



## **Fire Group**

# **PRODUCT CONFORMITY CERTIFICATION SCHEME**

## **FOR**

### **PASSIVE FIRE PROTECTION PRODUCTS (FIRE DOOR & NON-LOADBEARING FIRE PARTITION)**

### **PCCS – PFPP PARTS**

### **ONE & TWO**

#### **Administrative Regulations**

#### **Technical Regulations**

**Issue 3**

**November 2017**

**Hong Kong Institute of Steel Construction**

The use of the documentation is subjected to the standard Terms and Conditions of Hong Kong Institute of Steel Construction (HKISC). A Certification Body who uses this Scheme for product certification shall be approved by and registered with HKISC.

**Disclaimer**

No responsibility is assumed for any injury and/or damage to persons or properties as a matter of products liability, negligence or otherwise, or from any use or operation of any methods, products, instructions or ideas contained in the material herein. HKISC and the members of the Joint Technical Committee of this document will not be responsible for its use or misuse in whatever form and the readers of this document should accept this condition before reading or making reference of this document.

**Copyright 2017 © reserved by:**

**The Hong Kong Institute of Steel Construction (HKISC)**

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic mechanical, photocopying, recording or otherwise, without the prior written permission of the HKISC. Further information about the HKISC can be obtained at the official website: <http://www.hkisc.org>.

This document is controlled. In case of any discrepancy(ies) in interpretation of this document, the interpretation by Hong Kong Institute of Steel Construction shall be final. Enquiries about status and issue of amendments should be directed to HKISC and make attention to the Secretary of HKISC (Fire Group).

**HONG KONG INSTITUTE OF STEEL CONSTRUCTION  
C/O DEPARTMENT OF CIVIL & ENVIRONMENTAL ENGINEERING  
THE HONG KONG POLYTECHNIC UNIVERSITY  
KOWLOON, HONG KONG**

**PRODUCT CONFORMITY CERTIFICATION SCHEME  
FOR PASSIVE FIRE PROTECTION PRODUCTS  
(FIRE DOOR & NON-LOADBEARING FIRE PARTITION)  
PCCS-PFPP**

**FORWARD**

The objective of this Scheme is to provide a framework for the certification of the production of passive fire protection products i.e. fire door and non-loadbearing fire partition only. This Scheme can be generally adopted by all related passive fire protection product manufacturers in order to show conformity with all necessary technical requirements in accordance with this Scheme.

**The following organizations have been sought for opinions  
in the course of drafting this document**

The Hong Kong Institute of Steel Construction  
(Fire, Thin-walled Steel and Product Certification Group)

The Hong Kong Institution of Engineers (Fire Division)  
The Hong Kong Institution of Engineers (Structural Division)  
The Institution of Fire Engineers (Hong Kong Branch)

Buildings Department, HK SAR Government  
Hong Kong Housing Authority

China Hong Kong Fire Protection Association  
Hong Kong Fire Protection Association  
Passive Fire Protection Research Centre

Building Research Establishment Ltd.  
Exova Warringtonfire Hong Kong Ltd.  
SGS Hong Kong Limited

The Scheme is the effort of the Task Group formed by the members of Hong Kong Institution of Steel Construction through the co-operation among representatives of local academics, engineers, passive fire protection products producers, contractors, government bodies and users to develop a product conformity certification scheme for passive fire protection products in accordance with the ISO/IEC 17067.

## **Contents**

<b>FORWARD .....</b>	<b>2</b>
<b>ADMINISTRATIVE REGULATIONS .....</b>	<b>4</b>
1. INTRODUCTION .....	5
2. GENERAL DEFINITIONS .....	6
3. PREREQUISITES FOR PARTICIPATION .....	9
4. PROCEDURES FOR APPLICATION AND CERTIFICATION .....	9
5. OBLIGATIONS OF CERTIFIED PFPP MANUFACTURERS .....	13
6. SURVEILLANCE ASSESSMENT AND RECERTIFICATION ASSESSMENT .....	14
7. SUSPENSION AND WITHDRAWAL OF CERTIFICATION .....	16
8. INFORMATION ON CERTIFIED PFPP MANUFACTURERS .....	17
9. APPEALS AGAINST DECISIONS .....	17
10. COMPLAINTS .....	17
11. CONFIDENTIALITY .....	18
12. EXPERIENCE AND QUALIFICATION OF LEAD AUDITORS AND TECHNICAL AUDITORS .....	18
<b>TECHNICAL REGULATIONS .....</b>	<b>20</b>
1. INTRODUCTION .....	21
2. QUALITY SYSTEM .....	21
3. CERTIFIED PFPP MANUFACTURERS' QUALITY RESPONSIBILITIES .....	21
4. TECHNICAL DEFINITIONS .....	21
5. EVALUATION OF CONFORMITY .....	22
6. MARKING AND LABELLING .....	28
7. REQUIREMENTS OF PASSIVE FIRE PROTECTION PRODUCTS AND PARTS .....	28
8. MODIFICATION TO ORIGINAL DESIGN OF CERTIFIED PFPP .....	36
<b>APPENDIX A – GUIDELINE FOR SELECTING SAMPLE FOR AUDIT TESTING (RECERTIFICATION) .....</b>	<b>38</b>

# **PRODUCT CONFORMITY CERTIFICATION SCHEME**

**FOR**

**PASSIVE FIRE PROTECTION PRODUCTS**

**(FIRE DOOR & NON-LOADBEARING**

**FIRE PARTITION)**

**PCCS – PFPP**

**PART ONE**

**Issue 3**

**ADMINISTRATIVE REGULATIONS**

**Hong Kong Institute of Steel Construction (Fire Group)**

**PRODUCT CONFORMITY CERTIFICATION SCHEME  
FOR PASSIVE FIRE PROTECTION PRODUCTS (FIRE  
DOOR & NON-LOADBEARING FIRE PARTITION)**

**PCCS-PFPP**

**ADMINISTRATIVE REGULATIONS**

**1. INTRODUCTION**

- 1.1** The purpose of the Scheme is to ensure that all passive fire protection products (PFPP) produced by Certified PFPP Manufacturers meet Purchasers' specified requirements in accordance with the requirements under the Buildings Ordinance and associated regulations described in Part E of Code of Practice for Fire Safety in Buildings 2011. This is a product certification scheme that requires Certified PFPP Manufacturers to operate a quality system relevant to production and supply of passive fire protection products, which is certified to ISO 9001 and complies with 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 PFPP Manufacturers and certification body in relation to the Scheme.
- 1.3** The Technical Regulations set out the general technical requirements for the Scheme and the specific requirement for the specific PFPP (i.e. fire doors and/or partition wall).
- 1.4** This Scheme is a System 5 product certification scheme in accordance with ISO/IEC 17067 which includes initial assessment of quality and production systems, initial plant inspection and type testing, reassessment of Certified PFPP Manufacturers' quality and production systems, followed by periodic surveillance visits and regular audit testing that takes into account the Certified PFPP Manufacturers' quality system and the testing of samples.
- 1.5** A Certification Body who uses this Scheme for certification of passive fire protection products manufacturing plants, shall be accredited by Hong Kong Accreditation Service (HKAS) under the Hong Kong Certification Body Accreditation Scheme (HKCAS) or its Mutual Recognition Agreement (MRA) Partners in accordance with this Scheme and ISO/IEC 17065.
- 1.6** In order to ensure an impartial operation of the Scheme for Certification, the parties involved in the certification scheme with potential conflict of interests shall be independent from each other. The manufacturers of the certified products (applicants), the notified bodies (testing laboratories and certification bodies), the purchasers / end-users and their representatives (such as the project Authorized Person, Registered Structural Engineer and Registered Contractor), involved in administration and management of the project using products of this scheme, shall be independent from each other.

