

Product Certification Scheme for Passive Fire Protection Product -Fire Doors and Partitions

Background of PCCS - PFPP

PCCS-PFPP Issue 1 published on June 2007
Adopted by HKHA

PCCS-PFPP Issue 2 published on April 2012
No Certification Body (CB) use this issue

Functions of Product Certification Scheme

- ISO/IEC 17067
- Selection (planning)
- Determination (assessment activity needs)
- Review (interpret the effectiveness and results)
- Decision on certification
- Attestation (issue of a statement of conformity)
- Surveillance (maintain of the validity of the statement of conformity)

Table 1 — Building a product certification scheme

Conformity assessment functions and activities ^a within product certification schemes		Types of product certification schemes ^b							
		1a	1b	2	3	4	5	6	N ^{c,d}
I	Selection , including planning and preparation activities, specification of requirements, e.g. normative documents, and sampling, as applicable	x	x	x	x	x	x	x	x
II	Determination of characteristics , as applicable, by: a) testing b) inspection c) design appraisal d) assessment of services or processes e) other determination activities, e.g. verification	x	x	x	x	x	x	x	x
III	Review Examining the evidence of conformity obtained during the determination stage to establish whether the specified requirements have been met	x	x	x	x	x	x	x	x
IV	Decision on certification Granting, maintaining, extending, reducing, suspending, withdrawing certification	x	x	x	x	x	x	x	x
V	Attestation, licensing a) issuing a certificate of conformity or other statement of conformity (attestation) b) granting the right to use certificates or other statements of conformity c) issuing a certificate of conformity for a batch of products d) granting the right to use marks of conformity (licensing) is based on surveillance (VI) or certification of a batch.	x	x	x	x	x	x	x	x
VI	Surveillance , as applicable (see 5.3.4 to 5.3.8), by: a) testing or inspection of samples from the open market b) testing or inspection of samples from the factory c) assessment of the production, the delivery of the service or the operation of the process d) management system audits combined with random tests or inspections			x	x	x	x	x	x

^a Where applicable, the activities can be coupled with initial audit and surveillance audit of the applicant's management system (an example is given in ISO/IEC Guide 53) or initial assessment of the production process. The order in which the assessments are performed may vary and will be defined within the scheme.

^b An often used and well-tried model for a product certification scheme is described in ISO/IEC Guide 28; it is a product certification scheme corresponding to scheme type 5.

^c A product certification scheme includes at least the activities I, II, III, IV and V a).

^d The symbol *N* has been added to show an undefined number of possible other schemes, which can be based on different activities.

- Depends on the product type, the certification may be carried out according to different certification scheme type
- Type 5 is the highest level requires more in the surveillance

Fire Door Product Certification



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- It is a **series of quality assurance** process
- Initial factory technical production **inspection** and quality system **audit**
- Initial selection of ready to be certified fire doors for **Type Testing**
- Passed – fire door to be certified per model
- **Surveillance** visit at 9 months interval
- Any production > 20 000 **fire door-retesting**
- **Reassessment** at every 3 years interval-retesting of certified fire doors per model



Different Models Fire doors





**PCCS – FD PRODUCT CONFORMITY
CERTIFICATION SCHEME
FOR PASSIVE FIRE PROTECTION PRODUCT - FIRE DOORS
ADMINISTRATIVE PROCEDURES & TECHNICAL REQUIREMENTS
HKISC–FG TECHNICAL GUIDE TG001-1**

NOVEMBER 2005

What is PCCS-PFPP?

