

**Selection of Fire Resistant Doors in
accordance with
MS 1073: Part 3: 1996
(Amendment 2003)**

PAM Practice Notes

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Foreword

In 1987, when Jabatan Bomba Penyelamat Malaysia (JBPM) did away with the deemed to satisfy conformance pertaining to half and one hour fire resistant rated fire doors as contained in By Law 163 of the UBL 1984, it ushered in the requirement for fire resistant door sets to be tested in compliance with certain parts of BS 476 (pertaining to fire resistance) and pass these tests to establish their fire resistance rating before they were allowed to be installed in buildings.

We have since then seen the implementation of MS1073 Part 3 in 1996 governing the testing of fire resistance door sets.

The latest iteration to be finally implemented is the MS1073 : Part 3 : 1996 (Amendment 2003) which includes tests for double leaf FR doors and requires fire resistant door sets to undergo functional cyclic endurance testing prior to being tested for fire resistance.

With this latest requirement, it is hoped that the industry will finally see FR Door Sets which are not just fire resistant but also robust and functional in meeting the normal usage first and foremost as door sets.

Architects are advised that it is statutorily required of them to only specify FR Door Sets that comply with MS 1073 1996 Amendment 2003 in compliance with the UBBL 84 By law 257 with immediate effect.

Background

Fire resistant doors are first and foremost required to function as doors. When a fire occurs, they must offer the required fire resistance in preserving the integrity of a protected shaft or compartment wall so that occupants can make their way to safety protected from the threat or effects of a fire and smoke while the fire spread is contained and resisted to enable firstly, escape of occupants and then, containment of fire spread, and finally, enable firefighting and rescue efforts to be conducted via protected stairways and passages.

When parts of BS476 were adopted in the late eighties to test fire doors using furnaces for fire resistance, other tests or standards pertaining to functional requirements (for door sets and ironmongery) essential for the function of fire resistant doors were not made part of the tests. It was probably assumed that the industry would only select appropriately robust ironmongery for use in fire doors.

Cyclic testing of fire resistant door sets were first introduced with MS1073 in 1996 but this was deficient in that the latches were taped for the duration of the cyclic tests, meaning only the closers and hinges (and door selectors in double door sets) were really tested without the door handles and latches being called into service.

There was (and still is) no parallel MS or statutory requirements on functional aspects for ironmongery in Malaysia. This meant that over time, these so called Fire Resistant Doors were designed and manufactured with the primary objective to pass the fire resistance tests without sufficient consideration on their functional qualities as doors. Architects were not allowed to modify the door designs that had passed the tests. As a result of these skewed requirements, it created a problem in the industry where many SIRIM tested and FRDM Approved Fire Doors failed within months of being in use. An amendment to allow indicative fire testing of alternative ironmongery to be used on approved FR Door Sets did not solve the problem because the functional endurance aspects of door design as a whole did not require testing. The main problem stemmed from the inadequate design of the door with inadequate consideration being given (especially in timber doors) to fixing of ironmongery and structural considerations in use.

Commonly observed and documented failures were failure of ironmongery (door handles, locksets, hinges, closers, door selectors), structural failure of doors (detachment of lipping, detachment from hinges due to inadequate key and other defects generally attributed to poor selection of materials and design of doors from functional considerations.

As an observation, ironmongery did not require compliance with any international functional standards for use as in FR Door Sets. This explained the impracticality and poor quality of some of the ironmongery on offer in the industry where cost considerations often override functional considerations. Until 2007, knob handles were still allowed for use in fire doors when these were not allowed in most developed countries as these would render the fire doors inoperable in the event of a fire.

Added to these were several (4 nos) open market sampling tests conducted in 2011 where all four doors failed at the furnace in tests conducted by SIRIM with FR times ranging from 23 mins to 40 plus minutes.

Prior to the well documented failures, amendments to MS1073 part 3 : 1996 were initiated and accepted as the 2003 amendments. The main thrust of the amendments was that fire resistant door sets (ie doors, door frames, and all ironmongery) now have to undergo fully functional cyclic endurance testing (with proper latching of the lock for each cycle) and pass the cyclic endurance test before proceeding to fire resistance testing. The testing in accordance with the 2003 Amendments were finally commenced in 2012 with JBPM directives and since then, the failure criteria and testing procedures have been finalised and accepted by the manufacturers through dialogues with JBPM and the Professional Bodies [APM, ACEM, IEM, IFE (UK) Msia Branch].

Double leaf doors are also required to undergo the same tests with slight modifications. It is the objective of these amendments that doors complying with MS1073:Part 3:1996 (Amendment 2003) will not just be fire resistant but also robust in use so that as a passive fire safety installation, it will function as intended when the need arises.

Notes of Caution to Specifiers

All FR Door sets are meant to be tested every five (5) years before their licence are renewed by JBPM. Extensions are granted to manufacturers so that they can fulfil orders for deliveries placed before their licence expired. This is common practice as orders placed at the commencement of a building contract could take from 3 to 5 years to fulfil due to delays. This extension allows the Architect or Engineer to certify for the purposes of CCC that the doors and their installation are in compliance with all current By Laws even though the doors were last tested more than 5 years prior to the completion of the works on site.

As explained above, extensions were granted to licences for manufacturers primarily to fulfil installation orders. It has come to PAM's notice that some unscrupulous manufacturers have been using these extensions granted to their licenses to sell their doors (based on obsolete tests) for new projects while competing with an unfair advantage against manufacturers offering doors tested to current requirements. Architects have been accepting these doors while being assured by the manufacturers that they possess valid approvals (albeit extended) by JBPM. That is incorrect. What the manufacturers are not saying is that these doors are not tested to the latest requirements by JBPM and not meant for sale to new projects.