



Facade Group

PRODUCT CONFORMITY CERTIFICATION SCHEME

FOR

ALUMINIUM WINDOWS

(PCCS - AW)

PARTS ONE & TWO

Administrative Regulations

Technical Regulations

Issue 1

November 2011

HONG KONG INSTITUTE OF STEEL CONSTRUCTION

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HONG KONG INSTITUTE OF STEEL CONSTRUCTION

PRODUCT CONFORMITY CERTIFICATION SCHEME

FOR

ALUMINIUM WINDOWS

(PCCS-AW)

PART ONE

Administrative Regulations

HONG KONG INSTITUTE OF STEEL CONSTRUCTION

Administrative Regulations

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Product Conformity Certification Scheme

for

Aluminium Windows

ADMINISTRATIVE REGULATIONS

1. INTRODUCTION

- 1.1 The purpose of the Scheme is to ensure that all aluminium windows produced by Certified Aluminium Window Manufacturers meet Purchasers' specified requirements. This is a product certification scheme that requires Certified Aluminium Window Manufacturers to operate a quality system which complies with ISO 9001 and the Regulations of the Scheme.
- 1.2 The Administrative Regulations set out the rules for the operation of the Scheme and the rights and obligations of Certified Aluminium Window Manufacturers in relation to the Scheme.
- 1.3 The Technical Regulations set out technical requirements for the Scheme.
- 1.4 This Scheme is a System 5 product certification scheme in accordance with ISO/IEC Guide 67 including initial assessment of quality and production systems, initial plant inspection and type testing, reassessment of Certified Aluminium Window Manufacturers' quality and production systems, followed by periodic surveillance visits and regular audit testing that takes into account the Certified Aluminium Window Manufacturers' quality system and the testing of samples.
- 1.5 A Certification Body who uses this Scheme for certification of aluminium window manufacturing plants shall be accredited by Hong Kong Accreditation Service (HKAS) or its Mutual Recognition Agreement (MRA) partners in accordance with this Scheme, ISO/IEC Guide 65 and its corresponding IAF Guidance.

2. GENERAL DEFINITIONS

- 2.1 The following definitions are applied to the Regulations:

Administrative Regulations: The regulations which set out basic Administrative Requirement for the Scheme.

Applicant: An individual, firm or company who has formally applied to become a Certified Aluminium Window Manufacturer.

Areas For Improvement: Areas for improvement (AFI) are not nonconformities and corrective actions are not mandatory. However, the assessment team judges by their experience that these are potential problem areas which may deserve attention.

Assessment: An in-depth appraisal of an Applicant's or a Certified Aluminium Window Manufacturer's quality and technical system at a Plant to assess compliance with the Regulations. It is classified as Certification, Surveillance and Recertification assessments.

Audit Testing: Sampling and testing of aluminium windows which are ordered by an assessment team during an assessment. In Certification, Surveillance and Recertification Assessments, Aluminium Windows shall be sampled and tested for audit testing. The testing and compliance standards shall be confirmed by the assessment team in considering Purchaser's specifications and the Regulations of this Scheme. The test shall be conducted by an independent HOKLAS or its MRA partners accredited laboratory and the result shall be produced in a HOKLAS endorsed test report or equivalent.

Auditor: A nominee of the Certification Body appointed to carry out assessments. Auditors are classified as Lead and Technical Auditors.

Certificate of Conformity: The certificate issued by the Certification Body to confirm certification of an Applicant or a Certified Aluminium Window Manufacturer in respect of a particular aluminium window manufacturing plant.

Certification: Acceptance by the Certification Body, on the basis of assessments, that the Applicant or the Certified Aluminium Window Manufacturer complies with the Regulations for a particular aluminium window.

Certification Board: A decision making board of a Certification Body to deliberate and grant a Certification or otherwise to an Applicant or a Recertification to a Certified Aluminium Window Manufacturer.

Certification Body: An organization who is accredited by HKAS or its MRA partners in the field of "Product Certification" to process applications from the Applicant to become a Certified Aluminium Window Manufacturer.

Certification Mark: The Certification Body logo which Certified Aluminium Window Manufacturers are licensed to use. The use of this logo should be in accordance with the Regulations.

Certified Aluminium Window Manufacturer: An Applicant who has achieved Certification.

Critical Non-conformity: Significant deviations of products from specified requirements in the Regulations, or the absence of, or failure to implement and maintain, a series of required quality management system elements, or a situation which would, on the basis of available objective evidence raise highest degree of doubts to the conformity of the product that the Certified Aluminium Window Manufacturer produces.

Major Non-conformity: Deviation of products from specified requirements in the Regulations, or the absence of, or failure to implement and maintain, one or more required quality management system elements, or a situation which would, on the basis of available objective evidence raise serious doubts to the conformity of the product that the Certified Aluminium Window Manufacturer produces.

Minor Non-conformity: Failure to meet one requirement of a clause of ISO 9001 QMS and/or this Scheme or other necessary reference documents, and which is considered NOT to constitute a risk to the quality of the products that the Certified Aluminium Window Manufacturer produces.

Plant: A Plant for the production of certified aluminium windows.

Plant Register: The register of certified Plant maintained by the Certification Body of all Plants which have attained Certification and are currently certified.

Purchaser: An individual, firm or company, who entered into a contract with a Certified Aluminium Window Manufacturer to purchase certified aluminium windows.

Quality Assurance: All the activities and functions concerned with the attainment of the quality of aluminium windows.

