



PRODUCT SPECIFICATION

FireMaster® Plus

1 GENERAL

1.1 Scope

Coopers FireMaster® Plus active fire curtain barrier assemblies ("Fire Curtain") are to be designed, fabricated, delivered, installed and commissioned with all required components as outlined in this specification.

1.2 Design Requirements and Considerations

Pressurisation, air movement and smoke management systems

Whilst operating, the Fire Curtain should not have any air movement across its surface. Any air movement systems should be shutdown prior to activation of the fire curtain and any mechanical plant should not start up until the Fire Curtain is fully closed. The closing time of the Fire Curtain for a 2.7m high ceiling is approximately 30 seconds. The pressure differential across the fire curtain should be commissioned to not exceed 30Pa to ensure that the system is not unduly stressed. Please consult with the local supplier prior to designing the system as some of the options selected could affect the overall performance.

Structural movement of the building

Ensure that expansion joints do not intersect with part of the Fire Curtain headbox which would compromise the integrity of the fire barrier. Any concerns consult with the local supplier.

Construction tolerance

The Fire Curtain is an engineered product that is required to be installed to exacting tolerances. The required installation tolerance of the headbox is $\pm 2\text{mm}$ end to end. When installing to substrate and interfacing with other building elements, these elements will be installed to different tolerances e.g. concrete could have an installation specification of 6mm in every 3m to a maximum of 25mm. Any concerns consult with the local supplier.

Fire resistance requirements

As an uninsulated fire barrier, the use of a Fire Curtain in Australia is required to be substantiated as suitable for the project/application as part of a fire engineered solution. The required fire resistance requirement for the Fire Curtain is to be substantiated to be suitable for the opening it is protecting.

Activation requirements for the fire barriers

Often the Fire Curtain is providing protection against fire or smoke spread from all parts of the building, not only localised to the Fire Curtain. Ensure the correct activation requirements of the fire curtain are clearly identified.

Optional Items that are required with the product

Consider and included the required Optional Items in Section 2.6 of this specification.

Maintaining the area underneath the curtain as clear from obstructions

The Fire Curtain is a concealed, operable fire barrier. Its default position is down and is only maintained in the up position provided there is no risk or hazard in the area. Alarm activation or prolonged loss of power (more than 30 minutes) will cause gravity descent of the Fire Curtain. It is required as part of the design to ensure that suitable provisions are in place to maintain the area under the Fire Curtain as clear from obstructions at all times as the Fire Curtain could be activated at any time.

Ceilings & Partitions

Ensure that the ceiling does not protrude into the line of the headbox and does not bend or distort the headbox. If the design of the bottom tray is to finish below the headbox, there needs to be a minimum of 10mm clearance from the edge of the bottom tray to the adjacent ceiling finish.

Egress Paths

The Fire Curtain fabric acts like a sail and will inflate when pressurised and when in fire mode. If there are egress paths close to the fire curtain, ensure that the path width is wide enough considering the deflected fabric.



Floor finishes

Non- combustible flooring is required under the Fire Curtain. Should other floor finishes be required, the suitability of these flooring materials are to be addressed in the fire engineering solution. Coopers FireMaster® Plus has been proven by fire testing to stop fire spread with a number of different floor finishes. Consult with the local supplier for further information.

Handrails, balustrades and other possible building elements close to the Fire Curtain

A design tolerance of minimum 100mm should be used as between the bottom tray position and any building elements, such as balustrades, chairs, benches etc., to ensure that whilst operating the Fire Curtain does not hit any of these items whilst operating.

No fixing to the Fire Curtain

The components of the Fire Curtain cannot be fixed to by any other building element. Any ceiling or wall items that require fixing are to be independently framed and fixed, ensure they are not attached in any way to the Fire Curtain.

Control panel location

The controls for the Fire Curtain can be supplied with individual controllers for each motor supplied adjacent to the motors in the ceiling space or as grouped control panels with all serviceable control items in one central location. Grouped control panels usually provide for easier access for service and maintenance. It is often best practice to locate the controls for the fire curtain at low level in an electrical or communications cupboard rather than in the ceiling space. Consider nominating the location and requirements of the controls for the Fire Curtain as this will be the location where power and alarm signals will need to be provided and will also identify the requirements for control cabling between the controller and Fire Curtain.

