define the acceptance criteria of the programmes and actions to be taken in cases of acceptance criteria not being met.

A written corrective action plan and documentation of corrective actions are required.

(b) Each laboratory shall establish regular schedules for participation in proficiency testing programmes or inter-laboratory comparison. Where practicable, at least one of the participating laboratories shall have been accredited for the tests under comparison. The frequency of participation shall commensurate with the volume of work for each test parameter. The minimum frequency of participation shall be once every four years for each test area according to the categorisation in section 2 of this document.

7.8 Reporting of results

(a) A description of the samples as received shall normally be given in test reports. The description shall include, where relevant to the interpretation of test results, a description of the number, appearance and colour, type of fabrics or garments and care label when received. Any deviation from the test standard requirements shall be given.

7.9 Complaints

(No additional explanation)

7.10 Nonconforming work

(No additional explanation)

7.11 Control of data and information management

(No additional explanation)

8 Management system requirements

(No additional explanation)

Appendix A
(informative)

BIBLOGRAPHY

VIM, ‘International Vocabulary of Basic and General Terms in Metrology’

GUM, ISO/IEC Guide 98-3:2008 ‘Uncertainty of Measurement – Part 3: Guide to the Expression of Uncertainty in Measurement’

EURACHEM/CITAC, ‘Quantifying Uncertainty in Analytical Measurement’

ISO 11095: 1996, ‘Linear Calibration Using Reference Materials’