Quality Control: The operational techniques and activities that sustain the quality of aluminium windows as set out in a specification agreed between the Purchaser and the Certified Aluminium Window Manufacturer and in accordance with the Regulations.

Quality Manual: The document describing the Applicant's or Certified Aluminium Window Manufacturer's structures, resources, procedures and methods which together ensure that the Applicant or Certified Aluminium Window Manufacturer can meet the requirements of the Scheme.

Quality Record: The records required by the Certified Aluminium Window Manufacturer's Quality Manual to be kept by the Certified Aluminium Window Manufacturer to meet the requirements of the Regulations.

Quality System Management Office: A location at which a Certified Aluminium Window Manufacturer's quality and production records are maintained.

Regulations: The combined Administrative Regulations and Technical Regulations.

Scheme: The product conformity certification scheme for the certification of the production of aluminium windows. The Scheme is owned by the Hong Kong Institute of Steel Construction.

Technical Committee: The Committee under HKISC responsible for the drafting, amendment and maintenance of the PCCS-AW Scheme document.

Technical Regulations: The regulations set out the technical requirements of the Scheme.

3. PREREQUISITES FOR PARTICIPATION

- 3.1 Any individual, firm or company engaged in the production of aluminium windows, shall be eligible as an Applicant to apply to become a Certified Aluminium Window Manufacturer.
- 3.2 The Applicant will be required to demonstrate the ability to comply with the Regulations and shall confirm agreement to comply with the Regulations.
- 3.3 The Applicant shall nominate a quality system management office and/or a plant office to be responsible for the overall management of the aluminium window production and supply activities of the Plant of the Applicant.
- 3.4 The Applicant shall establish and maintain a documented quality system in accordance with the requirements of the Administrative Regulations. The same quality system shall apply to the production of aluminium windows in a Plant of the Applicant within the Scheme.
- 3.5 The Applicant shall obtain relevant permits for the operation of the Plant to fulfill relevant statutory and regulatory requirements and establish a quality system management office to maintain quality records for at least three months before the Certification Assessment.
- 3.6 Upon successful Certification Assessments and subsequent decision made by the Certification Board or equivalent function of the Certification Body, the Applicant shall be granted with a Certificate of Conformity to this Scheme for the product manufactured at its Plant.

4. PROCEDURES FOR APPLICATION AND CERTIFICATION

4.1 Application

- 4.1.1 For consideration to become a Certified Aluminium Window Manufacturer, an Applicant shall:
 1. complete and submit the applicant form prescribed by Certification Body;
 2. pay the appropriate fee;
 3. provide the Quality Manual and related documentations for Assessment;
 4. nominate a person to be the management representative and the Applicant's formal contact with the Certification Body.

4.2 Certification Assessment

- 4.2.1 On receipt of an application, an assessment team consisting of a Lead Auditor and one or more Technical Auditors will assess the quality and technical documentations for compliance with the Regulations and arrange to perform on site assessment of the Quality System Management Office and Manufacturing Plant.

4.2.2 Certification Assessment shall comprise the following:

1. Overall assessment of the quality management and production systems.
2. Manufacturing Plant. The assessment team will assess the plant and equipment including the calibration of such plant and equipment and the operation of the relevant sections of the Certified Aluminium Window Manufacturer's quality and technical systems conforming to the Regulations.
3. Quality System Management Office. The assessment team will assess the quality system relating to the Plant by an assessment of quality and production records.
4. Evaluation of the results of production testing. The assessment team will assess the quality control system by carrying out an evaluation of quality control (QC) testing results covering a minimum of three months. The assessment team will also examine relevant quality and production records to confirm the output of quality control systems and hence authenticate the conformity of the aluminium windows to the specified criteria in the Regulations.
5. Audit testing. The assessment team shall take random representative samples at the point of release of aluminium windows from the Plant and/or depots supplied with the aluminium windows by the Plant. The first batch of aluminium windows to be certified is used for initial type testing. The relevant requirements specified in the Regulations shall be checked for compliance. The test shall be carried out by an independent HOKLAS or its MRA partners accredited laboratory and the results produced in an endorsed test report. The choice of selecting an accredited laboratory for testing shall be based on an agreement between the aluminium window manufacturer and the Certification Body.

The results shall be evaluated by the assessment team of the Certification Body and an evaluation report shall be produced.

4.2.3 On completion of the Certification Assessment, the assessment team will report the type of nonconformities found and obtain the Applicant's acknowledgement of these. The assessment team will indicate orally a written recommendation for Certification or otherwise.

4.2.4 There are four possible recommendations:

1. **No nonconformity.** Certification will be recommended to the decision making Certification Board or equivalent function of the certification body. Some AFIs may be given for the improvement of the quality and technical systems.
2. **A number of minor nonconformities** which do not cumulatively indicate a major failure of the quality management system and product quality. Certification will be recommended after receipt of a letter giving satisfactory details of corrections and corrective actions which will remove the nonconformities from the system after successful implementation. The time limit for the receipt of the letter will be two weeks.

Note that corrections and corrective actions do not have to be implemented before the receipt of the letter by the Certification Body. Corrections and corrective actions shall be implemented within an acceptable time which will be a maximum of four weeks or such lesser time as the assessment team may decide. Minor nonconformities will be audited on the first subsequent Surveillance Assessment.

