FIBERSHIELD ULR

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FIRE+SMOKE SHUTTER



The ultra-low radiation (ULR) fire shutter; Fibershield ULR provides a light weight, compact, high-performance and cost effective Performance Solution in both sprinklered and non-sprinklered buildings.

Architects are discovering the benefits of using automatic fire curtain/shutter technology to provide open plan areas, while maintaining effective fire and smoke separation during the buildings fire alarm.

- Fire tested in accordance with AS1530.4:2014 with measured ultra low radiant heat performance
- Fire and Smoke Performance -/120/- ULR
- No sprinklers required
- Engineered fabric with encapsulated insulation technology
- Gravity Fail Safe

SMOKE CONTROL

FIBERSHIELD ULR Fire+Smoke Shutter

COMPLIANCE

One of the limitations of conventional integrity only fire shutters, is the radiant heat transfer through the thin barrier can re-radiate sufficient heat to ignite nearby objects or prevent egress of occupants. Fire integrity only barriers may not meet the insulation requirements of -/120/120 or -/120/30 for example.



Fibershield ULR being used in Australia to fire separate a basement car park. Fibershield ULR also provides smoke separation, a feature not offered by other methods.

- Fire Safety Engineers and other fire protection designers have been specifying fire shutters, but in order to minimize the radiant heat transfer are forced to use uninsulated barriers protected with drenchers. This system is effective but may not be practical and adds cost to the system with increased pump sizes, water storage and material costs.
- Smoke Control is proud to have introduced Australia to a complete range of ultra low radiant heat transfer, ("partially" insulating) automatic fire shutters over a decade ago.
- Experienced Fire Engineers recognise that Fibershield ULR is still the only system available which encapsulates the high performance insulating materials within the flexible barrier to guarantee the same performance each and every time. Other systems which do not encapsulate their intumescent technology are susceptible to decay during fire from building pressurisation, opposable air flow/exhaust systems and falling debris.
- Independently verified data suitable for input into Performance Solutions can be found on the following pages. While the measured data during a laboratory fire test is important, equally important is the reliability of the product during its life time and during a real fire event.

The Fibershield ULR fire shutter is a high performance product which outperforms traditional fire shutters with respect to re-radiation. The Fibershield ULR fire shutter design is intended to be a compromise between weight, dimensions and fire performance, which means a Fire Engineer will need to evaluate the application to determine how and where the system may be used.

In regards to fire performance there is not a significant difference between Fibershield ULR fire shutters and fire doors. The only notable difference is the insulation rating. In simple terms the Fibershield ULR fire shutter does not provide a full insulation rating as defined in the Deemed-to-Satisfy (DtS) provisions of the National Construction Code (NCC). We term this type of product "partially insulated".

WHAT ARE THE DEPARTURES FROM THE DTS PROVISIONS?

The failure criteria for insulation when testing in accordance with AS1530.4 consists of two measurements taken during the fire test. That is: the time for any individual thermocouple to reach a temperature rise of 180 º C or the average of all required thermocouples to reach a temperature rise of 140 º C when measured on the surface of the test specimen. As it is difficult to attach thermocouples to the surface of this particular type of technology and have them remain in place for the duration of the fire test. Thermocouples were placed at 20, 30 and 60mm from the face of the specimen. Samples of wood, paper and cotton wool were also placed in front of the specimen and the time to ignition recorded. This verified data provides a high level of confidence for Performance Solutions.



Ignition times for materials placed from the assembly

IGNITION TIMES FOR MATERIALS PLACED 100MM FROM THE ASSEMBLY	
Material	Ignition time (minutes)
Paper	148
Cotton Wool	163
Wood	164

Fibershield ULR can be used in lieu of a wall (-/120/120) or openings in fire walls traditional protected by fire doors (-/120/30)

FIBERSHIELD ULR Fire+Smoke Shutter

This concession means that the insulation rating need only be 30 minutes, while the fire integrity rating may be 120 minutes, 90 minutes or 60 minutes. That is -/120/30 for example. The reduction in insulation rating for the doorway is not considered to reduce the overall fire rating of the barrier (including wall) as there is unlikely to be bookshelves and other combustible objects within the path of doorway, the concession is there to provide a practical solution for doorways in fire walls.

Fibershield ULR fire shutters can be used in lieu of DtS walls and fire doors. The Fire Engineers assessment would consider which of these two applications apply and then determine the correct departure from the DtS provisions and use the published data to determine the suitability of the product for the specific application. Of course, there are other provisions in the NCC which must be considered such as minimum egress path widths and when does a door become a wall by definition. As Fibershield ULR fire shutters do not require the addition of sprinklers to assists its performance, they have been used extensively in basement carparks and for protecting egress paths, as well as for fire compartmentation in high risk areas of buildings and more.