## 2. GENERAL DEFINITIONS

For the purposes of this document, the terms and definitions given in BS EN ISO 13943: 2010 Fire Safety, Vocabulary and the following definitions are applied to the Regulations:

### 2.1 **Administrative Regulations**

The regulations that set out basic Administrative Requirement for the Scheme.

### 2.2 **Applicant**

A firm or company engaged in production and supply of passive fire protection products who has formally applied for certification to become a Certified PFPP Manufacturer.

### 2.3 **Areas for Improvement**

Areas for improvement (AFIs) 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.

### 2.4 **Assessment**

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

### 2.5 **Audit Testing**

Sampling, inspection and testing of passive fire protection products which are ordered by an assessment team during Certification, Surveillance and Recertification or based on the production volume whichever applicable or requested by Certification Body after critical nonconformity has been raised. In Certification, Surveillance and Recertification Assessments, passive fire protection products shall be sampled and tested for audit testing. The testing and compliance standards shall be confirmed by the assessment team in considering the fire resistance rating of the products and the Regulations of this Scheme. The fire resistance tests shall be conducted by an independent HOKLAS, or its MRA partners, accredited laboratory and the results shall be produced in a HOKLAS or its MRA partners endorsed test reports. The Certification Body shall assign a technical auditor to witness the fire resistance tests.

### 2.6 **Auditor**

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

### 2.7 **Certificate of Conformity**

The certificate issued by the Certification Body to confirm certification of an Applicant or a Certified PFPP Manufacturer has been assessed and complied with Scheme Requirements in respect of a particular passive fire protection product manufacturing plant.

### 2.8 **Certification**

Acceptance by the Certification Body, on the basis of assessments, that the Applicant or the Certified PFPP Manufacturer complies with the Regulations for a particular passive fire protection product.

**2.9 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 PFPP Manufacturer.

**2.10 Certification Body (CB)**

An organization which is accredited by HKAS under the Hong Kong Certification Body Accreditation Scheme (HKCAS), or its MRA partners in accordance with this Scheme and ISO/IEC 17065 to process applications from the Applicant and to grant certification or otherwise to the Applicant.

**2.11 Certification Mark**

The Certification Body logo issued by Certification Body which Certified PFPP Manufacturers are licensed to use. The use of this logo should be in accordance with the Regulations of the Certification Body.

**2.12 Certified PFPP Manufacturer**

An Applicant who has achieved the Certification.

**2.13 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 PFPP Manufacturer produces.

**2.14 Family of Products**

A range of products with similar form of construction and details, and within the scope of allowed minor modification as defined in the FPA report.

**2.15 Initial Type Testing**

A method under which a sample of the product is selected in the certification audit and tested according to a prescribed test method in order to verify full compliance with the relevant Technical Requirements.

**2.16 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 PFPP Manufacturer produces.

**2.17 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 passive fire protection products that the Certified PFPP Manufacturer produces.

**2.18 Passive Fire Protection Products**

Products which resist fire penetration and their fire resistance performance shall be determined by the fire resistance period with respect to integrity and insulation. In particular, only fire doors and non-loadbearing fire partitions have been adopted in this Scheme.



- 2.19 Plant**  
A Plant for the production of certified passive fire protection products.
- 2.20 Plant Production Control (PPC)**  
The manufacturer shall establish, document and maintain a PPC system to ensure that the products placed on the market comply with the declared performance of the essential characteristics.
- 2.21 Plant Register**  
The register of certified Plant maintained by the Certification Body of all Plants which have attained Certification and are currently certified.
- 2.22 Purchaser**  
An individual, firm or company who entered into a contract with a Certified PFPP Manufacturer to purchase certified passive fire protection products.
- 2.23 Quality Assurance**  
All the activities and functions concerned with the attainment of the quality of passive fire protection products.
- 2.24 Quality Control**  
The operational techniques and activities that sustain the quality of passive fire protection products as set out in a specification agreed between the Purchaser and the Certified PFPP Manufacturer and in accordance with the Regulations.
- 2.25 Quality Manual**  
The document describing the Applicant's or Certified PFPP Manufacturer's structures, resources, procedures and methods which together ensure that the Applicant or Certified PFPP Manufacturer can meet the requirements of the Scheme.
- 2.26 Quality Records**  
The records required by the Certified PFPP Manufacturer's Quality Manual to be kept by the Certified PFPP Manufacturer to meet the requirements of the Regulations.
- 2.27 Quality System Management Office**  
A location at which a Certified PFPP Manufacturer's quality and production records are maintained.
- 2.28 Regulations**  
The combined Administrative Regulations and Technical Regulations.
- 2.29 Scope of Certification**  
A range of products that an Applicant applies for the product conformity certification under this Scheme.
- 2.30 Scheme**  
The product conformity certification scheme for the certification of the production of passive fire protection products. The Scheme is owned by Hong Kong Institute of Steel Construction (HKISC)
- 2.31 Technical Regulations**  
The regulations which set out the technical requirements of the Scheme.

### **3. PREREQUISITES FOR PARTICIPATION**

- 3.1** The Applicant will be required to demonstrate the ability to comply with the Regulations and shall confirm agreement to comply with the Regulations.
- 3.2** The Applicant shall nominate a quality manager to be responsible for the overall management of the passive fire protection products production and supply activities of the Plant of the Applicant.
- 3.3** The Applicant shall establish and maintain a documented quality system (ISO 9001) in accordance with the requirements of the Administrative Regulations. The same quality system shall apply to the production of passive fire protection products in a Plant of the Applicant within the Scheme.
- 3.4** 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.

### **4. PROCEDURES FOR APPLICATION AND CERTIFICATION**

#### **4.1 Application**

- 4.1.1** For consideration to become a Certified PFPP Manufacturer, an Applicant shall:
  - 1. complete and submit the application form prescribed by Certification Body;
  - 2. pay fee including an application fee, a certification audit fee, a product testing fee and all the subsequent fees for the certification etc.;
  - 3. provide the Certification for the ISO 9001 system for the business office and production plant, Quality Manual and related documentations e.g. scope of certification, quality manual, drawings and technical information including specifications related to the products, certificates of origin for purchased raw materials, etc. for Assessment;
  - 4. provide the past records related to the audit of PCCS-PFPP, if any.
  - 5. nominate a person to be the management representative and the Applicant's formal contact point 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 carry out document review and arrange to perform on site assessment of the Quality Management System and Manufacturing Plant.