1.3 Related Works

Structure

Suitable fire rated substrate is required to affix the headbox and side guides (open design only). Concrete or timber rated plasterboard substrate to FRL of -/120/120 or -/240/240 depending on the fire rating requirement of the Fire Curtain.

Electrical

240V 20A dedicated and maintained power supply to each Fire Curtain supplied from the essential services supply where available.

Fire

Normally closed volt free (0V) alarm signal to each Fire Curtain

Access panels or removable ceiling tiles

They are required to each motor location for commissioning, service and maintenance requirements.

Mechanical

Ensure that all air handling equipment it off whilst the Fire Curtain is deploying and start-up of the mechanical plant is delayed until the Fire Curtain is fully deployed. Pressure differential across the fire curtain should be commissioned to not exceed 30Pa. Consider that the fire curtain will leak when designing the system.

1.4 Standards and Compliance

All standards testing and compliance is required to be completed and witnessed by a Registered Testing Authority that is NATA approved. The testing needs to be issued as a Test Report, Assessment Report, Classification Report or Formal Opinion Report.

Fire Engineering Report

The reference Fire Engineering Report must also be complied with as well as the requirements of this specification. Any discrepancies between this specification and the fire engineering report are to be advised and rectified prior to order.

A. Fire Engineering Report:

Fire Resistance

AS 1530.4: 2005 : Fire-resistance test of elements of construction

- FRL of - / 120 / - for sizes up to 30 metres and drop height of 7.5 metres.



- Must have successfully passed a full scale test (largest size possible to be tested) of the complete product assembly with the tested prototype matching the requirements of supply for the project. i.e. if there are side guides then they are tested, if it is closed design that has also been tested.
- Assessment report outlining the maximum sizes that the product can be supplied and that these sizes and designs match what is required for the project.
- Assessment report confirming that the substrate has been tested and approved by a NATA accredited agency.
- Assessment report confirming the installation methodology and support framing system has been approved by a NATA accredited agency.
- Any passive fire rating system above the headbox has been confirmed through testing and assessment to provide suitable fire stopping as part of the Fire Curtain system.

BS EN 1634-1 : European fire resistance test for non-loadbearing elements. Walls

- Classification E120 EW120 C2 Grade 3, Class "0"

Smoke Leakage

EN 1634-3 : 2004 : Smoke control test for door and shutter assemblies

- Testing of air leakage performance to show the performance through the product assembly.
- Air (smoke) leakage not exceeding 3 m³/m/hr at 25Pa.

Reliability performance

EN 12605 : 2000 : Clause 5 : Smoke and Heat Control Systems – Part 1: Specification for Smoke Barriers

- Performed 1,600 cycle testing without maintenance or adjustment on a 9.3 metre specimen of height 4 metres.

Impact performance

EN 949:1999 : Determination of the resistance to soft and heavy body impact for doors

BS 5234-2, Partitions (including matching linings) – Part 2: Specification for performance requirements for strength and robustness including methods of test

- Twice the Severe Duty (SD) testing in accordance with BS 5234-2 on a 3 metre specimen of height 3 metres.
- Testing performed prior to cyclic testing and after cyclic testing with the Fire Curtain being able to maintain its integrity and being able to operate up and down.

Response time and true gravity fail safe operation

BS 8524-1 : 2013 : Clause 5.4 : Active fire barrier assemblies. Part 1 Specification

- Test to ensure that operating speed is within 0.06 - 0.15 m/sec under ALL operating scenarios.
- Testing must confirm operation with power available.
- Gravity fail safe operation must be tested against the loss of primary power (mains), loss of secondary power (batteries), cable disconnection and cable corruption (short circuit) and all combinations of these.

1.5 Submittals

Certification

Test or assessment reports from NATA accredited agencies are required to be submitted for all items outlined in Section 1.4 of this specification

Shop drawings

Detailing the location, size, requirements 'by others' and design of the Fire Curtains shall be submitted to the General Contractor and the drawings approved prior to the commencement of the manufacture process.

Samples

300mm long samples of bottom bar and side guides including the required finish for the project are to be submitted for approval prior to the commencement of the manufacture process. It is not possible to change the raw material or design of the product; however, the applied finish is to be approved or amended through this process.

Inspection and test plan

Provide a detailed Inspection and Test Plan which outlines the required hold points and compliance checks from order through to handover to ensure that this specification and the requirements of the manufacturer and third party product certifier are met.