3. **A major nonconformity or a number of systematic minor nonconformities** which accumulate to indicate a major failure of the quality management system and product quality. The Applicant will be required to respond giving satisfactory details of corrections and corrective actions which will rectify the nonconformities in the system after successful implementation. The time limit for the written response will be two weeks.

Corrections and corrective actions shall be implemented within an acceptable time which will usually be between one to three months.

Certification will not be recommended until the nonconformities have been rectified from the system and a satisfactory follow up assessment has been carried out.

If the Applicant is not ready for the follow up assessment within six months, the application will be considered unsuccessful. A new application will be required.

4. **A critical nonconformity** indicating that the extent of the system failure is considered by the assessment team to require more than six months for corrections. The Applicant will be required to re-apply for Certification after a period of at least six months following the date of Certification Assessment.

4.3 **Certification**

- 4.3.1 On receipt of the assessment team's written recommendation, the Certification Body will decide to grant Certification or otherwise based on the decision made by the Certification Board or equivalent function.
- 4.3.2 The Applicant shall sign an agreement to be abode by the Regulations and the regulations of the Certification Body. A Certificate of Conformity will be issued to the Applicant for that Plant.
- 4.3.3 Details of the Certified Aluminium Window Manufacturer together with its locations and details of the certified Plant will be included on the Plant Register published in the Certification Body's website or equivalent means.
- 4.3.4 Where an application for participation in this Scheme is rejected or Certification is refused, the Applicant shall have the right of representation to an appeal committee in accordance with the Certification Body regulations.

4.4 **Certificate of Conformity and Certification Mark**

- 4.4.1 Upon Certification, conformity of aluminium windows to the PCCS-AW Scheme requirements shall be indicated by a Certificate of Conformity issued by the Certification Body. The Certified Aluminium Window Manufacturer shall be entitled to use the Certification Body logo as a Certification Mark in accordance with the Certification Body regulations.

4.4.2 Certificate of Conformity shall include, in particular:

- (a) the name and address of the Certification Body,
- (b) the name and address of the Certified Aluminium Window Manufacturer and of the Plant,
- (c) the name of the certified aluminium windows,
- (d) statement that the aluminium windows conforms to the requirements of the relevant product specification standard and the conformity is established according to the PCCS-AW Scheme,
- (e) the certificate number assigned by the Certification Body.

The Certificate of Conformity shall entitle the manufacturer to use the Certification Mark on packaging materials and any documentations used for the certified aluminium windows.

4.4.3 A Certified Aluminium Window Manufacturer may also use the Certification Mark on quotations and delivery notes for Plants which have achieved Certification and may use the Certification Mark on stationery, brochures and other advertising media.

4.4.4 The conformity marking shall consist of the Certification Mark and shall be followed by:

- (a) the identification number of the Certified Aluminium Window Manufacturer,
- (b) the standard designation of the aluminium windows to the PCCS-AW Scheme.

5. OBLIGATIONS OF CERTIFIED ALUMINIUM WINDOW MANUFACTURERS

5.1 The Certified Aluminium Window Manufacturer shall operate a quality management system in accordance with ISO 9001. The Certified Aluminium Window Manufacturer shall also comply with the Regulations.

5.2 The Certified Aluminium Window Manufacturer's quality and technical documentations shall be applied to its Plant producing and supplying the products within the Scheme.

5.3 The Certified Aluminium Window Manufacturer shall pay an annual fee to Certification Body for each Certification. The Certified Aluminium Window Manufacturer shall also pay an initial assessment fee and all subsequent fees to Certification Body for assessment, surveillance and re-assessment. The amount of all fees will be determined by the Certification Body. The Certified Aluminium Window Manufacturer shall bear the cost of any Audit Testing which may be directed.

5.4 The Certified Aluminium Window Manufacturer shall afford an assessment team full assistance and cooperation during any assessments, producing documentation and Quality Records when requested, allowing an assessment team to have free access to a Plant and Quality Records Centre and assisting with Audit Testing as necessary.

5.5 The Certified Aluminium Window Manufacturer shall not sub-contract the production and supply of aluminium windows unless specific prior approval has been obtained from the Certification Body. Such approval will only be given if the proposed sub-contractor is also a Certified Aluminium Window Manufacturer and the Purchaser has been informed of and agreed with the sub-contract arrangement.

5.6 The Certified Aluminium Window Manufacturer may use the Certification Mark as described above but shall not use it in a manner that may bring HKISC or the Certification Body into disrepute.

- 5.7 The Certified Aluminium Window Manufacturer shall keep the Certification Body informed in writing of changes in circumstances which may affect Certification. Such changes include:
1. Changes in ownership or name.
 2. The resignation of its management representative or company directors.
 3. Changes in the Quality Manual or significant items in its Plant.
 4. Changes of the location of the Plant and/or Quality System Management Office.
 5. Closure of a manufacturing Plant.
- 5.8 The Certified Aluminium Window Manufacturer shall inform the Certification Body any significant changes to the product, manufacturing process or quality system, which may affect the conformity of the product. In such case, the Certification Body shall evaluate the degree of such changes to the product quality and may demand an assessment for such changes and the Certified Aluminium Window Manufacturer may be asked not to release the product before the performance of an on site assessment.
- 5.9 The Certified Aluminium Window Manufacturer shall keep a list of its purchasers who purchased the certified aluminium windows for the purpose of recall in case if it is necessary.

6. SURVEILLANCE ASSESSMENT AND RECERTIFICATION ASSESSMENT

6.1 After Certification, the assessment team will conduct periodic Surveillance Assessments to the Plant and associated Quality System Management Office, for assessment of the Certified Aluminium Window Manufacturer.