4.2.2 Certification Assessment shall comprise the following:

1. Overall assessment of the quality management and PPC systems.
2. Quality management system office. The assessment team will assess the quality system relating to the Plant by an assessment of quality and Production records.
3. Manufacturing Plant. The assessment team will assess the plant and equipment including the calibration of such plant, equipment, PPC processes and the operation of the relevant sections of the Certified PFPP Manufacturer's quality and technical systems conforming to the Regulations.
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 passive fire protection products to the specified criteria in the Regulations.
5. Initial Type Testing. The samples of the products shall be selected by the Certification Body for the purpose of initial type testing. The fire resistance test shall be carried out by an independent HOKLAS, or its MRA partners, accredited laboratory and the results produced in a HOKLAS or its MRA partners endorsed test report. The Certification Body shall assign a technical auditor to witness the fire resistance tests. Details for initial type testing refer to the Technical Regulation.

The results, which include the Test Reports of the certified product and the associated Fire Performance Assessment (FPA) Reports about the permitted minor variations for the family of products shall be evaluated by the assessment team of the Certification Body for generating the approved scope of product variation.

4.2.3 On completion of the Certification Assessment, the assessment team will notify the Applicant the type of nonconformities found and obtain the Applicant's acknowledgement of these. The assessment team will indicate orally the recommendations 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 taken which will eliminate 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 agreed timeframe 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 to be taken 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 agreed time frame 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 abided by the Regulations and the regulations of the Certification Body. A Certificate of Conformity will be issued by Certification Body to the Applicant for that Plant.
- 4.3.3 Details of the Certified PFPP Manufacturer together with its locations and details of the certified Plant will be included on the Plant Register of 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.

4.3.5 For traceability of records, the Certification Body is responsible to keep the following documents of not less than 5 years.

1. Application documents;
2. Certification assessment records;
3. Certification documents;
4. Surveillance assessment records;
5. Re-certification assessment records and documents;
6. Suspension and withdrawal of certification records; and
7. Complaint and investigation records.

4.3.6 Documents from one Certification Body shall not be transferrable to another Certification Body for products conformity certification.

#### **4.4 Certificate of Conformity and Certification Mark**

4.4.1 Upon Certification, conformity of passive fire protection products to the PCCS-PFPP Scheme shall be indicated by a Certificate of Conformity issued by the Certification Body. The Certified PFPP 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:

1. The name and address of the Certification Body;
2. The name and address of the Certified PFPP Manufacturer and of the Plant;
3. The name of the certified passive fire protection product;
4. Statement that the passive fire protection product conforms to the requirements of the relevant product specification standard and the conformity is established according to the PCCS-PFPP Scheme;
5. List of important components and materials from other suppliers and sub-contractors associated with the certified passive fire protection products, like fire rated glass, fire rated boards, intumescent fire seals, smoke seals or ironmongeries etc. The list shall provide specific name and model of the important components and the name of supplier / sub-contractor;
6. The scope of allowable product variations based on the FPA report;
7. 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 documentation used for the certified passive fire protection products.

4.4.3 A Certified PFPP 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:

1. The identification number of the Certified PFPP Manufacturer,
2. The standard designation of the passive fire protection product to the PCCS-PFPP Scheme.

## **5. OBLIGATIONS OF CERTIFIED PFPP MANUFACTURERS**

- 5.1** The Certified PFPP Manufacturer shall operate a quality management system in accordance with ISO 9001. The Certified PFPP Manufacturer shall also comply with the Regulations.
- 5.2** The Certified PFPP Manufacturer's quality and technical documentations shall be applied to its PPC and supplying passive fire protection products within the Scheme.
- 5.3** The Certified PFPP Manufacturer shall pay an annual fee to Certification Body for each Certification. The Certified PFPP 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 PFPP Manufacturer shall bear the cost of any Audit Testing which may be directed.
- 5.4** The Certified PFPP 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 PFPP Manufacturer shall not sub-contract the production and supply of passive fire protection products 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 PFPP Manufacturer and the Purchaser has been informed of and agreed with the sub-contract arrangement.
- 5.6** The Certified PFPP Manufacturer may use the Certification Mark as described before but shall not use it in a manner that may bring the Scheme or the Certification Body into disrepute.
- 5.7** The Certified PFPP Manufacturer shall keep the Certification Body informed in writing of any changes in his circumstances which may affect Certification. Such changes include:
1. Changes in ownership or name.
  2. Changes of its management representative or company directors.
  3. Changes of Certification for the ISO 9001 system for the plant and Quality System in its Plant.
  4. Significant changes of activities related to production of passive fire protection products e.g. changes of suppliers for sources of the raw materials
  5. Changes of scope of certification
  6. Changes of the location of the Plant and/or Quality System Management Office.
  7. Closure of a manufacturing Plant.
- 5.8** The Certified PFPP 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 PFPP Manufacturer may be asked not to release the product before the performance of on site assessment.

- 5.9** The Certified PFPP Manufacturer shall keep a list of its purchasers who purchased the certified passive fire protection product for the purpose of recall when necessary. An identification system (i.e. RFID, 2d Bar Code or similar equivalent) should be in place to ensure that any products to be recalled, where necessary, could be located easily.

## **6. SURVEILLANCE ASSESSMENT AND RECERTIFICATION ASSESSMENT**

### **6.1 Continual Periodical Assessments**

- 6.1.1** After Certification, the assessment team will conduct periodic Surveillance Assessments to the Plant and associated Quality System Management Office, for assessment of the Certified PFPP 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 once for every twelve months.

Surveillance Assessments shall comprise the followings:

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 PFPP Manufacturer's quality and technical documentations conforming to the Regulations. Audit on each manufacturing line for each product will be conducted.
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 passive fire protection products to the specified criteria in the Regulations and relevant requirements.
4. Audit Testing (Surveillance). The surveillance assessment team will select samples randomly at the Plant for destructive and non-destructive testing to check the compliance of the physical properties and the assembly of the passive fire protection products against the product specifications.

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

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 PFPP 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 PFPP 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 PFPP 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 PFPP Manufacturer is persistently failing to comply with his 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 except that the initial type testing for fire resistance performance will be substituted by an Audit testing (Recertification). The scope of certification could be extended to cover a wider range of products in the recertification assessment provided that the new range of products are of similar form of construction and details, within the scope of allowed minor modification as defined in the FRA report and agreed by the CB; otherwise, any extension of scope of certification shall be carried out as if it is an initial Certification Assessment and initial type testing is to be conducted.
- 6.4.2 During the recertification assessment, testing to cover the full scope of application is not necessary. Alternatively, an audit testing is required to provide a monitoring on the certified product to reveal possible invisible deficiency of the manufacturing line. The Certification Body shall randomly take one sample, which is the most representative from the family of products as determined by the CB (see Appendix A for details), at the point of release of passive fire protection products by the plants. The sample will then be sent for a fire resistance test carried out by a HOKLAS, or its MRA partners, accredited laboratory and the results shall be produced in a HOKLAS or its MRA partners endorsed test reports. The Certification Body shall assign a technical auditor to witness the fire resistance tests.
- 6.4.3 A satisfactory audit testing result from the random selected sample applies to the products within the same family of products. In case the certified scope of the factory has more than one family of products, one sample from each family of products shall be selected for audit testing.