Completion certificate

Issue a completion certificate at the completion of the works confirming that the installation has been completed in accordance with this specification, the fire engineering report and the tested prototypes for the Fire Curtain.

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Operation and maintenance manual

Electronic copy of operation and maintenance manual including commissioning data for each Fire Curtain and As Built drawings.

1.6 Quality Assurance

Management Systems

The manufacturer shall operate and be certified to ISO 9001 for quality management systems, and ISO 14001 for environmental management systems.

[Greene Fire ISO 9001 Certificate of Approval](#)

[Greene Fire ISO 14001 Certificate of Approval](#)

1.7 Warranty

Coopers Fire Limited warrants that its FireMaster® Plus Fire Curtain is free from manufacturing defects for a period of not less than 12 months from installation and commissioning when installed, maintained and used in accordance with Coopers specifications and operational manuals.

1.8 Inspections

Pre-installation meeting

Hold a meeting at the project site with the Owner, Architect, Fire Engineer, General Contractor, fire curtain sub-contractor, mechanical sub-contractor, electrical sub-contractor, fire sub-contractor and ceiling/fitout sub-contractor to review the Fire Curtain requirements.

Review this specification, fire engineering report, substrate conditions, requirements of related work, installation methodology, storage and handling procedures, protection measures and commissioning requirements. Document the responsibilities of each party.

Notice

Give notice so that inspection may be made of the following:

- Correct operation of the Fire Curtain, before being concealed.
- Witness testing of automated Fire Curtain with activation from fire alarm and in conjunction with any other services or functionality. To be witnessed by the Fire Engineer, Architect and General Contractor.
- Fire brigade inspection.

2 Product

2.1 Manufacturer

Greene Fire Pty Limited – Level 2, 381 Port Hacking Road, Caringbah NSW 2229, Australia
Tel: (02) 9526 3100 (Int'l +61 2 9526 3100), Fax: (02) 9526 3111 (Int'l +61 2 9526 3111)
Email: sales@greenefire.com.au, Web: www.greenefire.com.au

2.2 Location

Coopers FireMaster® Plus fire curtains are to be installed in the locations shown on the Architectural drawings.

B.	Drawing References:	.....
C.	Summary Location:	.....



2.3 Product Description

Coopers FireMaster® Plus Fire Curtain

An electrically operated FireMaster® Plus Fire Curtain is a light weight fire separating element that automatically closes on fire alarm to fire protect spaces.

The Fire Curtain comprises of zinc anneal mild steel headbox, tubular Gravity Fail Safe DC geared motor with brake, fire resistant fabric, intermediate roller supports, zinc anneal mild steel bottom bar, zinc anneal mild steel side guides and motor controller.

The fabric, when installed, forms one continuous barrier. FireMaster® Plus is a single roller assembly up to 30 metres in width and 7.5m height.

2.4 Operation

The Fire Curtain will remain retracted within its headbox until it is automatically activated by the fire alarm signal. Upon activation the Fire Curtain will deploy by gravity to its fire operation position, completely closing the opening and creating a fire compartment.

In the event of mains power failure, they remain retracted using their own dedicated battery back-up power supply for a predetermined period (nominally 30 minutes). If signalled to descend during this period, they fail-safe by gravity in a controlled manner to their fire operational position. At the end of the pre-determined time delay they fail-safe by gravity in a controlled manner. This safety feature is essential to avoid dangerous guillotine/ free-fall deployment. Battery backup is a function to reduce nuisance activations of the Fire Curtain.

Once the fire alarm signal is restored the FireMaster® Plus Fire Curtain is manually reset by pressing the reset button on its control panel.