6.2 Frequency and Purpose of Surveillance Assessment

6.2.1 The frequency of routine Surveillance Assessments for the first three-year Certification and subsequent Certification cycles shall be at least every nine months.

Surveillance Assessments shall comprise the following:

1. Manufacturing Plant. The surveillance assessment team will assess plant and equipment including the calibration of such plant and equipment and the operation of the relevant sections of the Certified Aluminium Window Manufacturer's quality and technical documentations conforming to the Regulations.
2. Quality System Management Office. The surveillance assessment team will assess the quality system relating to the Plant by an assessment of the quality and production records.
3. Evaluation of the results of production testing. The surveillance assessment team will assess and evaluate the results of all quality control tests since the previous assessment. The surveillance team will also examine relevant quality records to confirm the output of control systems, and hence authenticate the conformity of the aluminium windows to the specified criteria in the Regulations and relevant requirements.

4. Audit testing. The surveillance assessment team shall take random representative samples at the point of release of certified aluminium windows from the plant and/or depots supplied with the product by the plant. The sample of a certified aluminium window is used for audit testing. The relevant properties specified in the Regulations shall be determined for checking compliance. The test shall be carried out by a HOKLAS or its MRA partners accredited laboratory and the results produced in an endorsed test report.

The results shall be evaluated by the assessment team of the Certification Body and a report shall be produced.

6.2.2 Other Surveillance Assessments will be made for follow up assessment purposes following a report of major or critical nonconformities. Such assessments may require either:

1. a partial assessment to confirm that nonconformities have been corrected; or
2. a full assessment to confirm compliance with the Regulations.

6.3 Conclusions from Surveillance Assessment

6.3.1 On completion of each Surveillance Assessment, the surveillance assessment team will report the type of nonconformities found and obtain the Certified Aluminium Window Manufacturer's acknowledgement of these. The surveillance assessment team will indicate orally with a written recommendation for continued Certification or otherwise.

6.3.2 There are four possible recommendations:

1. Certification should be confirmed. The Plant and its associated Quality System Management Office comply with the Regulations with no nonconformity. Some AFIs may be given for the improvement of the quality and technical systems.
2. Certification should be conditionally confirmed. **A number of minor nonconformities** exist which do not cumulatively indicate a major failure of the quality management system and product quality. Certification will be recommended to be confirmed after receiving a written response from the Certified Aluminium Window Manufacturer stating details of the proposed corrections and corrective actions, to which the judgment of the surveillance assessment team will rectify the nonconformities in the system after successful implementation. The time limit for the receipt of the written reply will be two weeks. Corrections and corrective actions shall be implemented within an acceptable time limit which will be a maximum of four weeks or such lesser time as the surveillance assessment team may decide.
3. Suspension of Certification is recommended. A **major nonconformity** or a **number of systematic minor nonconformities** exist which accumulate to indicate a major failure of the quality management system and product quality. The Certified Aluminium Window Manufacturer will be required to submit a written reply stating details of the proposed corrections and corrective actions, to which the judgment of the surveillance assessment team will rectify the nonconformities in the system after successful implementation. The time limit for the receipt of the written response will be two weeks. Surveillance assessment team shall assess the corrections and corrective actions to ensure proposed actions are effectively implemented before the reinstatement of the Certification.

A partial or full re-assessment, as directed by the surveillance assessment team, will be required within three months before reinstatement of Certification can be recommended.

4. Withdrawal of Certification is recommended. A critical nonconformity, major nonconformity or a number of systematic minor nonconformities have not been rectified in the system in accordance with the relevant procedures stated in the Regulations, or if the Certified Aluminium Window Manufacturer is persistently failing to comply with its obligation under this Scheme.

6.4 Recertification Assessment

- 6.4.1 The duration of a Certification is three years. Recertification Assessment will be carried out at every third year of each three-year Certification cycle. The Recertification Assessment will be carried out as if it is an initial Certification Assessment.

7. SUSPENSION AND WITHDRAWAL OF CERTIFICATION

- 7.1 On receipt of an adverse Assessment report and recommendation from the assessment team on any Plants or associated Quality System Management Office, the Certification Board or equivalent will agree or otherwise that the Certification for the Plant will be suspended or withdrawn.
- 7.2 If the Certified Aluminium Window Manufacturer is, at any time in the opinion of the Certification Board, failing systematically to comply with the Scheme either by reason of suspension of Certification for the majority of its Plant or by reason of its failure to comply with its obligations under the Scheme, then the Certification Body will suspend the Certification for all certified Plants of the Certified Aluminium Window Manufacturer.
- 7.3 If the Certification is suspended in accordance with Clause 7.2, a full Certification Assessment of the Certified Aluminium Window Manufacturer's Plant under the Scheme will be required within three months after the suspension of Certification is made before reinstatement of Certification can be recommended.
- 7.4 If, upon an assessment following suspension in accordance with Clause 7.3, a major nonconformity or a number of systematic minor nonconformities have not been rectified in the system, or if the Certified Aluminium Window Manufacturer is persistently failing to comply with his obligations under the Scheme, then the Certification Body may, in its absolute discretion, withdraw all the Certificates of Conformity of the Certified Aluminium Window Manufacturer.
- 7.5 In the event that the Certification Body suspends or withdraws the Certification of any Plants of a Certified Aluminium Window Manufacturer, the Certification Body may publish such decisions in appropriate newspapers or similar media. If the Certification Body has exercised its right to publish such decisions, then the Certification Body will, at the request of the Certified Aluminium Window Manufacturer, publish any decisions reinstating a Certification.
- 7.6 If the Certification for a Plant is suspended or withdrawn, the Certified Aluminium Window Manufacturer shall cease to use the Certification Mark in relation to that Plant.