## **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 Management System, 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 PFPP 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 his obligations under the Scheme, then the Certification Body will suspend the Certification for all certified Plants of the Certified PFPP Manufacturer.
- 7.3 If the Certification is suspended in accordance with Clause 7.2, a full Certification Assessment of the Certified PFPP 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 PFPP 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 PFPP Manufacturer.
- 7.5** In the event that the Certification Body suspends or withdraws the Certification of any Plants of a Certified PFPP 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 PFPP Manufacturer, publish any decisions reinstating a Certification.
- 7.6** Upon suspension or withdraws of the Certification of Conformity, the PFPP Manufacturer shall notify his customers and shall call back all products which fail systematically to comply with the Scheme.
- 7.7** If the Certification for a Plant is suspended or withdrawn, the Certified PFPP Manufacturer shall cease to use the Certification Mark in relation to that Plant.

## **8. INFORMATION ON CERTIFIED PFPP MANUFACTURERS**

- 8.1** Upon the request of any purchasers, end users or any concerned parties of the certified passive fire protection products. The Certification Body will provide verbal and, if requested, written confirmation of the status of any Certified PFPP 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 PFPP Manufacturer shall have the right of appeal against any decisions of the Certification Body. Details of the appeal procedure shall refer to the Certification Body regulations.

## **10. COMPLAINTS**

- 10.1** Certified PFPP 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 Assessments.

- 10.2** The Certification Body will keep a record of all written complaints, in relation to a Certified PFPP Manufacturer received from any concerned parties. Such complaints will be investigated and reported to the Certification Board or equivalent in accordance with the Certification Body regulations.
- 10.3** The Certification Body will respond to complainants with a report which is confined to a statement upon the Certification status of the Certified PFPP Manufacturer and its Plants.
- 10.4** The Certified PFPP Manufacturers shall take appropriate actions with respect to the Certification Body's decision on the complaints and make good any deficiencies found in the products or the services to comply with the requirements of this Scheme.

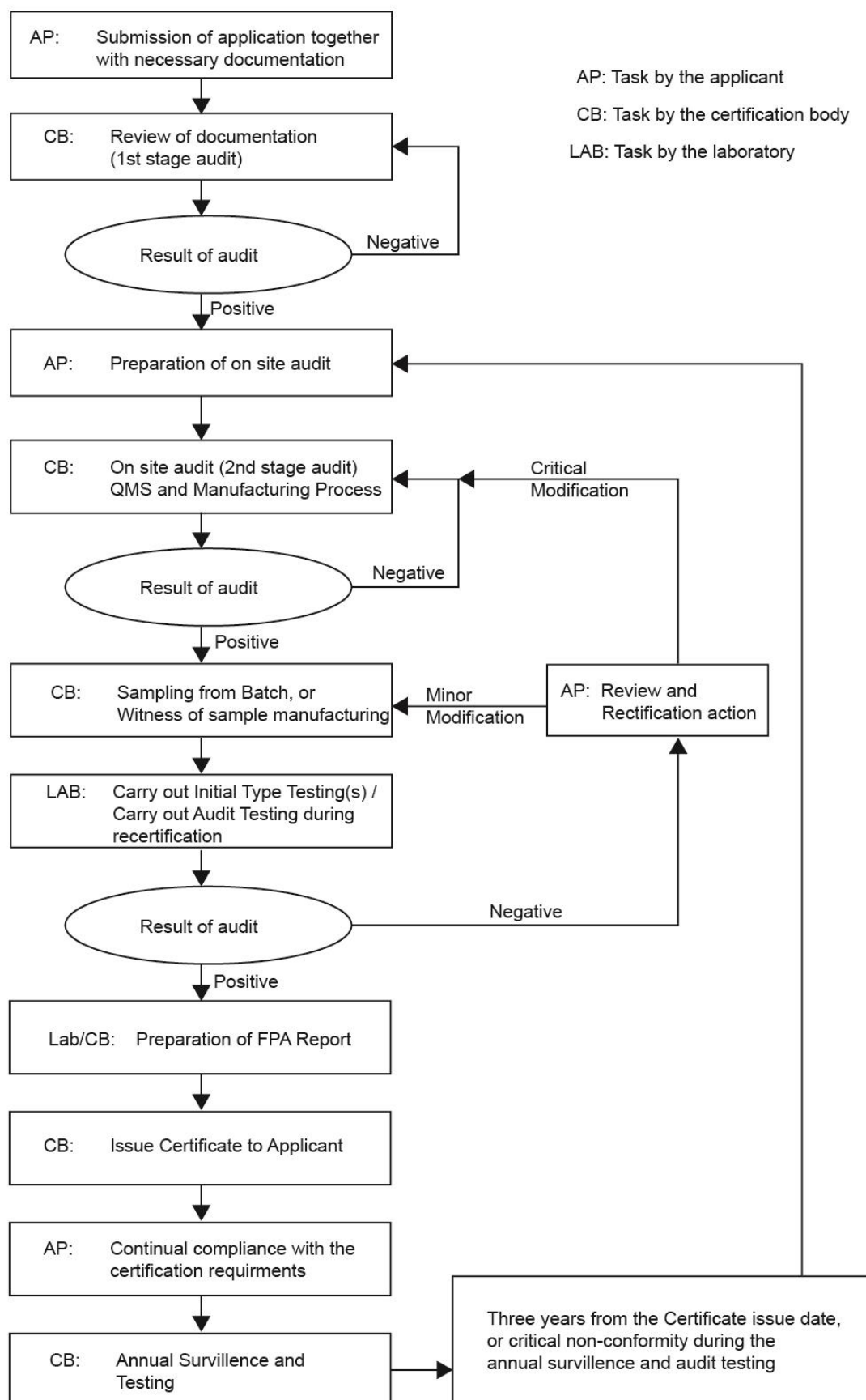
## **11. CONFIDENTIALITY**

- 11.1** Certified PFPP 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.
- 11.2** The assessment team and the Certification Body shall not disclose information or records obtained from Certified PFPP Manufacturers except as may be permitted by the Certification Body regulations.

## **12. EXPERIENCE AND QUALIFICATION OF LEAD AUDITORS AND TECHNICAL AUDITORS**

- 12.1** Lead Auditors who are eligible for auditing PCCS-PFPP quality management system shall have the following registration:  
- With minimum of two years quality management system auditing experience and with Quality Management System (QMS) and Product Certification training acceptable to HKAS or equivalent for this purpose.
- 12.2** Technical Auditors who are eligible for auditing PCCS-PFPP technical management system shall have the following training, experience and qualifications:
1. A recognized Degree in Fire Engineering, Architectural Studies, Building Services, Civil Engineering, Materials Science, Surveying, Production Engineering, Structural Engineering, Mechanical Engineering, Chemical Technology, Chemical Engineering or equivalent and;
  2. With QMS and Product Certification training acceptable to Certification Body for this purpose, and
    - a) a minimum of two years post-degree experience in relevant industry; or
    - b) a minimum of two years fire testing experience; or
    - c) a minimum of two years quality management system audit experience for relevant manufacturing industry.

