Guideline No.: C-02(201510)

C-02 FIRE DOORS

Issued date: October 20,2015

Foreword:

This Guide is a part of CCS Rules, which contains technical requirements, inspection and testing criteria related to classification and statutory survey of marine products.

This Guide is published and updated by CCS and can be found through http://www.ccs.org.cn . Comments or suggestions can be sent by email to ps@ccs.org.cn .

Historical versions and release date :

Main changes and effective date:

CONTENTS

FIRE DOORS

1 Application

1.1 This Guideline applies to the doors fitted in compartments and passages of ships and offshore installations according to the requirements for “A”, “B” and “H” class fire divisions.

1.2 The types of fire doors are as follows: single leaf fire doors, double leaf fire doors, sliding fire doors (i.e. fire sliding doors), lift fire doors, shutter fire doors, etc.

2 Normative references

2.1 The approval and inspection of fire doors are to be based on the following documents and their subsequent amendments:

(1) Regulations 3 and 9, Chapter II-2 of International Convention for the Safety of Life at Sea, 1974 and the amendments thereof;(2) IMO Resolution MSC.307(88)-the International Code for Application of Fire Test Procedures, 2010 (IMO 2010 FTP Code);

(3) Chapter 1, PART SEVEN of CCS Rules for the Construction and Classification of Mobile Offshore Units;

(4) ISO/TR 834-3:1994 “Fire-resisting Tests – Elements of Building Construction – Part 3: Commentary on Test Method and Test Data Application”;

(5) Regulations 3~12, Chapter II-1 of International Convention for the Safety of Life at Sea, 1974 and the amendments;

(6) IMO MSC.337(91) The Code on Noise Levels on Board Ships;

(7) Chapter 4 Part 3 CCS Guidelines for Noise Control and Testing for Ships and Products.

3 Plans and technical documents

3.1 To apply for the type approval of fire doors, the following drawings and technical documents are to be submitted in triplicate to CCS for approval or information:

(1) General arrangement of fire door;

(2) Drawing of door leaves (including vent, escape hatch grating or hose opening, as appropriate);

(3) Drawing of door frame;

(4) Fire test arrangement (including thermocouples);

(5) Technical specifications of fire doors (for information);

(6) Type test program;

(7) List of qualified suppliers of major raw materials/components and parts;

(8) Product installation specifications;

(9) Nameplate.

4 Materials and components

4.1 Materials and components are to comply with relevant requirements of CCS Rules.

4.2 The door leaves and frame are to be made of steel or other equivalent materials, and CCS approved core materials (i.e. insulation materials, e.g. non-combustible materials such as rock wool, ceramic fiber and calcium silicate boards), and relevant approval certificates are to be provided. Door locks, automatic closing devices (if necessary) are to be approved by CCS.

5 Design and technical requirements

5.1 A and B class fire doors are to comply with the relevant requirements in 2.1(1) and (2) of this Guideline in terms of structural design, integrity and insulation.

5.2 H class fire doors are to comply with the relevant requirements in 2.1(2), (3) and (4) of this Guideline in terms of structural design, integrity and insulation.

5.3 Major raw materials of fire doors are to comply with the following requirements:

(1) Insulation materials (non-combustible materials such as ceramic fiber,rock wool and calcium silicate boards): the non-combustibility is to comply with Part 1 of IMO 2010 FTP Code.

(2) Adhesives: the low flame spread characteristics are to comply with Part 5 of IMO 2010 FTP Code.

(3) Non-metallic materials used in fire doors are to be free of asbestos.

6 Type test

6.1 Selection of typical samples: The standard fire test may be carried out to the largest fire door (with the largest opening size) constructed on the basis of approved drawings. Other tests may be carried out at the manufacturer.

6.2 The type test items are given in Table 6.2.

The type test items **Table 6.2**

No.	Test item	Type test	Routine test
1	Review of material quality certificates	√	√
2	Size examination	√	√
3	Surface quality examination	√	√
4	Strength test	√	—
5	Opening and closing test	√	√
6	Standard fire test	√	—
7	acoustic noise index test for air sound insulation	√	—

6.3 Test methods and requirements

(1) Review of material quality certificates: Main raw materials of fire doors are to be furnished with: the manufacturer's quality certificate for steel plates, CCS products/approval certificates for insulation materials, CCS products/approval certificates for fire door locks and automatic closing devices (if necessary).