8. INFORMATION ON CERTIFIED ALUMINIUM WINDOW MANUFACTURERS

- 8.1 Upon the request of any Purchasers, end users or any concerned parties of the certified Aluminium Window, the Certification Body will provide verbal and, if requested, written confirmation of the status of any Certified Aluminium Window Manufacturers or Plant under its register.
- 8.2 Any announcement or confirmation of the suspension or withdrawal of Certification will state the reasons for such suspension or withdrawal.

9. APPEALS AGAINST DECISIONS

- 9.1 The Applicant or Certified Aluminium Window Manufacturer shall have the right of appeal against any decisions of the Certification Board or equivalent to an appeal committee set up under the Certification Body. Details of the appeal procedure are given in the Certification Body regulations.

10. CHANGES TO THE REGULATIONS

- 10.1 The Certification Body will give Certified Aluminium Window Manufacturers at least a three-month written notice of any intended changes to the Certification Body regulations to allow for clarification between Certified Alluminium Window Manufacturers and the Certification Body.
- 10.2 Following any changes to the Certification Body regulations which the Certification Board or equivalent may agree, the Certified Aluminium Window Manufacturer shall be allowed at least three months to carry out any adjustments to their quality assurance scheme which may be required as a result of such changes.

11. COMPLAINTS

- 11.1 Certified Aluminium Window Manufacturers shall keep a record of all written complaints received from any concerned parties. These records shall be made available to the assessment team at the time of any Assessments.
- 11.2 The Certification Body will keep a record of all written complaints in relation to a Certified Aluminium Window Manufacturer received from any concerned parties. Such complaints will be investigated at the discretion of Certification Body and reported to the Certification Board or equivalent.
- 11.3 The Certification Body will respond to complainants with a report which is confined to a statement upon the certification status of the Certified Aluminium Window Manufacturer.

12. CONFIDENTIALITY

- 12.1 Certified Aluminium Window Manufacturers shall disclose to the assessment team for the purposes of Assessments all information or records obtained from or pertaining to Purchasers and connected with the Scheme.
- 12.2 The assessment team and the Certification Body will not disclose information or records obtained from Certified Aluminium Window Manufacturers except as may be permitted by the Certification Body regulations.

13. EXPERIENCE AND QUALIFICATION OF LEAD AUDITORS AND TECHNICAL AUDITORS

- 13.1 Lead Auditors who are eligible for auditing PCCS-AW quality management system shall have the following registration:
- Registered IPC or Hong Kong Institution of Certified Auditors (HKICA) Lead Auditor in QMS or equivalent.
- 13.2 Technical Auditors who are eligible for auditing PCCS-AW technical management system shall have the following training, experience and qualifications:
- a. Registered HKICA Product Certification auditor in relevant fields or equivalent,
 - b. A relevant Higher Diploma or Degree in architectural studies, buildings, materials science, structural or civil engineering, or other related fields; and
 - c. With a minimum of two years relevant industry technical experience, or a minimum of two years quality management system audit experience for relevant manufacturing industry, or with appropriate training held by or acceptable to the Hong Kong Institute of Steel Construction for this purpose.

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FOR

ALUMINIUM WINDOWS

(PCCS-AW)

PART TWO

Technical Regulations

HONG KONG INSTITUTE OF STEEL CONSTRUCTION

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Product Conformity Certification Scheme

for

Aluminium Windows

TECHNICAL REGULATIONS

1. INTRODUCTION

- 1.1 The Technical Regulations set out the technical requirements of the Scheme.
- 1.2 The Technical Regulations shall be read in conjunction with the Administrative Regulations.

2. QUALITY SYSTEM

- 2.1 An effective quality system shall be established, documented and maintained in accordance with the prevailing ISO 9001 requirements to ensure and demonstrate that the aluminium windows produced and supplied under the Scheme conforms to the relevant requirements and the Regulations.

3. CERTIFIED ALUMINIUM WINDOW MANUFACTURERS' QUALITY RESPONSIBILITIES

- 3.1 The Certified Aluminium Window Manufacturer shall nominate a Quality Management Representative who shall have defined authority and responsibility for ensuring that the requirements of ISO 9001 and the Technical Regulations are met.
- 3.2 All staff shall be technically competent for the functions that they perform and are aware of the effects of these functions on the product quality. A proper training procedure shall be set up and maintained for the training of technical staff.

4. TECHNICAL DEFINITIONS

- 4.1 Aluminium Windows - Any part of an external wall that consists predominantly of transparent or translucent sheet material contained within a frame or frames, with any necessary intermediate frame members or coupling members.

5. REQUIREMENTS OF ALUMINIUM WINDOWS AND PARTS

- 5.1 Aluminium members
 - 5.1.1 Extruded aluminium alloy to BS 1474: 1987 of alloy designation: 6063 - T5 or T6
 - 5.1.2 Structural members: minimum wall thickness 2 mm;
 - 5.1.3 Non-structural members: minimum wall thickness 2 mm unless otherwise specified;
 - 5.1.4 Glazing bead: minimum wall thickness 1.0 mm;
 - 5.1.5 Dovetailed groove for weather stripping.

