Intumescent Fire Dampers

Technology & Standards

Presenter: Colin Moss - National Sales Manager

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What is an Intumescent Fire Damper?

Intumescent Fire Damper (or IFD):

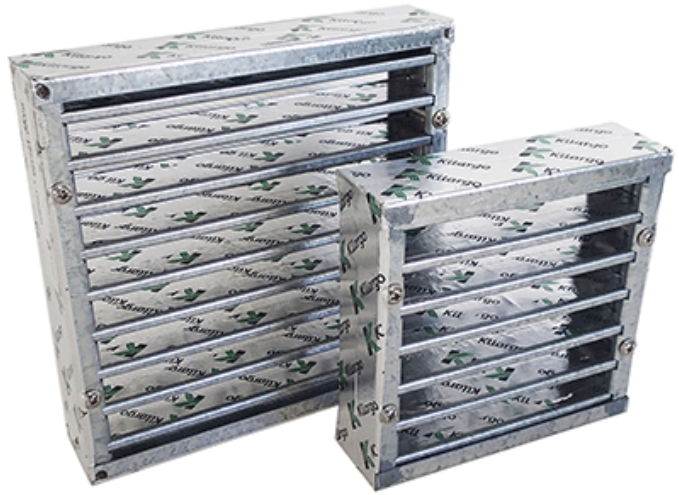
- Intumesce *n* –
- To swell up, as with heat.
- Intumescent, *adj.*

Intumescent Fire Dampers (IFD)

Incorporate a number of parallel intumescent slats,

reinforced with impact resistant steel edging,

housed in a rigid steel frame.



Intumescent Fire Dampers (IFD)

Increasing temperature causes the slats to swell (**intumesce**) to many times their original thickness, fusing together to provide a barrier to the passage of fire & hot smoke.

Intumescent Fire Dampers (IFD)

The Kilargo Intumescent Fire Damper (IFD) has from it's first release to industry offered unique & valuable features

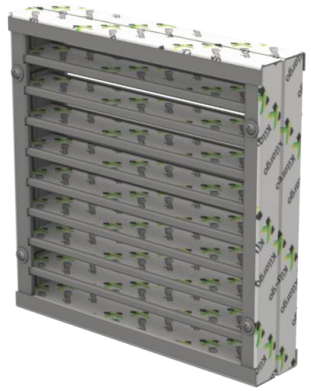
Design - Application - Ease - Flexibility

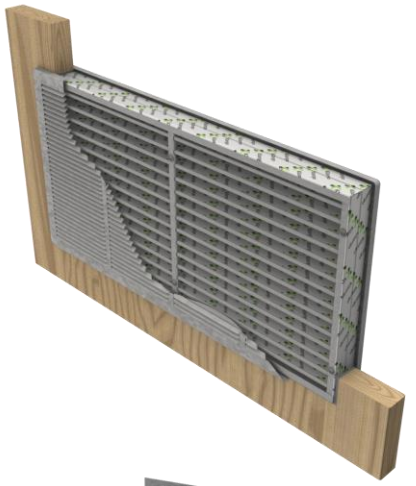
Building Element Types

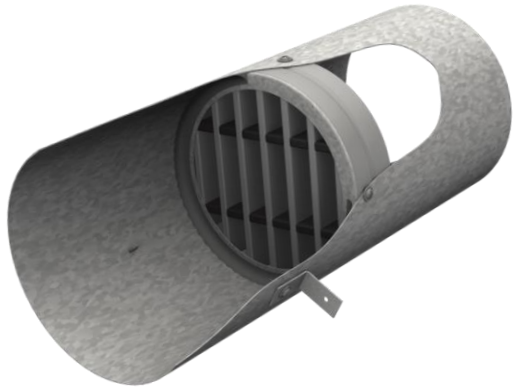
- Wall - multiple types
- Floor Slabs (including insulation rated)
- Ceiling Systems
- Fire Door Kits
- Upgrade / Retrofit Solutions