## FLOW CHART TO OBTAIN AND MAINTAIN THE PCCS – PFPP



**PRODUCT CONFORMITY CERTIFICATION SCHEME**

**FOR**

**PASSIVE FIRE PROTECTION PRODUCTS**  
**(FIRE DOOR &**  
**NON-LOADBEARING FIRE PARTITION)**

**PCCS – PFPP**

**PART TWO**

**Issue 3**

**TECHNICAL REGULATIONS**

**HONG KONG INSTITUTE OF STEEL CONSTRUCTION**

**PRODUCT CONFORMITY CERTIFICATION SCHEME  
FOR PASSIVE FIRE PROTECTION PRODUCTS  
(FIRE DOOR & NON-LOADBEARING FIRE  
PARTITION)**

**PCCS – PFPP**

**TECHNICAL REGULATIONS**

**1. INTRODUCTION**

- 1.1 This Technical Regulations set out the technical requirements of the Scheme.
- 1.2 This Technical Regulations shall be read in conjunction with the Administrative Regulations.
- 1.3 This Technical Regulations cover the technical requirements for the certification of fire doors (fire rated doors) and fire barriers in form of a non-loadbearing partitions without openings unless otherwise stated, i.e. non-loadbearing fire partitions. For non-loadbearing fire partitions, the lining and decorative finished affixed on it is excluded from this scheme.

**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 passive fire protection products produced and supplied under the Scheme conforms to the relevant requirements and the Regulations.

**3. CERTIFIED PFPP MANUFACTURERS' QUALITY RESPONSIBILITIES**

- 3.1 The Certified PFPP 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 **Passive Fire Protection Products (PFPP)**  
Products which respond against flame, heat and smoke and prevent fire development and spread to maintain the fundamental requirements of building compartmentation, structural stability, fire separation and safe means of escape. Their fire performances shall be determined by the fire resistance rating with respect to integrity and thermal insulation or by the classification of combustibility. Fire rated doors and non-loadbearing fire partitions are examples of these products.
- 4.2 **Fire Resistance**  
The time for which an element of building construction is able to withstand exposure to a standard temperature/time and pressure regime without a loss of its fire separating function or loadbearing function or both.

#### **4.3 Fire Resistance Rating (FRR)**

The period of time that a building element is capable of resisting the action of fire when tested in accordance with the test standard as specified in this regulation. Fire resistance ratings are designated by three terms, to represent the make up of the element of construction, i.e. X/Y/Z, where

X: Stability fire resistance rating (minutes)

Y: Integrity fire resistance rating (minutes)

Z: Insulation fire resistance rating (minutes)

##### **4.3.2 Integrity**

The ability of a specimen of a separating element to contain a fire to specified criteria for collapse, freedom from holes, cracks and fissures and sustained flaming on the unexposed face.

##### **4.3.3 Insulation**

The ability of a specimen of a separating element to restrict the temperature rise of the unexposed face to below specific levels.

#### **4.4 Fire barriers**

The construction that has a fire resistance rating separating one space from another, it may form part of a fire compartment.

### **5. EVALUATION OF CONFORMITY**

#### **5.1 General requirements**

The Scheme for the evaluation of conformity for fire resistance performance relating to the technical aspect includes the following tasks:

1. Inspection of plant QMS and Plant Production Control (PPC)
2. Initial Type Tests (ITT)
3. Audit Testing (AT)

A Certified PFPP 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.

#### **5.2 Plant Production Control (PPC)**

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

Any change in raw materials, manufacturing procedures or control plan that can affect the properties of the passive fire protection products 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:

1. inspection and/or testing of raw materials;
2. inspection and/or testing of production equipment and process;
3. inspection and/or testing on finished products.

#### 5.2.1 Production

##### 5.2.1.1 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.

##### 5.2.1.2 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.

#### 5.2.2 Finished products

The number and sizes of the samples, the frequency of sampling, the tests performed and the results obtained shall be recorded. The test shall be conducted at least with the frequency specified in Table 5. For the purposes of PPC, alternative tests to those given in Table 5 may be used, provided that a correlation of the test results between both tests, for the product in question, is established.

#### 5.2.3 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.

#### 5.2.4 Registration and traceability

The Certified PFPP 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.

Traceability of the passive fire protection products based on an electronic means using either radio frequency identification (RFID) or two dimensional bar code systems should be adopted as far as practicable. The use of this system provides a control mechanism of the authenticity of the passive fire protection products throughout the supply chain from the factory to the purchaser.



### 5.3 Initial Type Tests (ITT)

- 5.3.1 Due to the variety of the forms of PFPP in the market and the physical constraints of the fire tests, it is usually not effective to duplicate the exact prototype for evaluation. In order to reasonably broaden the scope of application of the certificated PFPP, the samples and the number of tests required for the Initial Type Tests shall be designed for this purpose. The basis to work out the specification of samples and number of tests required for initial type tests in relation to the scope of application may refer to the relevant standards. A FPA report shall be produced based on the test results from the initial type tests to form the scope of certification of the PFPP.
- 5.3.2 One first evaluation of a passive fire protection product to the requirements of the Regulations, appropriate initial type testing using the test method as mentioned in **Table 2 to Table 4** in Section 7 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.
- 5.3.3 The samples for initial type testing shall be selected by the Certification Body by the following means:
- Either
- a) The assessment team shall take random representative samples at the point of release of passive fire protection products from the Plant and/or depots supplied with the passive fire protection products by the Plant. The selected samples will be marked and submitted for initial type testing.
- or
- b) The assessment team agreed specific design(s) of fire doors, which are aligned with the proposed scope of certification suggested by the client, and the representative of the assessment team shall witness the whole process of manufacturing. The end product(s) will be marked and submitted for the initial type testing.
- 5.3.4 The Certification Body shall assign a technical auditor to witness the initial type test for the PFPP to be certified in the accredited laboratory during testing of the PFPP.
- 5.3.5 The results from the initial type tests which used as the primary test evidences for supporting the general construction of the doorsets shall achieve at least the declared fire resistance performance without reduction, i.e. the doorset declared to certified as the doorset to achieve fire resistance performance of 60 minutes integrity and insulation, any result less than 60 minutes will not be accepted as the supporting evidence.
- 5.3.6 The results from the initial type tests which used as the supplementary test evidences for supporting the minor variations of the doorsets, such as the use of alternative glass pane for vision panel or alternative ironmongery, the results from the supplementary test reports may have deficiency provided that the deficiency is not relevant to the supporting object with reasonable justification.

#### **5.4 Audit Testing (Surveillance)**

- 5.4.1 Audit Testing (Surveillance) shall be carried out by the CB during surveillance visit to ensure the compliance of quality control as specified in the PPC. During the surveillance visit, the CB shall select samples for audit testing (surveillance) in accordance with Table 5.

#### **5.5 Audit Testing (Recertification)**

- 5.5.1 Audit testing (recertification) is needed to provide a monitoring on the certified product to reveal the invisible deficiency of the PPC procedure or the unaware changed in raw material. The frequency of audit testing (recertification) shall be every three years in the certification cycle. The CB shall randomly take sample, which is the most representative from the family of products as determined by the CB (see Appendix A for details), at the point of release of passive fire protection products by the plants for audit testing (recertification) in accordance with Table 5. The fire resistance test shall be carried out by a laboratory accredited by HOKLAS, or its MRA partners, for the concerned test and the results shall be produced in a HOKLAS or its MRA partners endorsed test reports. The test methods for the fire performance tests shall be as specified in Tables 2 to 4. The Certification Body shall assign a technical auditor to witness the fire resistance tests. The results from an audit test (recertification) may be as shown in Table 1a and Table 1b.