- 5.2 Aluminium finishes
 - 5.2.1 Natural anodizing to BS EN 12373-1: 2001, thickness grade Class 25 for aluminium window frames;
 - 5.2.2 Colour anodizing to BS 3987: 1991 and not less than 25 microns thick;
 - 5.2.3 Other finishes to be approved.

- 5.3 Frictional hinge
 - 5.3.1 Free from rust, cracks;
 - 5.3.2 Friction pivots are correctly positioned at the sliding stays,
 - 5.3.3 All sliding stays are to be minimum 2.5 mm thick. All sliding stays and base rails are stainless steel of UNS Designation S30400 to ASTM A240/A240M-09c, or equivalent grade of other recognized standards specified by the Purchaser;
 - 5.3.4 Friction pivots are to be stainless steel of either UNS Designation S30200, S30400 or S30430 to ASTM A493-09, or equivalent grade of other recognized standards ;
 - 5.3.5 The Certified Aluminium Window Manufacturer shall purchase certified frictional hinges from a Certified Frictional Hinge Manufacturer. Otherwise, the Certified Aluminium Window Manufacturer shall meet the requirements in **Table 3 and Table 4** of these regulations for the quality assurance of the non-certified frictional hinges.

- 5.4 Weatherstrip

Santoprene grade 251-70W232 or an approved equivalent designed for glazing and sealing applications, sized and shaped to fit the proposed window system.

- 5.5 Fixing lugs

Hot dip zinc galvanized steel to BS EN 10327: 2004 unless otherwise approved, with the cut edges to be painted with zinc phosphate primer.

- 5.6 Sealant for assembling composite units
 - 5.6.1 Silicone sealant to BS 5889: 1989, Type B.

- 5.7 Sealant for fixing glazing
 - 5.7.1 Silicone sealant to BS 5889: 1989 (neutral type), Type B.

- 5.8 Small gap sealant
 - 5.8.1 Synthetic rubber base sealant for aluminium section joints.

- 5.9 Casement fasteners, locking handles etc
 - 5.9.1 Moulded stainless steel with satin finish; or
 - 5.9.2 Die-cast zinc alloy to BS EN 1774: 1998 and BS EN 12844: 1999 suitably coloured to match the anodised window.
 - 5.9.3 Other finishes to be approved.

- 5.10 Pull handles
 - 5.10.1 Anodized aluminium; or
 - 5.10.2 Other finishes to be approved.

- 5.11 Glass

To BS 952: Part 1: 1995

5.12 Safety glass
To BS 6206: 1981

5.13 The performance requirements for aluminium windows shall be in accordance with **Table 1**.

Table 1 – Performance Requirements for Aluminium Window

Items	Test Method	Acceptance Standards	Remarks
1. Dimensional Tests			
- Overall Size	Measure the peripheral and diagonal dimensions of the sample to nearest 0.5 mm. Indicate the measurements in the report with aid of schematic diagrams.	<p>- Peripheral dimensions : ± 1.0 mm for length < 2 m ± 1.5 mm for 2 m \leq length < 3.5 m ± 2.0 mm for 3.5 m \leq length < 5 m ± 3.0 mm for length ≥ 5 m</p> <p>- Diagonal dimensions : ± 1.5 mm for length < 2 m ± 2.5 mm for 2 m \leq length < 3.5 m ± 3.5 mm for length ≥ 3.5 m</p>	<p>● Three specimens are required, one for Tests 1 to 2(c) & 3, one for Tests 2(d), the other one for Test 4 unless otherwise specified</p> <p>● For test 1, refer to the shop drawings submitted by the suppliers for dimensions of each type of window.</p>
- Individual Member	Select one structural member to be tested. Choose three positions, each 300 mm apart, along the length of the member. Carry out dimensional tests to BS 1474 : 1987 : Cl. 7.4 on width, angular dimensions, corner radii, straightness, concavity and thickness	<p>- Width - BS 1474 : 1987 : Table 6 - Angular dimensions - BS 1474 : 1987 : Table 9 - Corner radii - BS 1474 : 1987 : Table 10 - Straightness - BS 1474 : 1987 : Table 14 - Concavity - BS 1474 : 1987 : Table 16 - Thickness - Minimum 2 mm</p>	<p>● For test on individual member under Test 1, suppliers should provide additional sections of the members 300 mm long, in case suitable testing positions are difficult to access in complete windows set.</p>
	Perform the Test for structural member above to one non-structural member	Same as above except for glazing bead, which will be minimum 1.0mm	

2. Operation & Strength Tests			
2 (a) Operating Forces	BS 6375-2 : 2009 Cl. : 5.1 and BS EN 12046-1 : 2003	BS 6375-2:2009 Cl. 5.1 and Table 1	For Tests 2 (a) to 2 (c): Sequence of tests from 2 (a) to 2 (c) shall be followed. Failure of any tests will have the whole sequence re-tested.
2 (b). Resistance to static torsion	BS 6375-2 : 2009 Cl. 5.2.1 and BS EN 14609:2004 Static Test Load F=300N	BS 6375-2:2009 Cl. 5.2.1 and BSEN 13115:2001 Cl. 3	
2 (c). Resistance to racking	BS 6375-2:2009 Cl. 5.2.2 and BS EN 14608:2004 Static Test Load F=600N	BS 6375-2:2009 Cl. 5.2.2 and BSEN 13115:2001 Cl. 3	Test 2 (c) apply to side hung windows only.
2 (d). Endurance of Fastener or Hardware	SS212 : 2007, Annex E : E9, Test 8 Include Test 1 and Test 2	SS212 : 2007 Cl. 10.2.2.7, 10.2.2.1.1, 10.2.2.1.2 & 10.2.2.2 No visual damage, and forces and torque not to exceed the appropriate values in Table 2 and Table 3 of the Standard	For Test 2 (d) : Full size sample of window with glazing shall be used, and shall be tested separately from all the above operation or strength tests.
3. Tests on Coating			
- Visual Inspection	BS 3987 : 1991 : Cl. 3 and Appendix G	Surface shall be free from visible coating defects.	
- Thickness of Coating	BS EN ISO 1463 : 1995 for thickness Class 25	Minimum average thickness is 25 µm, and minimum local thickness is 20 µm	