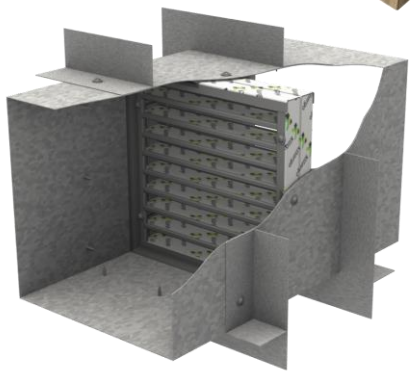
Intumescent Fire Dampers (IFD)

- No Moving Parts
- Flexibility of Installation
- High Reliability
- Fully Insulating
- Low Access Requirements









Australian Standards

Touching on the Australian Standards

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Relevant Australian Standards

For discussion

- AS1668.1:2015
- AS1530.4:2014
- AS1682:2015 - Part 1: Specification
  - Part 2: Installation

Relevant Australian Standards

AS1668.1:2015

- The use of ventilation and air conditioning in buildings
- Part 1: Fire and smoke control in buildings

Relevant Australian Standards

The most important aspect of the latest revision of AS1668.1:2015 is

Insulation

Remembering the Fire Damper is rated by way of an FRL (Fire Resistance Level)

FRL - / 120 / 120

Structural Integrity / Fire Integrity / Insulation

Relevant Australian Standards

AS1530.4:2014

- Methods for fire tests on building materials, components and structures
- In relation to Fire Dampers, this is an update to the 2005 version, which introduced a major change to 1997 fire resistance test methods.

Relevant Australian Standards

- **AS1530.4:2014**
- We have two principal tests that can be carried out for Fire Dampers (of any design or type)

Air Transfer Grilles (NOT DUCTED)	To Section 10
Wall / Floor Damper Systems (DUCTED)	To Section 11

Relevant Australian Standards

AS1682.1:2015

Fire Dampers SPECIFICATION

How we can & cant make them

AS1682.2:2015

Fire Dampers INSTALLATION

How they can & cant install them

Kilargo Technical Support

Kilargo IFD's are supplied to industry via a network of trained specialist (stock holding) distributors around Australasia.

We technically support the industry directly, working at all levels with specifiers, compliance specialists, fire safety engineers and installers to ensure compliance can…. and is… achieved.

Architectural Seals

Presenter: Dean Tadich - Regional Sales Manager

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Presentation Overview

Objective:

- To provide an understanding of performance criteria and design considerations when specifying smoke door sealing systems

Subjects:

- BCA/NCC Prescriptive Requirements for Smoke Doors
- Performance Based Design
- Smoke Door Applications and Types of Assemblies

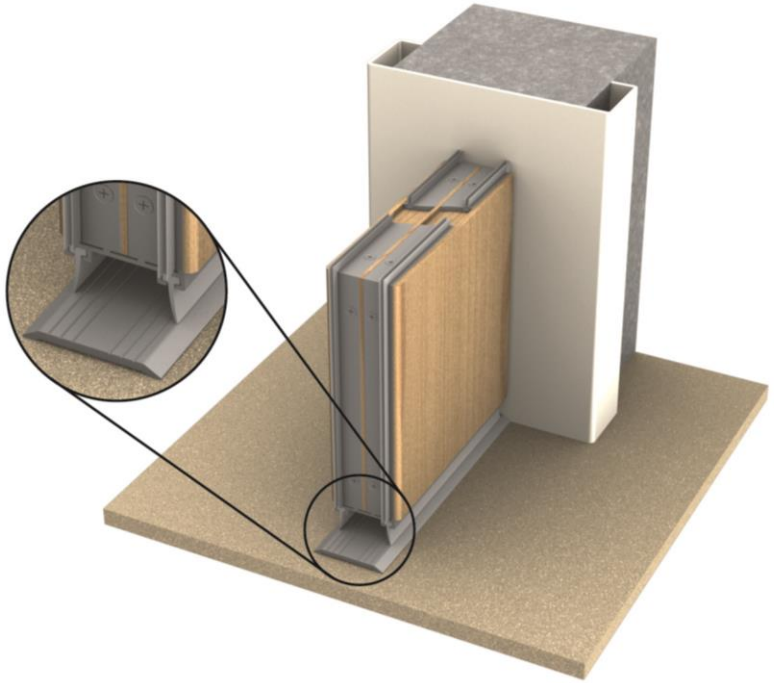
Abstract from BCA Specification C3.4

"Smoke doors must be constructed so that smoke will not pass from one side of the doorway to the other" and provides the following "deemed to satisfy" guidance