Table 1a - Consequence of Audit Testing Results (Fire Resistance Test)

Result	Corrective Action Required	Time schedule
FRR > or = required	None required	N/A
FRR < Required period	<p>(i) FRR in between the required FRR and 90% of the required FRR</p> <p>The reasons for the reduced performance shall be identified. A re-test shall be conducted. As long as the result of the re-test achieve the required FRR, the result is satisfactory to use for recertification.</p> <p>If the result of the re-test is again less than the required FRR, The certification will be suspended until the reason for the performance had been determined. The probable number of defective products shall be determined and dialogue between the certificate holder and CB initiated in order to discuss notifying the market and to consider a product recall. The product shall be retested and the product specification and manufacturing procedures reviewed.</p>	<p>Providing the reasons are identified and is not the fault in manufacturing process, a re-test on the same/similar sample shall be conducted within 1 month;</p> <p>or</p> <p>Providing the reasons are identified and requires minor rectification of manufacturing process, a re-test on the rectified sample shall be conducted within 1 month. If the re-tested sample achieved the required FRR, the result is satisfactory to use for recertification, however, the scope of certification shall be modified to reflect the rectification made.</p>
	<p>(ii) FRR &lt; 90% of the required period</p> <p>The certification will be suspended until the reason for the performance had been determined. The probable number of defective products shall be determined and dialogue between the certificate holder and CB initiated in order to discuss notifying the market and to consider a product recall. The product shall be retested and the product specification and manufacturing procedures reviewed.</p>	<p>The scale of the problem and destination of products likely to be deficient shall be determined within three weeks. Re-test(s) must take place within 3 months otherwise certification will be limited or withdrawn. Steps to notify the market and/or to organize a product recall shall take place within two weeks of the retest. Procedure review shall be conducted within 3 months of the original test.</p>

Failure to comply with the required actions within the agreed time schedule shall result in the withdrawal of certification.

Table 1b - Consequence of Audit Testing Results (Smoke Control Test)

Result	Corrective Action Required	Time schedule
Smoke Control Performance $\geq$ required	None required	N/A
Smoke Control Performance $<$ Required performance	<p>(i) Performance in between the required and 90% of the required performance</p> <p>The reasons for the reduced performance shall be identified. A re-test shall be conducted. As long as the result of the re-test achieve the required performance, the result is satisfactory to use for recertification.</p> <p>If the result of the re-test is again less than the required performance, The certification will be suspended until the reason for the performance had been determined. The probable number of defective products shall be determined and dialogue between the certificate holder and CB initiated in order to discuss notifying the market and to consider a product recall. The product shall be retested and the product specification and manufacturing procedures reviewed.</p>	<p>Providing the reasons are identified and is not the fault in manufacturing process, a re-test on the same/similar sample shall be conducted within 1 month;</p> <p>or</p> <p>Providing the reasons are identified and requires minor rectification of manufacturing process, a re-test on the rectified sample shall be conducted within 1 month. If the re-tested sample achieved the required performance, the result is satisfactory to use for recertification, however, the scope of certification shall be modified to reflect the rectification made.</p>
	<p>(ii) Performance <math>&lt;</math> 90% of the required performance</p> <p>The certification will be suspended until the reason for the performance had been determined. The probable number of defective products shall be determined and dialogue between the certificate holder and CB initiated in order to discuss notifying the market and to consider a product recall. The product shall be retested and the product specification and manufacturing procedures reviewed.</p>	<p>The scale of the problem and destination of products likely to be deficient shall be determined within three weeks. Re-test(s) must take place within 3 months otherwise certification will be limited or withdrawn. Steps to notify the market and/or to organize a product recall shall take place within two weeks of the retest. Procedure review shall be conducted within 3 months of the original test.</p>

Failure to comply with the required actions within the agreed time schedule shall result in the withdrawal of certification.

## **6. MARKING AND LABELLING**

### **6.1 General Requirements**

Products complying with the Regulations of the PCCS-PFPP 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,
- (d) PCCS-PFPP and the fire resistance rating,
- (e) Type of product,
- (f) Model and serial numbers,
- (g) Details of size,
- (h) Address of manufacturer.

Note:

This may use a designation of Fire Resistance Rating (FRR) in terms of X/Y/Z, that is stability/integrity/insulation in minutes, i.e. a fire door of FRR -/60/- or a fire door of -/60/60, etc.

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

## **7. REQUIREMENTS OF PASSIVE FIRE PROTECTION PRODUCTS**

- 7.1** This section gives the basic requirements for the PFPP which are essential to show its fire resistance performance and smoke control performance, or if necessary, the reaction to fire performance (Table 2 to Table 4). Other physical properties of the components of the PFPP which were used for internal quality checking may be included in the certification scheme upon requested. However, the test methods for evaluating those physical properties will not be mentioned in this regulation.

- 7.2** The fire performance test standards/requirements for fire door shall be in accordance with **Table 2**.

**Table 2 – Fire Performance Test Standards for Fire Doors**

PERFORMANCE TO CONSIDER	TEST STANDARDS	RESULTS FOR CERTIFICATION
Fire resistance performance	<ol style="list-style-type: none"> <li>BS EN 1634-1: 2008 Fire resistance and smoke control tests for door, shutter and openable window assemblies and elements of building hardware – Part 1: Fire resistance test for doors, shutters and openable windows; or</li> <li>BS EN 1634-2: 2008 Fire resistance tests for door, shutter and openable window assemblies and elements of building hardware – Part 2: Fire resistance characterization test for elements of building hardware; or</li> <li>BS 476-20: 1987 Fire tests on building materials and structures – Part 20: Method for determination of the fire resistance of construction (general principles); or</li> <li>BS 476-22: 1987 Fire tests on building materials and structures – Part 22: Methods for determination of the fire resistance of non-loadbearing elements of construction.</li> <li>BS EN 14600: 2005 Doorsets and openable windows with fire resisting and/or smoke control characteristics - Requirements and classification.</li> </ol>	<p>The results shall be expressed as X/Y/Z in minutes of 60 mins, 120 mins or 240 mins depends on the achieved fire resistance duration.</p> <p>e.g. -- / 120 / 60 means the doorset is certified for use as 120 minutes integrity and 60 minutes insulation and no loadbearing capacity is considered.</p>
Smoke control performance	<p>Doors with smoke seal should be tested at ambient temperature and medium temperature and demonstrated to comply with the smoke leakage rate criteria in accordance with the following applicable standards:</p> <ol style="list-style-type: none"> <li>BS EN 1634-3: 2004 Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware – Part 3: Smoke control test for door and shutter assemblies; or</li> <li>ISO 5925-1: 2007 Fire tests - Smoke- control door and shutter assemblies - Part 1: Ambient – and medium - temperature leakage tests; or</li> <li>UL 1784: 2009 UL Standard for Safety Air Leakage Tests of Door Assemblies; or</li> <li>AS 1530: Part 7: 2007 Methods for fire tests on building materials, components and structures- Smoke control assemblies – Ambient and medium.</li> <li>BS EN 14600: 2005 Doorsets and openable windows with fire resisting and/or smoke control characteristics - Requirements and classification.</li> </ol>	<p>The results shall be referred to the relevant classification document associated with the testing method. For example, the BS EN 13501-2: 2007 stated the S<sub>a</sub> and S<sub>m</sub> classifications using the test result from BS EN 1634-3: 2004.</p>

- 7.3** The fire performance test standards/requirements for non-loadbearing fire partitions shall be in accordance with **Table 3**.