2.5 System Components

Headbox

The fire curtain is concealed in a zinc anneal mild steel headbox of not less than 1.2mm thickness which provides protection for the barrier (curtain) and acts as a fixing element to the building structure. This can be powder coated to a standard DULUX colour. There are three headbox types:

- FM 19/23 – headbox which is 190mm wide & 230mm high for widths up to 4 metres & drop height up to 3 metres
- FM 24/29 – headbox which is 240mm wide & 290mm high for widths up to 4 metres & drop height up to 7.5 metres
- WSR 23/23 – headbox which is 235mm wide & 235mm high for widths up to 30 metres & drop height up to 4 metres
- WSR 25/30 – headbox which is 250mm wide & 300mm high for widths up to 30 metres & drop height up to 6 metres
- WSR 30/34 – headbox which is 300mm wide & 340mm high for widths up to 30 metres & drop height up to 7.5 metres

D.	Headbox type:	FM /
E.	Powder coat finish:	Yes / No DULUX

Bottom Bar

The bottom bar assembly is attached to the lower edge of the fabric, and acts to keep the fabric hanging vertical when the curtain is in the lowered position, minimising deflection due to air currents. The bottom bar must form one continuous section when installed. The bottom tray is zinc anneal mild steel of not less than 2mm thickness and can be powder coated to a standard DULUX colour. It is tested up to 10kg/m.

The jumbo bottom bar is 73mm high and 40mm wide, weighing 3.5kg/m as standard before adding additional weight.

F.	Powder coat finish:	Yes / No DULUX
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Side Guides

Side guide is zinc anneal mild steel of not less than 1.6mm thickness and is a side fixing element to the building structure. This can be powder coated to a standard DULUX colour.

The Fire Curtain fabric is restrained at the sides in the side guides, which prevents fire spread at the sides.



The side guide assembly is either a 2 or 3 part assembly, the third part being a front fixing angle for face mount installation detail. The overall size of the 2 part assembly is 33mm wide and 100mm deep (nominally) for Fire Curtain drop up to 5 metres high and 33mm wide by 130mm deep for longer drops.

G. Powder coat finish:	Yes / No DULUX
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Fabric

The curtain material is a continuous filament glass fibre and stainless steel wire fabric with fire retardant intumescent graphite flake silicone coating. It is 2mm thick, and weighs approximately 1.64kg/m² in its finished form. The fabric is manufactured in widths of approximately 1.5m and is tested in the vertical and horizontal orientation including the sewing yarns.

Motor

Motors shall meet all applicable safety standards. Motors shall operate at 24Vdc and contain the necessary drive mechanisms, a mechanical epicyclical gearbox retarder, automatic overload protection and both automatic and manual distance travel positioning, linked to an internal 24Vdc electromagnetic brake with regenerative braking system. When Motors are retracted their internal drive motor shall be isolated from all power and the barrier shall be held in position by an internal electromagnetic brake. This ensures the barriers not drift upward or downward.

The barrier assemblies shall have true fail-safe by gravity, in accordance with BSI PAS 121, and be able to move to their fire operational position even in the event of open or closed circuit wiring, or total system corruption, with controlled braking system and drive mechanisms. All working parts shall be totally enclosed and protected within the steel enclosure and shall be tested as part of the complete assembly for fire resistance. Additionally, the motor(s) shall be tested for operation at temperatures of 400 °C as required by BS 8524-1.

The motor is required to have short circuit protection. This requires that the motor will still operate and default down by gravity if the motor cabling has any short circuit.

Motors do not use mechanical top or bottom limits to stop the Fire Curtain to reduce maintenance costs. To enable easy maintenance the motor(s) shall be positioned and mounted outside the headbox. The motor(s) must be able to be mounted on either vertical face or the top face to suit site conditions.

Controls

The control system of the Fire Curtain is designed as a standalone system and is automated in the building by the connection of the project power and alarms. As such the control panel must be tested and approved by an Independent Third Party authority to confirm that it performs the function stated by the manufacturer.

Coopers Battery Back-Up – Controls Grouped (BBU-CG) or Emergency Retract Unit – Controls Grouped (ERU-CG) control panels are to be provided. Both control panels incorporate battery backup functionality. Battery backup is a function to reduce nuisance activations of the Fire Curtain and will hold the curtain open for 30 minutes on loss of mains power.

ERU-CG will be supplied if any additional control functions from Section 2.7 of this specification are incorporated. Otherwise BBU-CG will be supplied.

2.6 Additional Functions (where required)

Suspended framework

Threaded rod and unistrut frame work system is to be installed at 1,000mm pitching along the length of the Fire Curtain and at all nominated locations by the manufacturer. The design of this framework is to be as approved in the fire resistance approvals to AS1530.4 as a suitable installation method.