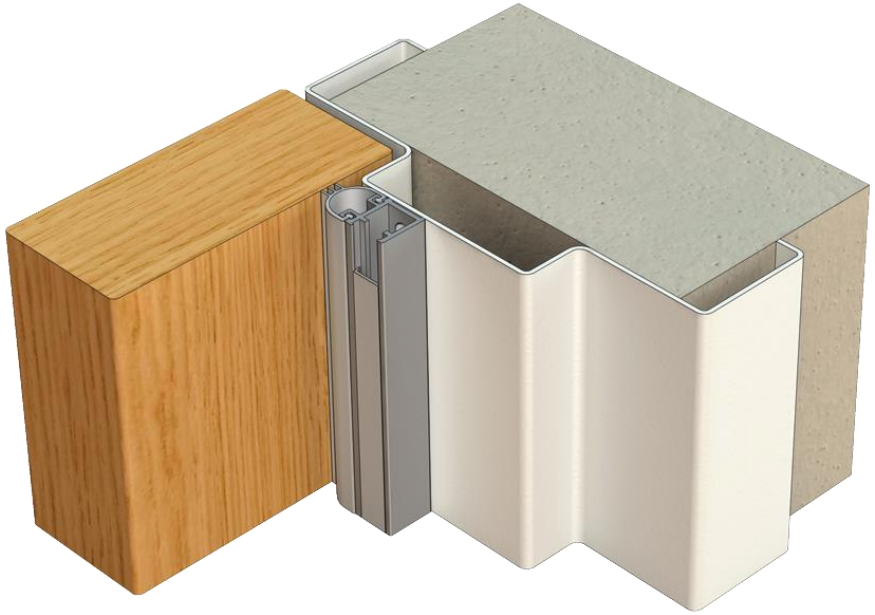
A smoke door of one or two leaves satisfies Clause 3.1 if it is constructed as follows:

- (a) The leaves are side-hung to swing— (i) in the direction of egress; or (ii) in both directions.
- (b) (i) The leaves are capable of resisting smoke at 200°C for 30 minutes.
- (ii) Solid-core leaves* at least 35 mm thick satisfy (i).
- (c) The leaves are fitted with smoke seals.

Solutions



DTS ✓



DTS ✗

Performance Based Design

The BCA allows provision for the use of 'Performance Based Alternate Solutions'

Two Australian Standards developed to help Fire Engineers & Building Practitioners specify smoke doors with quantifiable levels of performance

- AS 6905:2007 – Smoke Doors
- AS 1530.7:2007 – Smoke control assemblies –Ambient and medium temperature leakage test procedure.

Performance Based Design

AS 6905:2007 – Smoke Doors

- Covers the specification, construction, installation and identification of smoke doors.
- Requires assemblies tested in accordance with conditions detailed in AS1530.7, most importantly defines maximum allowable smoke leakage rates for single/double door assemblies at prescribed temperature and pressure differentials.

Performance Based Design

AS 1530.7:2007 -

Smoke control assemblies –Ambient and medium temperature leakage test procedure.

- Temperature of 200°C is maintained for 30 minutes before leakage is measured.
- Timing of readings specified to ensure consistency of results.
- Performance dependent on duration of exposure
- Must test in two separate directions for medium temperature:
    1. Door opening away from the chamber / heat source
    2. Door opening towards the chamber / heat source
- It is common that the performance in one direction will be drastically different to that of the other direction.