- The PCCS written by the Hong Kong Institution of Steel Construction (HKISC)
- This is prepared specifically for fire door and partition
- The rules in the PCCS-PFPP need to be well defined to avoid misinterpretation by different CBs (inclination to CB with interpretation favor the applicant)
- The PCCS-PFPP have two parts:
 - Administrative Regulations
 - Technical Regulations



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Independent Factory Production Inspection and Auditing

Fire resistance glazed door

- Fire resistance glass
- Intumescent firestop door seals-expansion volume up to 50% of initial thickness
- Fire insulation board-JC/T564-2000 , GB/T 7019 and GB/T 10294 CaO & SiO₂
- Stainless steel frame
- Ironmongery



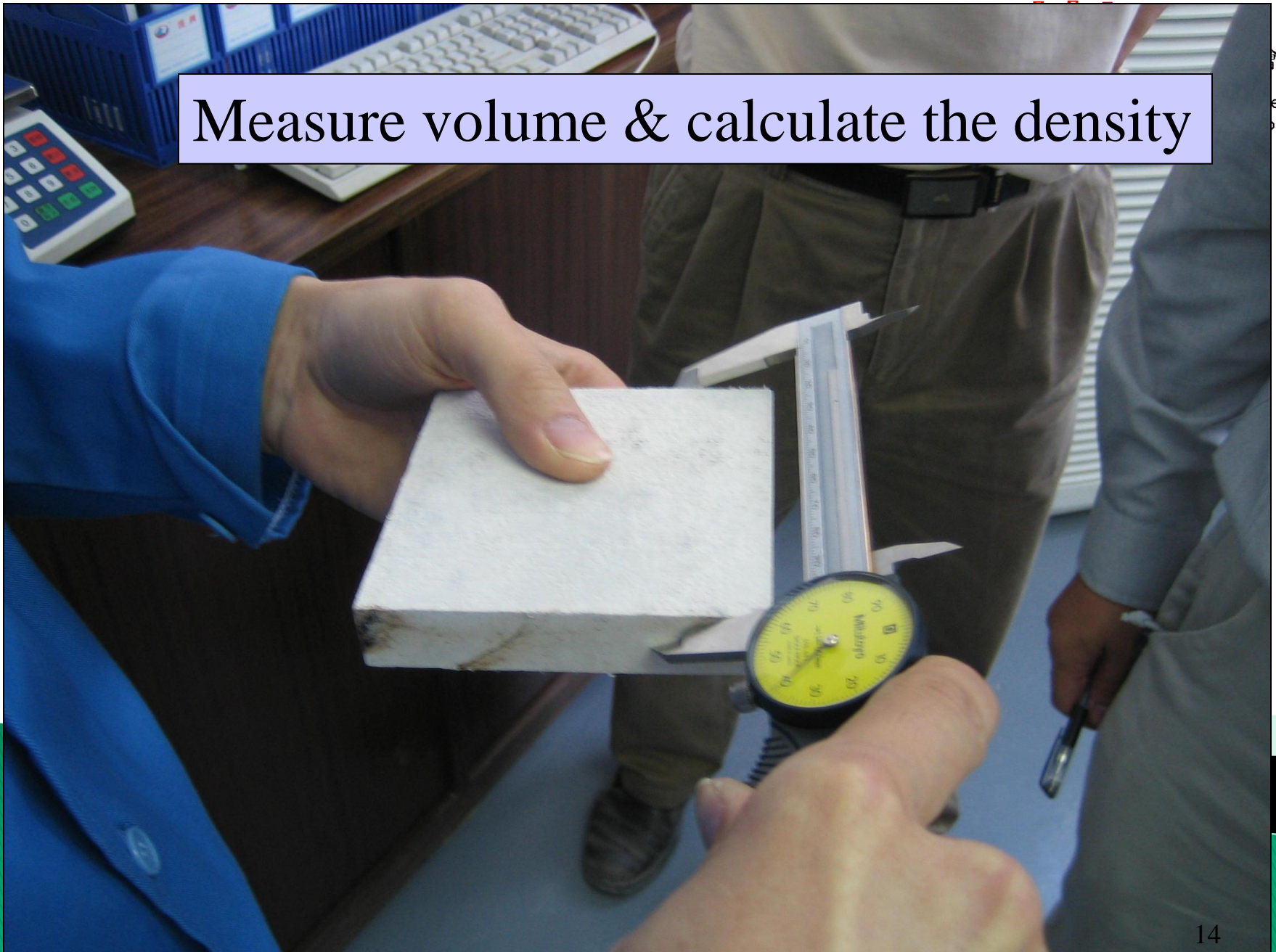
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品名：防火板
规格：20*95*2440