(2) Size examination: External size and gap measurements are to comply with the approved drawings.

(3) Surface quality examination: The surface of samples is to be smooth and free from burrs and cuts, and the paint is to be applied evenly without drainage, wrinkling, and breakdown (if painted).

(4) Strength test (except shutter doors, sliding doors and lift fire doors): The door is to be dropped freely for three times with door leaf being opened to an angle of 60 °, and the tested door leaf and frame are to be structurally intact and undamaged.

(5) Opening and closing test(except shutter doors, sliding doors and lift fire doors): The vertically installed door is to be inclined to an angle of 3.5 °in the direction opposite to the vertical one and then opened and closed for three times, with the door leaf being opened flexibly without abnormal noise and the bolt being easily inserted into the lock latch when closing the door.

(6) The standard fire test is to be carried out in accordance with the requirements in Part 3 of IMO 2010 FTP Codeor ISO/TR 834-3 & Part 3 of IMO 2010 FTP Code.

(7) The products which met the requirements Regulations 6.2 Chapter 6 of IMO MSC.337(91) The Code on Noise Levels on Board Ships should be tested for acoustic noise index at the test and inspection institutes approved by CCS.The specific testing methods, please see to Chapter 4 Part 3 CCS Guidelines for Noise Control and Testing for Ships and Products.

① Integrity requirements:

a) A class (including A-60, A-30, A-15, A-0) fire doors are to be subjected to the standard fire test for one hour, at the end of which the doors are to be intact and capable of preventing the passage of smoke and flame;

b) B class (including B-15, B-0) fire doors are to be subjected to the standard fire test for half an hour, at the end of which the doors are to be intact and capable of preventing the passage of flame;

c) H class (including H-120, H-60, H-30, H-0) fire doors are to be subjected to the standard fire test for two hours, at the end of which the doors are to be intact and capable of preventing the passage of smoke and flame.

② Insulation requirements:

a) A-0, B-0, H-0 class fire doors are to comply with the integrity requirements only;

b) A-60, A-30, A-15, H-120, H-60 and H-30 class fire doors are to be fitted with thermocouples on the unexposed surface according to 7.6.3 of Appendix 1 of Part 3 of IMO 2010 FTP Code during the standard fire test, and the average temperature will not rise more than 140℃ above the initial temperature, nor will the temperature, at any one point, including any joint, rise more than 180℃ above the initial temperature, whereas for B-15 class fire doors the temperature at any one point will not rise more than 225℃ above the initial temperature, within the test period corresponding to the appropriate degrees of fire resistance.

(8) The connection of the door frame to the bulkhead: in a test, the method of fixing the door frame to the bulkhead is to be as used in practice. If the method of fixing the door frame in a test is made by bolts, welding may also accepted as a method of fixing the door frame without further tests. Where intermittent welding is used, reliable methods are to be used to fill the welding gap with non-combustible materials or appropriate fire-retardant materials (e.g. fire-resisting

sealant).

(9) Non-metallic materials used in products are to be free of asbestos and are to provide asbestos free statement or approval certificate.

6.4 Test report

(1) The non-combustibility test report for insulation materialsis to comply with the requirements in Part 1 of IMO 2010 FTP Code. The term of validity of non-combustibility test report for insulation materials of A, B and H class fire doors is not to be beyond 24 months before the date of the insulation test, or valid CCS certificates for insulation materials are to be furnished with.

(2) The standard fire test report is to comply with Part 3 of IMO 2010 FTP Codeor ISO/TR834-3&Part 3 of IMO 2010 FTP Code.

(3) Test reports for application are not to be more than 5 years old. If the approval depends on several test reports with different dates, the date of the oldest report governs. However, a type approval certificate may be renewed without retesting provided that the test report is not more than 15 years old and that no alternation of components or construction has been made to the product.

(4) Prior to 1 July 2013, fire tests may still be carried out in accordance with the older edition of FTP Code (1996 FTP Code). The term of validity for test reports is not to exceed 15 years.

7 Unit/batch inspection

7.1 10% of fire doors for each type/specification are to be taken as test samples.

7.2 The unit/batch inspection of fire doors is to be carried out upon type approval. The inspection scope is shown in column “Routine test” of Table 6.2.

7.3 Products are to comply with the asbestos free requirement and provide asbestos free statement or approval certificate.