Performance Based Design

AS 1530.7:2007

Smoke control assemblies –Ambient and medium temperature leakage test procedure.

- Must test in two separate directions for medium temperature:

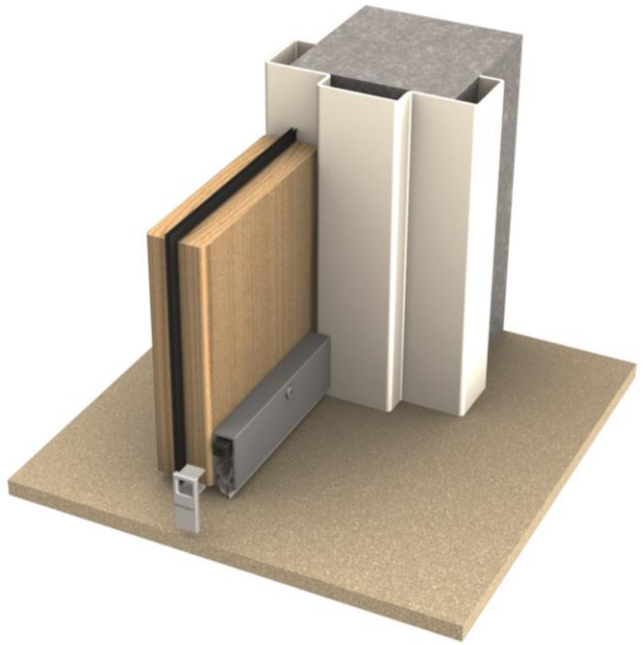
1. Door opening away from the chamber / heat source
2. Door opening towards the chamber / heat source

TYPICAL TEST REPORT FOR DOOR ASSEMBLIES

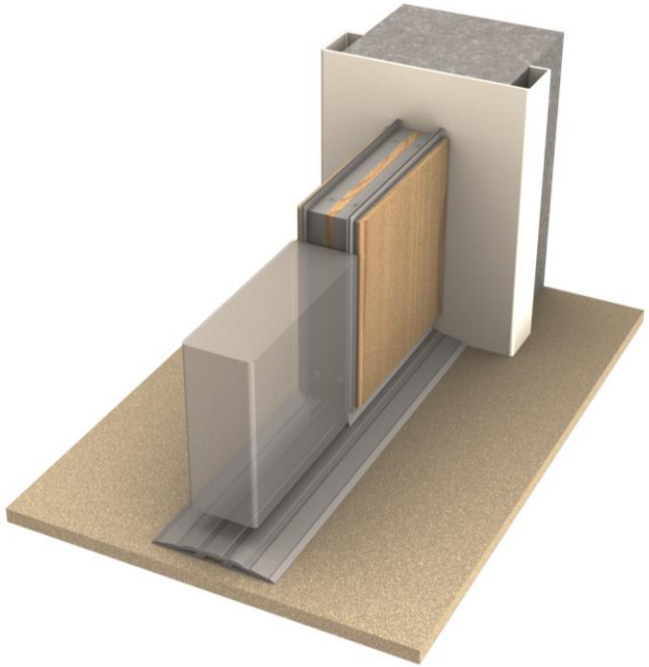
Specimen configuration/pressure	Exposure	Leakage rate correction	Leakage rate $Q(m^3/h)$ at a pressure difference of		
			10 Pa	25 Pa	50 Pa
Opening towards positive pressure (fire side)	Ambient	Standard Reference Conditions	*	*	*
Opening towards positive pressure (fire side)	Medium (200°C)	Standard Reference Condition	*	*	*
		200°C	*	*	*
Opening towards positive pressure (fire side)	Medium (200°C) >30 min	Standard Reference Conditions	*	*	*
		200°C	*	*	*

* Insertion of values required following the test.