The system complies with the requirements of EN12101.1 Smoke Curtains.

PERFORMANCE DATA	
Fire Shutter	Complies with AS1905.2:2005
Fire Rating	-/120/- when fire tested in accordance with AS1530.4:2014
Radiant Heat[1]	≤ 2.5 kW/m^2 @ 500mm and 30 minutes into the Standard Fire Test (AS1530.4)
Smoke Performance (Permeability)	<25 m^3/hour when tested in accordance with EN12101.1
Spread of Flame	0, 0, 0, 3 when tested in accordance with AS1530.3
Group Number	Group 1 when tested in accordance with AS3837
Cycle Test	2,000 open-close cycles
Operating Speed	4.5m/min
Maximum Pressure Differential	40Pa when fully closed
System Weight	35kg per metre of width
Maximum Sizes	12,000 mm max width x 6000 mm max drop

A table of radiant heat flux at various distances for Fibershield ULR fire shutters can be found on the next page

What you need to know

As radiant heat data is not required under DtS provisions, the data can be presented inconsistently when comparing different manufacturers.

To avoid this, radiant heat flux used for Performance Solutions only makes sense when it is stated in conjunction with the time it was measured during the AS1530.4 fire test and the distance from the radiant surface at which it was measured.
Eg: Rw shall be ≤2.5kW/m^2 @ 500mm @ 30 minutes.

RADIANT HEAT DATA

Radiant heat data is required to be recorded at 365mm from the surface of the test specimen in all AS1530.4 fire tests. However, the NCC does not require this data to be incorporated into the fire rating. Typically, radiant heat is measured at 1m from the surface during the test for practical reasons. At other distances the Fire Engineer will need to do the required calculations. However, we have had the following data verified by the Lab for your benefit.

HEAT RADIATION KW/M2 AT:			
TIME	60 mm	500mm	1000mm
30 minutes	2.8	2.5	0.5
60 minutes	6.2	5.5	1
90 minutes	9.5	8.5	2.5
120 minutes	16.2	14.5	4

Table 1: Heat radiation from Fibershield ULR fire shutter measured when fire tested in accordance with AS1530.4 as confirmed by the Registered Testing Authority in report number FAR 4731. Please request the full approval by contacting our technical department on info@smokecontrol.com.au or 1300 665 471.

What you need to know

The data provided here is the worse case scenario and is measured in the Standard Fire Test where the fire is in immediate contact with the barrier. Where the seat of the fire is remote from the barrier or the heat needs to pass through two or more barriers to reach occupants or objects, such as in an interconnecting stair or void/ atrium, the radiant heat will be much less than that in the table.

TEMPERATURE DATA

While Performance Solutions should use the radiant heat data from the Standard Fire Test on which to base their quantitative analysis, temperature rise measurements were taken for the duration of the fire test at locations adjacent to, but not directly on the surface of the assembly*.

Measurements were recorded with two different types of thermocouples:

1. AS1530 Part 4 thermocouples (copper disks covered with ceramic fibre insulating pads) fixed onto a thin mesh grid, and
2. Mantle type thermocouples (non compliant with AS1530 Part 4).

A summary of the temperature rise readings is as follows for the respective distances:

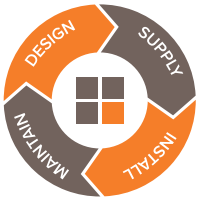
TEMPERATURE RISE IN DEGREES C AT DISTANCES CLOSE TO THE ASSEMBLY			
TIME	20mm	30mm	60mm
30 minutes	16**	22**	56***
60 minutes	22**	29**	83***
90 minutes	32**	43**	120***
120 minutes	43**	53**	153***

* These thermocouple measurements are susceptible to multiple variables and are provided for comparison purposes only
** Temperature measurement using mantle thermocouple
*** Temperature measurement using AS1530 Part 4 thermocouples.

FIBERSHIELD ULR Fire+Smoke Shutter

FUNCTION





SYSTEM OPERATION

The system is typically in the open position during normal building use. Upon receipt of an alarm or power outage, the Fibershield ULR fire shutter deploys (gravity fail safe) to provide fire and smoke compartmentation. On reset of the Fire Indicator Panel (FIP), the system automatically rewinds back into the standby position.



Fibershield ULR fire shutter being used to protect an escape path in an office building.
Below the system in non-fire mode (standby mode)

As the system is gravity fail safe the compact control box is provisioned for battery back up as an optional extra. The controller requires a standard 240V, 10A power supply and an alarm signal in the form of a normally closed dry contact. A localised smoke or heat detector may also be used to activate the system. Please contact our technical department for details on 1300 665 471.