4. Weather-tightness Test			●For Tests 4 (a) to 4 (d):
4 (a). Air Permeability Test	BS 6375-1:2009 Cl. 6 and BS EN 1026:2000 Pa max = 600 Pa	BS 6375-1:2009 Cl. 6 and Figure 1 : Graph C. No damages and functional defects shall be noted	Full size sample of window with glazing shall be used.
4 (b). Water-tightness Test	BS 6375-1:2009 Cl. 7 and BS EN 1027:2000, test Method 1A Pa max = 770 Pa	BS 6375-1:2009 Cl. 7 No water leakage, damages and functional defects shall be noted	Sequences and stipulated requirements indicated in BS 6375-1:2009 Cl. 5 shall be followed.
4 (c). Water Penetration Test by Cyclic Static Air Pressure Difference	ASTM E547-00 Test pressure difference = 770 Pa Ten test cycles	No water leakage, damages and functional defects shall be noted.	
4 (d). Resistance to Wind Load Test	BS 6375-1:2009 Cl. 8 and BS EN 12211:2000 Positive wind pressure : $P_2 = 0.5 P_1$, $P_3 = 1.5 P_1$; Negative wind pressure : $P_2' = 0.5 P_1'$, $P_3' = 1.5 P_1'$; P_1 and P_1' are the maximum designed positive and negative wind loadings respectively on building elements in accordance with Code of Practice on Wind Effects in Hong Kong 2004 or 3.8kPa whichever is greater	BS 6375-1:2009 Cl. 8 and BSEN 12210:2000 Cl. 6 The deformation of any member at P_1 and P_1' : - Permissible deflection of any member shall be less than 1/180 the length of the particular member; and shall not be greater than 20 mm.	BS 6375-1:2009 Annex B Figure B.1 to be used as sequence of operation
5. Tensile Test	BS 18 : 1987 or BS EN 10002-1:2001 or other standard methods	BS 1474 : 1987	

6. EVALUATION OF CONFORMITY

6.1 General requirements

6.1.1 The Scheme for the evaluation of conformity includes the following tasks :

- (b) Initial Type Tests (ITT)
- (c) Plant Production Control (PPC) Tests
- (d) Audit Testing (AT)

A Certified Aluminium Window Manufacturer having a quality management system to ISO 9001 and the Regulations in this Scheme are deemed to meet the requirements of Plant Production Control.

For the purposes of testing, including ITT, PPC testing and AT, aluminium windows may be grouped into families where it is considered that the results for one or more characteristics from one item in the family are representative for all items within that family of testing (a product may be in different families for different characteristics).

6.2 Initial Type Tests

One first evaluation of an aluminium window to the requirements of the Regulations, appropriate initial type testing in **Table 2** shall be carried out to confirm that the characteristics of the product meet the requirements of the Regulations in this Scheme and the relevant requirements.

Initial type tests shall also be carried out on existing products after any change in raw materials or manufacturing procedures that can modify the declared values of the characteristics or application properties. In these cases the appropriate initial type testing to be carried out are those, to the opinion of the Certified Aluminium Window Manufacturer based on sound technical projection, for the characteristics and properties that can be affected and need confirmation; any new property or properties arising from a change of formulation or manufacturing procedure shall be tested and the results reported.

Samples for initial type tests shall be sampled by the Certification Assessment team on site at the dispatching point of the manufacturing Plant. The tests shall be conducted by a HOKLAS or its MRA partners accredited test laboratory. The results shall be reported in HOKLAS endorsed test certificate or equivalent.

Table 2 : Initial type test, plant production control test and audit testing frequency