H. Suspended framework:	Required / Not Required
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Bulkhead Batt fire rating above headbox

Where suspended framework is required and the section above the Fire Curtain is concealed, a Bulkhead Batt fire system is required. This system allows for fire rating up to - / 240 / 240 and compliance with BCA Specification C3.15 and AS4072.1 dependant on the fire rating of the adjacent substrate and the penetrations going through the barrier.



For suspension up to 600mm a single layer Bulkhead Batt is to be installed to the approved details of the manufacturer. Suspended framing from 600mm up to 1200mm is a double layer Bulkhead Batt installed in the required installation detail by the manufacturer of the Fire Curtain.

Service penetrations are to be fire protected in accordance with the requirements of the Bulkhead Batt manufacturer. Refer to the manufacturer or supplier for further details.

[Bulkhead Batt datasheet](#)

Fabric barrier fire rating above headbox

Where suspended framework is required and the section above the Fire Curtain can be uninsulated, a static fabric barrier can be installed. The use of the static fabric barrier is addressed in the fire engineering report.

I.	Above headbox fire rating:	Substrate / Bulkhead Batt / Fabric Barrier
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Light Warning

This is a visual alert. A red flashing light will flash whilst the curtain is down or coming down. This will be located adjacent to the Fire Curtain on one or both sides as nominated in this specification. See datasheet (VS6-LWC).

J.	Light Warning:	Required / Not Required
K.	Location:	.....

Voice Warning

This is an audio and/or spoken multi message facility. The unit can give one customised up to 16 second message relayed when the curtain system activates or two 8 second customised messages relayed at different system events e.g. one message when the curtain activates and a different message when emergency retract is used. The default message is "Warning, fire curtain descending". The Voice Warning will only be audible in the vicinity of the Fire Curtain and will not interfere with the building's Occupant Warning System (EWIS). See datasheet (VS6-VWR or VS6-VWC)

L.	Voice Warning:	Required / Not Required
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Emergency Retract

A push button retract facility is required for escape and emergency service access. Once pressed, the curtain will retract to its top position, hold for a specified time duration (usually 10 seconds) then deploy again to its fire operational (down) position. This will allow for the temporary hold open of the curtain for evacuation/egress, and then revert back to its fire separating position.

When specified the controls need to an Emergency Power Supply unit. The emergency power supply unit will be able to provide an available power source during fire mode which can retract the curtain without any external services (i.e. power). This system also come as standard with the battery backup supply. All control cabling needs to be upgraded to fire rated. See datasheet (VS6-ERU-CAM or VS6-ERU-CG) & (VS6-ERR or VS6-ERDL)

M.	Emergency Retract:	Required / Not Required
N.	Hold Open Time:	..... seconds

Split Drop Delay

Upon activation the Fire Curtain must partially descend to a predetermined height to permit preliminary escape and initial smoke containment. After a time delay the Fire Curtain descends to the full fire operational position. The set hold open height will be accurate to ±50mm and the hold open time will be accurate to ±2 seconds.

O.	Split Drop Delay:	Required / Not Required
P.	Hold Open Height:	..... mm
Q.	Hold Open Time:	..... seconds



Dual Drop

Upon activation (e.g. smoke detection) the Fire Curtain must partially descend to a predetermined height to permit preliminary escape and initial smoke containment. On secondary activation (e.g. heat detection) the Fire Curtain descends to the full fire operational position. There can also be an overall time delay which will be deploy the Fire Curtain after this amount of time if the secondary activation device has not activated. The set hold open height will be accurate to ±50mm and the override time will be accurate to ±2 seconds.

R.	Dual Drop:	Required / Not Required
S.	Hold Open Height:	..... mm
T.	Secondary activation device:	.....
U.	Override Time:	..... seconds

Obstruction Warning System

The Obstruction Warning System monitors the opening protected by a fire curtain to ensure the opening is kept clear. If the opening is obstructed for longer than the time allowed (normally 5 minutes) the system will be activated. This system requires a Light Warning and/or Voice Warning to notify of the obstruction. The default Voice Warning message is “Warning, please remove obstruction”. Once the obstruction has been removed the system notification warning stops automatically and the system reverts to monitor mode. See datasheet (VS6-OWS-C).

Multiple ceiling mounted sensors are required to be installed in the adjacent ceiling. Each sensor can detect a wide of approximately 2.4m and come in either flush mount or face mount installation options.