Deemed To Satisfy BCA C3.4



IS0511 – IS8011si

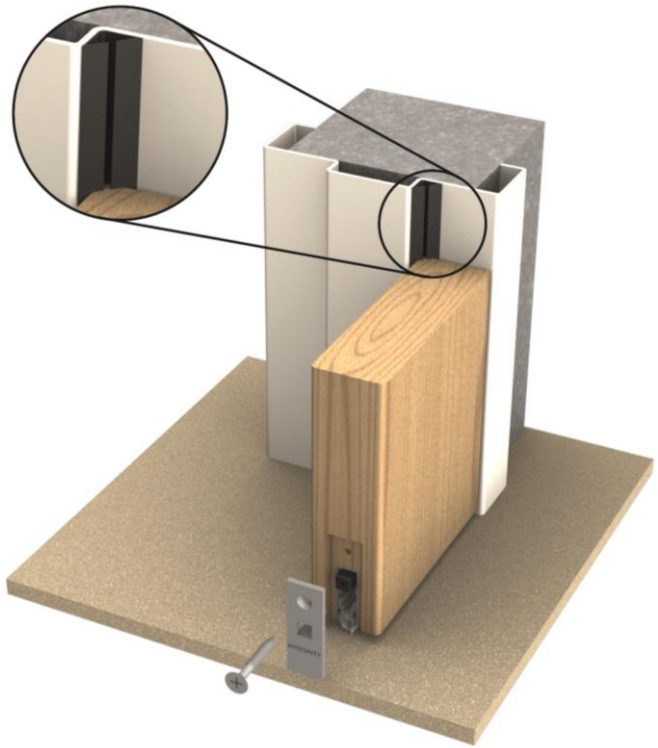


IS7071si – IS3022si

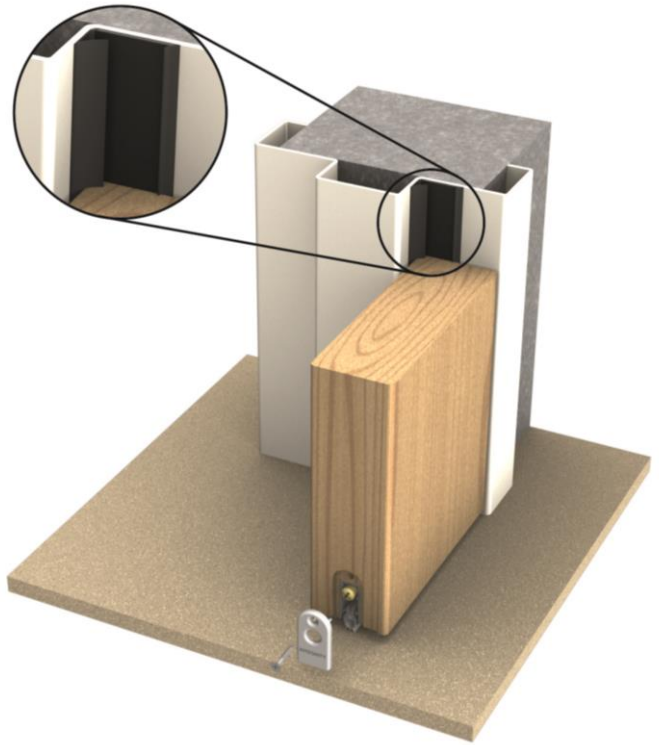
Shown with a low profile IS4010 threshold plate, preventing unsightly scrape or drag marks to floor covering.

Medium Temperature

Tested to AS1530.7:2007 Part 7



IS1212 – IS8010si



KG2512BW – IS8005si

Summary

- BCA compliant or Performance Based Design solutions available
- BCA compliant (deemed-to-satisfy) ensure seals are fitted to door leaf (leaves)
- Performance Based criteria tested in accordance with AS1530 Part 7: 2007,
- AS6905 -2007 Smoke Doors: a quantifiable performance based Standard to assist in specifying smoke door sealing solutions.
- Ensure evidence provided covers your application's direction of exposure, otherwise your leakage data could be very wrong!

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Kilargo wish to thank the NSW Chapter of the Society of Fire Safety (SFS) for the opportunity to present at their technical Information session

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