Weighing the board

Measure volume & calculate the density



Inspection of the production process



Random sampling of the door for type testing



Auditor signed
On the randomly
Selected door for
Initial Type testing



Type testing – Fire resistance test to BS 476 : Part 22 : 1987



Fire resistance timber door

- Fire resistance timber boards
- Core: size and density of softwood 450kg/m^3
- Internal framing : size and density of softwood 450kg/m^3
- Outfacing and lipping
- Glazed opening
- Ironmongery

Seasoning of timber



1hr

41x43x209

$\frac{1}{2}$ hr

42x45x273

普通.

41x41x279

The moisture content of all timber based components shall be $10\% \pm 2\%$



Timber with defects identified





Timber for making cores



of

Core:

- i) Material: softwood timber lamels
- ii) Thickness: 35 mm minimum
- iii) Width: 20 – 50 mm
- iv) Density: 450 kg/m³ minimum

- i) Stiles: 2 off. 35 mm wide by 35 mm thick minimum
- ii) Rails: 2 off. 35 mm wide by 35 mm thick minimum
- iii) Cross Rails: 3 off. 35 mm wide by 35 mm thick minimum



One fire door tested for two faces

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Fire door test in progress



Fire Door Product Certification

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Guideline for Fire Performance Assessment in lieu of Fire Tests



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1. Introduction

This Guideline is issued by the Fire Group of the Hong Kong Institute of Steel Construction. Its main objective is to provide guidance to accredited Certification Bodies in utilizing fire door performance **assessments** in lieu of fire tests when there are changes (either additions or deletions) to fire protection products which have been tested and certified.

A fire performance **assessment** must be based upon fire test(s) of a prototype or a fire protection product of the original design. The fire test reports shall be issued by a HOKLAS accredited laboratory or its mutual recognition agreement partner (MRA) endorsed test reports.

As an **assessment** is a technical expert opinion for a modified fire protection product as if it is subject to a fire test, it shall be carried out by technically competent personnel and reviewed by another competent personnel before the finding is formally issued in an **assessment report**. This Guideline also defines the requirements of the personnel for performing the assessment and review.

2. Rules for assessment for insignificant changes to approved doors

2.1 Fire performance assessments can only be carried out and assessment reports issued under an organization which shall be a HOKLAS accredited laboratory or HOKLAS overseas Mutual Recognition Agreement (MRA) accredited laboratory. (For information on the updated status of the HOKLAS's MRA partners, please access to the HKAS website at www.itc.gov.hk/hkas).

2.2 The assessment shall be carried out by an **Assessor** and reviewed by a **Reviewer** both of them are employers of the accredited laboratory who finally issued the assessment report. An **Assessor** for performing an assessment shall have a degree in engineering or related discipline with two years experience in fire testing. A **Reviewer** for reviewing an assessment shall have a higher degree in engineering or related discipline, or corporate membership of a recognized engineering institution with two years experience in fire testing. (Evidence of the qualification and experience of the **Assessor** and **Reviewer** shall be provided by the accredited laboratory)



2.3 The assessment shall be within the **Scope of Accreditation** of the accredited laboratory. For example, an accredited laboratory can only be allowed to perform assessments to BS 476 : Part 22 : 1987 for non-load bearing fire protection products if they are accredited to this standard. This laboratory is not allowed to perform assessments to BS 476 : Part 21 : 1987 for load bearing structural elements nor allowed to perform assessments to AS, ASTM, GB, EN and ISO for non-load bearing fire protection products unless they are also accredited to these standards. (Evidence of the accredited **Scope** shall be provided by the accredited laboratory which issued the assessment report)

2.4 A fire performance assessment must be based upon fire tests of a prototype or a fire protection product of the original design which are of similar materials and configurations. The test results shall be contained in HOKLAS or its MRA partners endorsed test reports which are within its Scope of Accreditation. (Endorsed test reports mean that the report bearing the HOKLAS or its MRA partners **Accreditation Mark or Logo**). If interpolation of fire performance is really necessary in an assessment, it shall be based on more than one fire test results with clear evidences and solid arguments to show the validity of this interpolation. Extrapolation of fire performance is in general not accepted.