**Table 3 – Fire Performance Test Standards for Non-loadbearing Fire Partitions without openings, unless otherwise stated (excluding lining and decorative finishes affixed on it)**

PERFORMANCE TO CONSIDER	TEST STANDARDS	RESULTS FOR CERTIFICATION PURPOSE
Fire resistance performance	<ol style="list-style-type: none"> <li>BS EN 1364-1: 1999 Fire resistance tests for non-loadbearing elements – Part 1: Walls; or</li> <li>BS 476-22:1987 Fire tests on building materials and structures – Part 22: Methods for determination of the fire resistance of non-loadbearing elements of construction.</li> </ol>	<p>The results shall be expressed as X/Y/Z in minutes of 60 mins, 120 mins or 240 mins depends on the achieved fire resistance duration.</p> <p>e.g. -- / 120 / 60 means the partition is certified for use as 120 minutes integrity and 60 minutes insulation and no loadbearing capacity is considered.</p>

- 7.4** The fire performance test standards/requirements for non-combustible materials shall be in accordance with **Table 4**.

**Table 4 – Fire Performance Test Standards for Non-combustible Materials if required under the Code of Practice for Fire Safety in Buildings 2011**

PERFORMANCE TO CONSIDER	TEST STANDARDS	RESULTS FOR CERTIFICATION PURPOSE
Non-combustibility of material	<ol style="list-style-type: none"> <li>Achieve the 'A1' Classification when tested in accordance with BS EN 13501-1: 2007: <ol style="list-style-type: none"> <li>BS EN ISO 1182:2010, Reaction to fire tests for products – Non- combustibility test; and</li> <li>BS EN ISO 1716:2010 Reaction to fire tests for products – Determination of the gross heat of combustion (calorific value);</li> </ol> <p>Or</p> </li> <li>BS 476-4: 1970, Fire tests on building materials and structures — Part 4: Non-combustibility test for materials.</li> </ol> <p>Other appropriate non-combustibility tests include:</p> <ol style="list-style-type: none"> <li>AS 1530:1: 1994 Methods for fire tests on building materials, components and structures Part 1: Combustibility Test for Materials;</li> <li>ASTM E 136 – 11 Standard test method for behavior of materials in a vertical tube furnace at 750°C.</li> </ol>	<p>The material shall be classified as 'combustible' or 'non-combustible' according to the test result.</p>

- 7.5** A FPA report based on the results from the fire performance test shall be produced which form the basis for the PFPP certified scope of application. The details for the FPA report shall refer to Section 8 of this Regulation.

- 7.6** The frequency for the initial type test, tests for plant production control and auditing testing and the related properties that need to be checked are summarized in Table 5.

**Table 5: Initial type test, production control test and audit testing frequency**

Test / Inspection Elements	Test / Inspection Method	Initial Type Test (ITT)	Production Control Test	Audit Testing (AT)	
				(Surveillance)	(Recertification)
Products for Opening in Fire Barriers in the Forms of Doors					
Fire and/or Smoke Control Doors (Timber or Timber Composite Doors)					
Overall fire resistance	See Table 2	Y	--	--	Y
Overall smoke control performance	See Table 2	Y	--	--	Y
Timber – materials	Raw material manufacturer certificate	Y	A	Y	Y
Timber – density and size	Physical test and measurement	Y	A	Y	Y
Timber - moisture content	Physical test and measurement	Y	A	Y	Y
Insulation boards/materials – materials*	Raw material manufacturer certificate	Y	A	Y	Y
Insulation boards – density and size	Physical test and measurement	Y	A	Y	Y
Insulation boards – bending strength	In-house	Y	A	Y	Y
Fire rated glazed materials*	Raw material manufacturer certificate	Y	A	Y	Y
Sealants and gaskets*	Raw material manufacturer certificate	Y	A	Y	Y
Intumescent fire seals, smoke seals*	Raw material manufacturer certificate	Y	A	Y	Y
Ironmongery	Raw material manufacturer certificate	Y	A	Y	Y
Dimensional check and structural inspection of overall configurations and internal components against certified product drawings	Destructive testing using a randomly selected certified fire and/or smoke control door	Y	A	Y	--



**Table 5: Initial type test, production control test and audit testing frequency (Cont.)**

Test / Inspection Elements	Test / Inspection Method	Initial Type Test (ITT)	Production Control Test	Audit Testing (AT)	
				(Surveillance)	(Recertification)
Products for Opening in Fire Barriers in the Forms of Doors					
Fire and/or Smoke Control Doors (Steel Doors)					
Overall fire resistance	See Table 2	Y	--	--	Y
Overall smoke control performance	See Table 2	Y	--	--	Y
Metal materials	Raw material manufacturer certificate	Y	A	Y	Y
Steel – tensile strength	BS EN 10002-1: 2001	Y	A	Y	Y
Steel – chemical analysis	In-house	Y	A	Y	Y
Insulation boards/materials- materials *	Raw material manufacturer certificate	Y	A	Y	Y
Insulation boards – density and size	Physical test and measurement	Y	A	Y	Y
Insulation boards – bending strength	In-house	Y	A	Y	Y
Fire rated glazed materials*	Raw material manufacturer certificate	Y	A	Y	Y
Sealants and gaskets*	Raw material manufacturer certificate	Y	A	Y	Y
Intumescent fire seals, smoke seals*	Raw material manufacturer certificate	Y	A	Y	Y
Ironmongery	Raw material manufacturer certificate	Y	A	Y	Y
Dimensional check and structural inspection of overall configurations and internal components against certified product drawings	Destructive testing using a randomly selected certified fire and/or smoke control door	--	A	Y	--

**Table 5: Initial type test, production control test and audit testing frequency (Cont.)**

Test / Inspection Elements	Test / Inspection Method	Initial Type Test (ITT)	Production Control Test	Audit Testing (AT)	
				(Surveillance)	(Recertification)
Products for Opening in Fire Barriers in the Forms of Doors					
Fire and/or Smoke Control Doors (Glazed Doors)					
Overall fire resistance	See Table 2	Y	--	--	Y
Overall smoke control performance	See Table 2	Y	--	--	Y
Steel frame – tensile strength	BS EN 10002-1: 2001	Y	A	Y	Y
Steel frame – chemical analysis	In-house	Y	A	Y	Y
Fire rated glazed materials*	Raw material manufacturer certificate	Y	A	Y	Y
Sealants and gaskets*	Raw material manufacturer certificate	Y	A	Y	Y
Intumescent fire seals, smoke seals*	Raw material manufacturer certificate	Y	A	Y	Y
Ironmongery	Raw material manufacturer certificate	Y	A	Y	Y
Insulation gel - density	In-house	Y	A	Y	Y
Insulation gel – setting time	In-house	Y	A	Y	Y
Dimensional check and structural inspection of overall configurations and internal components against certified product drawings	Destructive testing using a randomly selected certified fire and/or smoke door	--	A	Y	--