V.	Obstruction Warning System:	Required / Not Required
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Building Management System Outputs

The status of the fire curtain system can be monitored by the building management system with the following outputs that can be monitored:

- Mains power status
- Alarm status
- Battery condition
- Curtain Up
- Curtain Down
- Curtain fault

Each output from the control panel is supplied as a normally closed or normally open dry connect for connection to the BMS system by others. If 24Vdc output is required please contact the manufacturer.

W.	Building Management Outputs:	Required / Not Required
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SLAT Operable Access Panel

A 150mm wide ceiling interface is to be applied to the bottom bar. When the curtain is deployed this acts as an access panel to service the Fire Curtain from the underside. The headbox must be installed 150 – 200mm above the ceiling. The SLAT will provide an architectural finish to the system. The ceiling interface can be powder coated to a standard DULUX colour.

X.	SLAT Operable Access Panel:	Required / Not Required
Y.	Powder coat finish:	Yes / No DULUX

Signage

Signs must be installed on each side of the fire curtains located over the opening stating:

WARNING – AUTOMATIC FIRE CURTAIN
DO NOT OBSTRUCT



The words "WARNING - AUTOMATIC FIRE CURTAIN" must be in capital letters not less than 50mm high in a colour contrasting with the background and "DO NOT OBSTRUCT" must be in capital letters not less than 20mm high.

Z. Signage:	Required / Not Required
AA. Wording:	.....
AB. Location:	.....

Curtain Signage

Signage is to be provided direct to the Fire Curtain. The signage is to be printed with black text onto a piece of EFP™ 2/600/T fabric which is direct fixed to the Fire Curtain in the nominated location.

AC. Curtain Signage:	Required / Not Required
AD. Wording:	.....
AE. Location:	.....

2.7 Product Performance:

The complete FireMaster® Plus Fire Curtain inclusive of headbox, motor, fabric and bottom bar is to be tested or assessed to the requirements outlined in Section 1.4 of this specification. A summary of this performance is:

- FRL of - / 120 / - for sizes up to 30 metres wide and drop height of 7.5 metres.
- Must meet the radiation criterion of 10kW/m² at 365mm as tested in AS1530.4(2005) for a period of not less than 90 minutes when measured at the centre of the curtain
- Air (smoke) leakage not exceeding 3 m³/m/hr at 25Pa through the fabric when tested to EN 1634-3
- 1,600 cycle testing without maintenance or adjustment
- Twice the Severe Duty (SD) testing in accordance with BS 5234-2
- Test to ensure that operating speed is within 0.06 - 0.15 m/sec for all operating modes, power available and true gravity fail safe to BS8524-1

2.8 Labelling

The Coopers FireMaster® Plus Fire Curtain must be labelled with a metal tag riveted to the bottom bar clearing showing the Fire Curtain details, manufacturer, installation date and FRL.

3 EXECUTION

3.1 Installation

Coopers FireMaster® Plus Fire Curtain shall be installed by manufacturer trained and Approved Installers in strict adherence with the manufacturer's guidelines and the advice (if required) of their official representative.

Ensure that the structure being fixed to is suitably fire rated and to the manufacturer's specifications.

All Coopers FireMaster® Plus Fire Curtains shall be carefully located in the positions indicated on the approved Shop Drawings in perfect alignment, plumb, level, straight and true.

Adjust the active fire curtain barrier assemblies to provide uniform clearances and smooth non-binding operation.

Install all wiring to active fire curtain barrier assemblies in strict accordance with the manufacturers written instructions and AS/NZS 3000:2007 Wiring Rules.

3.2 Commissioning

The installer shall perform suitable tests to ensure that the Coopers FireMaster® Plus active fire curtain barrier assemblies operate in accordance with the Contract Documents and this specification.



Complete interface testing shall be performed between all associated trades to ensure that the Coopers FireMaster® Plus Fire Curtain work correctly in fire mode. At a minimum this will be between the fire alarm/s and Fire Curtain.

3.3 Maintenance

The Coopers FireMaster® Plus Fire Curtain shall be included in the required Fire Safety Measures for the building and must be maintained in accordance with the manufacturer's recommendations. At a minimum the active fire barriers shall be inspected and maintained in accordance with AS1851 (2012) Section 13 which requires 6 monthly intervals. Maintenance and inspections shall be performed by fully trained and competent technicians.