3. Assessment Report

An Assessment report shall consist of the followings:

- (a) Reference to the full-scale test including a general description of the tested item and the specific results achieved relevant to the opinion;
- (b) Reference to other supporting information;
- (c) A detailed statement of the proposed variation(s);
- (d) A summary of the critical issues leading to the opinion, including the main points of the argument and any assumption made A statement of the formal opinion;
- (e) The name of the Assessor and the HOKLAS or it MRA Partners Accredited Laboratory who prepares the assessment report and holds full responsibility for making the formal opinion together with his/her signature and date;
- (f) The name of the Reviewer and the HOKLAS or it MRA Partners Accredited Laboratory who reviews the assessment report and holds full responsibility for the review together with his/her signature and date.

A statement shall be included in the assessment stating that it has been carried out in accordance with this Guide. For laboratories accredited by HKAS for fire testing, HOKLAS Accreditation Mark may be used in the fire assessment report provided that the

(a) following statement shall be included in order to comply with the HKAS requirements.

“The statements and interpretations expressed in this assessment are outside the scope of HOKLAS accreditation”

(b) The signature page of the assessment report shall bear the following statement

“This assessment report is not valid unless it is duly signed by the Assessor and Reviewer”

4. Significant Variations to Certified Fire Protection Products

If the variations to a tested and certified fire product protection product are of significant nature, a full scale fire test shall be carried out as if it is a new model or a new fire product protection product to be certified.

Carry Out Audit

- Audit in accordance with ISO 9001 for the management system
- Audit the documented procedure related to the manufacturing
 - Auditor needs to have professional knowledge and well understanding about the industry
 - The typical QC testing necessary during the manufacturing
- Sampling for Initial Type Test (ITT)
 - Sample from available stock (for single scope of application), or
 - Technical auditor to witness the whole manufacturing process of the sample(s) used for ITT

Manufacturing of doorset

- Raw material selection
 - Fixed list of suppliers and specification of raw materials
 - The QC process for incoming raw material
 - Necessary pre-treatment for raw material
 - E.g. Timber needs conditioning to control the moisture content?
 - E.g. Steel grade checking
 - E.g. Dimensional and density checking
- Routine QC of each process
- Manufacturing of door core
 - Application rate of adhesive and the making of door core
- Assembly of door
 - Slot holes for ironmongeries
 - Method to assembly individual component
 - Nail or adhesive for timber, welding for steel door
 - Application rate of adhesive, etc.

Selection of Sample for Initial Type Test

- The design of doorset may have substantial variety
 - Sizes
 - Configuration (double or single leaf, double or single action)
 - Sizes and shape of vision panel
 - Use of ironmongery
 - Use of decorative cladding
- Difficult to have one door tested to represent all, and difficult to select the samples from stock that matches with the proposal
- Technical auditor understand the proposal from applicant and plan the proposed tests necessary for the scope
- Method of selection:
 - From stock if there are suitable
 - Place and order for the design door

Perform the Initial Type Tests

- Initial Type tests are the tests after the audit by the CBs and the samples selected by the CBs to determine the required performance of the product
 - The test may on raw materials
 - The performance test (FRR)
- The tests will be conducted by laboratory with HOKLAS accreditation to that particular test
- The laboratory may be accredited by other accreditation bodies other than HOKLAS but have MRA with HOKLAS

Administrative Regulations (Cont.)

- Certification
 - Rectify NC
 - Satisfactory ITT results
 - Final scope of application
 - Decision on certification
 - Issue certificate

Surveillance and recertification



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- Surveillance annually matches with most of the PCS in market, which seems to be a more reasonable timing
 - Adequate timing for audit and won't disturb the normal operation of the factory
- Recertification
 - PCCS-PFPP set 3-years interval
- Audit Test
 - PCCS-PFPP, 3 year interval or as specific based on the volume of manufactured products
 - Select from current stock, any door as specified by the CB



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End of the talk

Thank you