**Table 5: Initial type test, production control test and audit testing frequency (Cont.)**

Test / Inspection Elements	Test /Inspection Method	Initial Type Test (ITT)	Production Control Test	Audit Testing (AT)	
				(Surveillance)	(Recertification)
Products for Non-loadbearing Fire Partition Without Openings					
Walls and Partitions - Drywall Partitions					
Overall fire resistance	See Table 3	Y	--	--	Y
Partition materials*	Raw material manufacturer certificate	Y	A	Y	Y
Insulation boards – density and size	Physical test and measurement	Y	A	Y	Y
Insulation boards – bending strength	In-house	Y	A	Y	Y
Metal structural materials*	Raw material manufacturer certificate	Y	A	Y	Y
Mullion, transom and framing materials*	Raw material manufacturer certificate	Y	A	Y	Y
Timber framing density and thickness*	Physical test and measurement	Y	A	Y	Y
Sealants and gaskets*	Raw material manufacturer certificate	Y	A	Y	Y
Fire rated and insulation materials*	Raw material manufacturer certificate	Y	A	Y	Y
Dimensional check and structural inspection of overall configurations and internal components against certified product drawings	Destructive testing using a randomly selected certified fire wall / partition	--	A	Y	--

**Table 5: Initial type test, production control test and audit testing frequency (Cont.)**

Test / Inspection Elements	Test/Inspection Method	Initial Type Test (ITT)	Production Control Test	Audit Testing (AT)	
				(Surveillance)	(Recertification)
Products for Non-loadbearing Fire Partition Without Openings					
Walls and Partitions - Blockwork wall					
Overall fire resistance	See Table 3	Y	--	--	Y
Blocks - materials	Raw material manufacturer certificate	Y	A	Y	Y
Blocks – density and size	Physical test and measurement	Y	A	Y	Y
Blocks – compressive strength	In-house	Y	A	Y	Y
Metal structural materials*	Raw material manufacturer certificate	Y	A	Y	Y
Mullion, transom and framing materials*	Raw material manufacturer certificate	Y	A	Y	Y
Dimensional check and structural inspection of overall configurations and internal components against certified product drawings	Destructive testing using a randomly selected certified fire wall / partition	--	A	Y	--
Products Required to be Non-combustible					
Non-combustible Products					
Overall fire reaction	See Table 4	Y	--	--	Y
Non-combustible materials	See Table 4	Y	A	Y	Y
<b>Note:</b> 1. “Y” means yes. 2. Production Control Test frequency: “A” means 1 test / inspection for every 5000 finished products, with a minimum of 1 time per year and a maximum for 1 time per month. 3. Specimens of passive fire protection products shall be sampled randomly for representation of the products. 4. In-house method should be the test method of the manufacturer which is specified in their quality control system under ISO 9001 certification.  * Test/Inspection Elements depend on the product design requirements.					

## 8. MODIFICATION TO ORIGINAL DESIGN OF CERTIFIED PFPP

### 8.1 Minor Modifications to the Certified PFPP

Due to the variety of the forms of PFPP in the market and the physical constraints of the fire tests, it is usually not effective to duplicate the exact prototype for evaluation. Minor modifications (either additions or deletions) to the certified PFPP may be based on a **fire performance assessment** (FPA) in lieu of a real fire resistance test so that the modified PFPP can be continued to be certified.

The FPA shall be based on the fire test data of the original design and other relevant real fire test data. All data used shall be obtained from the valid endorsed test report either from HOKLAS or its Mutual Recognition Agreement (MRA) accredited laboratories. Data from test report of different standards shall not be applied as reference for the FPA, unless otherwise appraised.

- 8.2 As a FPA is a technical expert opinion for a modified PFPP as if it is subject to a fire test, it shall be carried out by technically competent personnel (Assessor) and reviewed by another competent personnel (Reviewer) before the finding is issued in a FPA report.

An assessor shall be a technical competent person with Engineering Degree plus at least 2 years relevant experience in fire testing or equivalent and assigned by the accredited laboratory or Certification Body.

A reviewer shall be the Approved Signature of a laboratory accredited by HKAS under HOKLAS or its MRA partners for fire testing. He or she shall have experience and qualifications as corporate or full membership of Hong Kong Institute of Architects, The Hong Kong Institute of Surveyors or Hong Kong Institution of Engineers (civil, structural, building, building services, geotechnical and fire discipline).

Assessors, reviewers and their employing organizations are required to abide by the Code and Rules of Conduct described in Annex C of Guide to Undertaking Assessments in lieu of Fire Tests.

The FPA report shall be issued by: –

1. a recognized laboratory accredited by the HKAS under HOKLAS or other laboratory accreditation bodies which have mutual recognition agreements with HOKLAS.
2. a recognized certification body accredited by the HKAS under HKCAS or other certification body accredited by other accreditation bodies which have reached mutual recognition agreements with HKCAS.

The subject category or type of the materials, products or components of the assessment should be within the accredited scope for testing or certification by the laboratory or the certification body.

The **FPA report** shall be endorsed by both the Assessor and Reviewer to confirm the validity of the expert opinion. It shall consist of inter alia the following:

- (a) Reference to the original endorsed fire test reports from which the data is retrieved;
- (b) A general description of the specific results from the endorsed fire test report relevant to the opinion made;
- (c) A detailed statement of the proposed variations;
- (d) A summary of the critical issues leading to the opinion, including the main points of the argument and any assumptions made;
- (e) A statement of the formal opinion;
- (f) The name of the **Assessor** and his/her signature;
- (g) The name of the **Reviewer** with his/her designation in the above-mentioned Discipline and his/her signature;
- (h) The name of the HOKLAS or its MRA partners accredited laboratory and its company logo;
- (i) An attachment of a current **Scope of Accreditation** of the accredited laboratory as a proof of its accreditation status.

## **Appendix A: Guideline for selecting sample for Audit Testing (Recertification)**

In selecting the sample for the audit testing (recertification), the sample shall be selected from readily available stock with the minimum requirements and, if possible, the most onerous situation as stated below (provided that the feature(s) as mentioned below is/are within the certified scope).

### **Minimum requirements:**

#### **1. Door leaf sizes**

The sizes of the door leaf shall be at least 900 mm wide by 2,200 mm high or up to the maximum certified sizes. The thickness shall be the nominal minimum thickness as within the certified scope.

### **Level of onerous for various features:**

#### **2. Door leaf configuration:**

Unequal width double-leaf > equal-width double-leaf > Single-leaf

#### **3. Door leaf action**

Double-acting > single-acting (Sliding door should belong to separate products of family)

#### **4. Door leaves engagement**

Unlatched, unlocked and unbolted > latched, locked and bolted (or as certified boundary condition)

#### **5. Door frame configuration:**

Flush door frame > L-profiled frame

#### **6. Vision panel<sup>\*Note1</sup>**

With vision panel, any sizes within the certified scope > Without vision panel

#### **7. Ironmongery<sup>\*Note1</sup>**

Concealed ironmongery > surface mounted ironmongery

\* Note 1: The certified scope may involve a number of different types of glass or ironmongeries, for example different brands. It is understood that a single audit testing (recertification) may not be able to cover the full range of the certified scope; The CB shall keep record that other types of glass or ironmongeries are selected in the next auditing testing (recertification).

© 2015 Hong Kong Institute of Steel Construction

Hong Kong Institute of Steel Construction administers the copyright and other intellectual property rights of these Regulations. All rights of Hong Kong Institute of Steel Construction are hereby reserved. No part of this document may be reproduced or transmitted in any form or by any means, including photocopying and recording, without the written permission of Hong Kong Institute of Steel Construction. Such written permission must also be obtained before any part of this document is stored in a retrieval system of any nature.