Test	Test method and requirement	Initial type test (ITT)	Plant Production control test (PPC)	Audit testing (AT)	
				(Surveillance) *	(Recertification)
Dimension check					
Overall Size	See Table 1	Y	A	Y	Y
Individual Member	See Table 1	Y	A	Y	Y
Operation & Strength Tests					
Operation force	See Table 1	Y	B	---	Y
Mechanical strength-resistance to static torsion	See Table 1	Y	B	---	Y
Mechanical strength-resistance to racking	See Table 1	Y	B	---	Y
Endurance of Fastener or Hardware	See Table 1	Y	---	---	Y
Weather-tightness test					
Air Permeability Tests	See Table 1	Y	--	---	Y
Water-tightness Test	See Table 1	Y	--	---	Y
Water Penetration Test by Cyclic Static Air Pressure Differential	See Table 1	Y	--	---	Y
Resistance to wind Load Test	See Table 1	Y	---	---	Y
Extruded Aluminium Section					
Chemical property	BS 1474 : 1987 or HOKLAS accredited in-house method or other standard methods	Y	---	Y	Y
Mechanical property	BS 1474 : 1987 except Tensile Test which adopts BS 18 : 1987 or BS EN 10002-1:2001	Y	---	Y	Y
Anodic oxidation natural coating	BS EN 12373-1 : 2001	Y	---	Y	Y
Anodic oxidation coloured coating	BS 3987 : 1991	Y	---	Y	Y
Thickness of Coating	See Table 1	Y	---	Y	Y
Gasket					
	BS 4255: Part 1: 1986				
Hardness	BS 903: Part A26	Y	---	---	Y
Aging	BS 903: Part A19	Y	---	---	Y
Initial type (ITT) and audit (AT) tests : "Y" means yes.					
Production Control Test frequency :					
"A" means 1 test for every 5000 products (window unit), with a minimum of 1 time per year and a maximum for 1 time per 2 months.					
"B" means 1 test for every 10000 products (window unit), with a minimum of 1 time per year and a maximum for 1 time per 6 months.					
Note 1 Specimens of aluminium windows and its parts shall be sampled in accordance with requirement of this Scheme in Table 1. Unless otherwise specified.					
Note 2 For each sampling, one typical critical type of aluminium windows will be sampled for testing. Unless otherwise specified by the customer of the aluminium window.					
* 1 test per project					

Table 3 : Initial type test, plant production control test and audit testing frequency for non-certified frictional hinges

Test	Test method and requirement	Initial type test (ITT)	Plant Production control Test (PPC)	Audit testing (AT)	
				(Surveillance)	(Recertification)
Sliding stays and base rails					
Mechanical property	See Table 4	Y	A	Y	Y
Chemical composition	See Table 4	Y	A	Y	Y
Friction pivots					
Mechanical property	See Table 4	Y	A	Y	Y
Chemical composition	See Table 4	Y	A	Y	Y
Initial type (ITT) and audit (AT) tests : "Y" means yes.					
Production Control Test frequency : "A" means 1 test for every 500,000 products, with a minimum of 1 time per year and a maximum for 1 time per 6 months.					

Table 4 – Performance Requirements for Non-Certified Frictional Hinges

Items	Method	Acceptance Standards
Sliding stays and base rails		
Mechanical properties	BS 18 : 1987 or BS EN 10002-1:2001 or other equivalent methods	ASTM A240/A240M-09c
Chemical composition	HOKLAS accredited in-house test methods or other standard methods	ASTM A240/A240M-09c
Friction pivots		
Mechanical properties	BS 18 : 1987 or BS EN 10002-1:2001 or other equivalent methods	ASTM A493-09
Chemical composition	HOKLAS accredited in-house test methods or other standard methods	ASTM A493-09

6.3 **Plant Production Control Test**

A PPC plan and procedures relevant to the declared properties, as confirmed by the initial type tests, of the Certified Aluminium Window Manufacturer shall be established and implemented in accordance with the requirements in the Regulations.

Any change in raw materials, source of supply, manufacturing procedures or control plan that can affect the properties of the product shall be recorded.

The PPC procedures shall consist of a system for the production quality control to ensure that the product complies with the relevant requirements.

The production control shall consist of the following main phases:

- (a) inspection and testing of raw materials,
- (b) inspection and testing of production equipment and process,
- (c) inspection and testing on finished products.

6.3.1 **Production**

6.3.1.1 **Raw materials**

The manufacturer shall define the acceptance criteria and control procedures for incoming materials to ensure that these are not used until it has been verified that they comply with the required specifications.

6.3.1.2 **Production process**

The manufacturer shall identify and define the plant and production processes and ensure that the processes are carried out under controlled conditions clearly described in the procedures. The processes are verified by means of inspections and tests documented in a plan, as frequency and values or criteria are required both on equipment and on operations in the process. The actions to be taken when control values or criteria are not obtained shall be given.

6.3.2 **Finished products**

The number and size of the samples, the frequency of sampling, the test performed and the result obtained shall be recorded. The test shall be conducted at least with the frequency specified in **Table 2 and Table 3**. For the purposes of PPC, alternative tests to those given in **Table 2 and Table 3** may be used, provided that a correlation of the test results between both tests, for the product in question, is established.

6.3.3 **Statistical techniques**

Where and when possible and applicable, the results of inspections and testing shall be interpreted by means of statistical techniques, by attributes or by variables, to verify the product characteristics and to determine if the production complies with the compliance criteria and the product complies with the declared values.

6.4 Registration and traceability

The Certified Aluminium Window Manufacturer shall establish and maintain suitable procedures for the identification and traceability of materials from receipts of raw materials and during all stages of production and delivery.

7. AUDIT TESTING

7.1 Audit testing of samples for Surveillance Assessments and Recertification Assessments shall be in accordance with **Table 2 and Table 3**.

8. MARKING AND LABELLING

8.1 General Requirements

Products complying with the Regulations of the PCCS-AW Scheme shall be clearly marked with the following information:

- (a) Brand name of the product,
- (b) Manufacturer's mark and place of origin,
- (c) Date or code of production, and conditions of storage,
- (d) PCCS-AW and relevant requirements,
- (e) Type of product,
- (f) Model and series numbers,
- (g) Details of size,
- (h) Address of manufacturer,
- (i) Packing and yield,
- (j) Any other manufacturer's specification or recommendations on the use of this aluminium window.

The information shall be marked on the packaging and/or the product's technical data sheet.

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