EGRESS

When Fibershield ULR fire shutters are used as part of egress strategy, rewind switches can be connected directly to the standard control box. When used in basement carparks for example, a standard fire door can be incorporated into the design to allow egress without the need to rewind the Fibershield ULR fire shutter. This design is significantly cheaper than other design options.

INSTALLATION

In line with Smoke Control's mission to provide customers with reliable solutions, the Fibershield ULR system is installed by our fully trained and approved installer network.

MAINTENANCE

As with all essential services Fibershield ULR should be maintained in strict accordance with our documented procedures by fully trained and competent technicians. Operational tests alone are not considered adequate and when conducted by inexperienced personnel, may lead to damage of the product. Smoke Control offers a comprehensive preventative maintenance program which has proven costs savings over the life of the product. Please contact our technical department for details on 1300 665 471.



0 Minutes



60 Minutes



90 Minutes



120 Minutes

APPLICATIONS

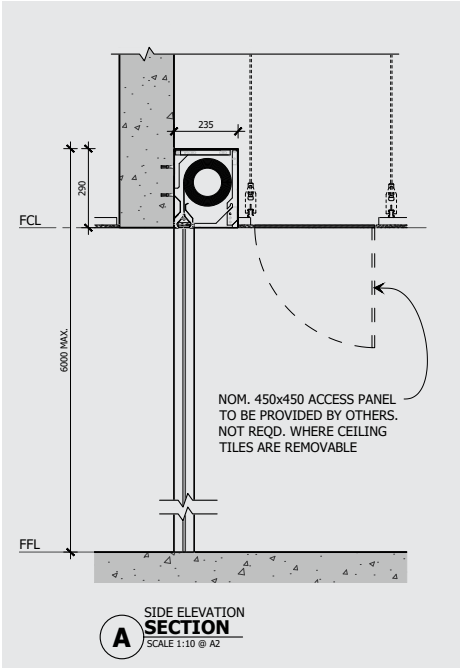
Fibershield ULR fire shutters have been used to provide fire and smoke compartmentation to:

- escape path protection
- warehouse dividing walls
- basement carparks with cars adjacent to the barrier

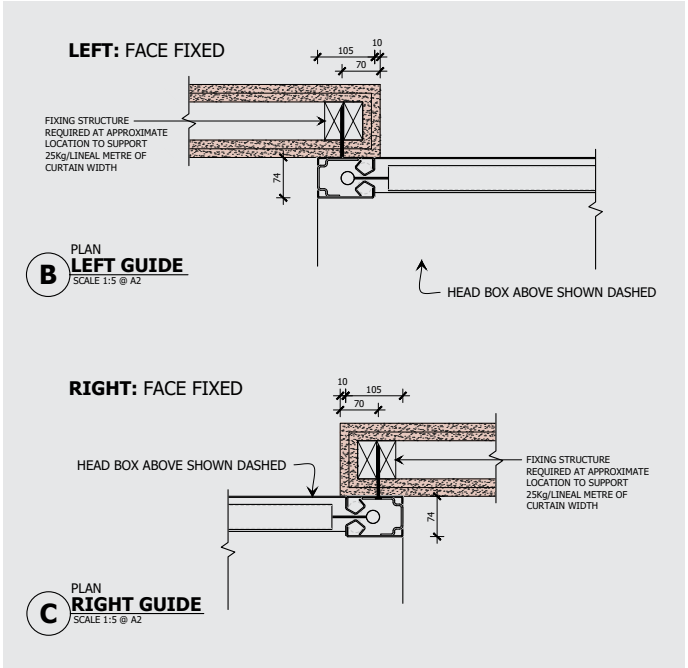
ACCESSORIES

- battery backup
- rewind switch

PRODUCT DIMENSIONS



Head box detail - Face Fixed



Side guide mounting options (Face Fixed, Left & Right)

GENERAL INFORMATION

TECHNICAL SUPPORT



Smoke Control offers obligation free technical support and pricing throughout your design and documentation stage so you can accurately prepare your budgets through value engineering.

You can also download the set of specifications, drawings and technical data from our website www.smokecontrol.com.au.

Contact our technical department to discuss your project requirements, or feel free to arrange a meeting.

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A LITTLE MORE ABOUT US...

Smoke Control was established in 2003. We partner with leading local and international organisations to work with the new performance-based design environment - in addition to the traditional prescriptive environment - designing and installing systems to meet the challenging fire and smoke control demands of modern buildings.

Constant research and development continue to enhance our offering of fire windows, fire shutters and fire & smoke curtains, bringing the most innovative technology to both regular and unique project challenges. If you cannot find what you are looking for, please contact our team as we may already have a solution for you.

Smoke Control services all regions in Australia and New Zealand via our own offices and people. International customers can contact our Australian office by phone or email for your nearest distributor.

SMOKE CONTROL

We believe people deserve to work & live in safe & beautiful buildings