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ONE SEALANT, ENDLESS SOLUTIONS

Quick Reference Guide

FireMastic-HPE™ System

EDITION2

Head Office: Unit 1/16 Atkinson Rd Taren Point NSW 2229 Australia

Contents

Thank you

Thank you for purchasing or enquiring about the BOSS Fire Products. We manufacture our products to the highest quality standards, and we appreciate your supporting an Australian Owned company. If you have any feedback or questions relating to the product or it's designed purposes, please contact us on 1300 502 677 or +61 2 9531 8591 or info@bossfire.com.au.

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Introduction

This Quick Reference Guide is a document developed as a first reference for users to be able to determine if FireMastic-HPE™ might be suitable for their firestopping building application in Fire Rated Plasterboard Systems.

This document must be read in conjunction with the appropriate Technical Data Sheets, Safety Data Sheets and relevant Test or Assessment report relative to the listed system. You must follow adhere to the items outlined in the Important Information section outlined below before specifying, installing or certifying any BOSS Fire products or systems.

Important Information

Fire separation is a critical part of life safety in building design and must be treated carefully. Follow the steps below to help ensure your installation is carried out correctly and compliantly.

1. Always read and understand the appropriate certification relevant to the listed system contained in this guide. Test and Assessment reports are available at bossfire.com.au. If you cannot access a copy of a particular report please contact BOSS Fire® to request a copy. If you do not understand it, then please contact BOSS Fire® for technical clarification on the details contained therein.
2. Ensure the Approved Applications detailed in the Test and/or Assessment report is applicable to your construction details or for further details on 'as-tested' systems contact BOSS Fire® on the details below.
3. All BOSS Products must be installed in accordance with the manufacturer's specifications & certification or be subject of a Performance Solution.
4. This Quick Reference Guide must be read in conjunction with the product test or assessment reports. Always read and understand these documents carefully.
5. Always check your relevant Building Regulations, local laws and AS/NZS Standards to properly understand your obligations.
6. Ensure you have an accredited Certifier or 3rd party compliance inspector to check your proposed system before installation. Pre-approval can help to save significant costs and delays and avoid non-compliance.
7. NOTE: This guide will be updated from time to time, and you must ensure they are reviewing the most recent version at the time of installation. Please visit the BOSS Fire® website (bossfire.com.au) to check for further updates or contact us on the below details.
8. If you don't understand anything contained in this guide and would like clarification, contact BOSS Fire® on the details below.

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FireMastic-HPE™

FireMastic-HPE™ is a graphite-based, High Pressure Exerting fire rated sealant used to reinstate the fire resistance performance of wall, floor & ceiling systems. Under heat, **FireMastic-HPE™** will expand up to 40 times its volume and exerts pressure to the surrounding substrates leading to closure of the penetration. The integrity and insulation are then maintained by the stability of the remaining product char. **FireMastic-HPE™** is intended for use on service penetrations through walls, floors and ceilings and is tested and approved on an extensive range of Plumbing, Electrical and HVAC/R services. This product offers unrivalled versatility.

Applications

Use in a variety of applications:

- Lagged copper pipes
- A/C paircoil bundles
- Combustible pipes: uPVC & DWV Pipes, cPVC Sprinkler Pipes, PEX water pipes, PEX-AL Gas Pipes, PP-R Pipes (Aquatherm), Kelox pipes & ABS & PE pipes
- Electrical Cable Bundles: Power cables, Data & comms cables & Fire alarm cables

Key Benefits

- Long life and Paintable
- Fire Rating up to FRL -/240/240
- Easy gunning & tooling
- Lubrizol Compatible Sealant for cPVC Sprinkler Pipes
- Ultra-low VOC
- Cost effective
- Packaging made from recycled materials

Product Codes

FMHPE-3 Cartridge 310ml – Charcoal Grey
FMHPE-6 Foil Sausage 600ml – Charcoal Grey

Table 1.

Min 90mm thick single layer 13mm fire rated plasterboard walls

Service type	Service details	System details	FRL	Ref.
Power cable Bundle*	Up to 8 × 2.5mm² 3 core power cables	Sealant to depth of plasterboard in max. 60mm aperture finished flush.	-/60/60	WF FAS 190335 Table 33 Page 63
Optical cable*	Single core 5mm OD NBN cable.	20mm × 20mm fillet on non-exposed side only OR exposed side only.	-/60/60	WF FAS 190335 Table 35 Page 64
PEX pipe	Up to 20mm	Sealant to depth of plasterboard in annular gap of up to 20mm finished flush both sides.	-/60/60	WF FAS 190335 Table 11 Page 32
HVAC bundle*~^	Up to 10mm / 15mm insulated copper pipes with non-rated lagging, *Up to 2.5mm² 2C+E TPS power cable *Up to 1.5mm² 2C data cable. Up to 20mm uPVC conduit	Sealed to depth of plasterboard in 80mm aperture finished flush on penetrated side. Second layer of plasterboard 150mm x 150mm over penetration, edges coated with a 13mm x 13mm fillet of BOSS FireMasitc-300.	-/60/60	WF FAS 190335 Table 50 Page 81
HVAC bundle*~^	Services penetrating one side of wall: Up to 6.35mm / 9.52mm insulated copper pipes with non-rated lagging, *Up to 1.5mm² 2C+E TPS power cable. Up to 16mm PVC flexible outlet pipe.	Sealed to depth of plasterboard in annular gap finished flush on penetrated side.	-/60/60	

VARIATIONS

* Cables remain valid if the diameter of a single cable is reduced and/or the number of cables is reduced provided the overall outside diameter is not greater than tested. Ref Clause FAS190335 - 4.1.17

~ HVAC bundles represent the maximum number of services. Services are allowed to be removed from the bundle provided the annular gap, depth &/or fillet are maintained. Ref Clause FAS190335 4.1.25

^ Non fire rated lagging can be substituted for fire rated lagging. Ref Clause FAS190335 4.1.26

Table 2.

Min 96mm thick single layer 16mm fire rated plasterboard walls

Service type	Service details	System details	FRL	Ref.
PEX pipe	Up to 20mm	Sealant to depth of plasterboard in maximum 20mm annular gap finished flush both sides	-/90/90	WF FAS 190335 Table 11 Page 32

Table 3.

Min 100mm thick double layer 13mm fire rated plasterboard walls

Service type	Service details	System details	FRL	Ref.
PVC pipe or conduit	Up to 40 × 1.9mm	Sealant to depth of plasterboard in 20mm annular gap with additional 10mm × 10mm fillet both sides	-/120/120	WF FAS 190335 Table 11 Page 32
PVC pipe or conduit	Up to 125 × 9.2mm	Sealant to depth of plasterboard in 20mm annular gap with additional 10mm × 10mm fillet both sides	-/60/60	
PVC pipe or conduit	Up to 125 × 1.8mm	Sealant to depth of plasterboard in 20mm annular gap with additional 10mm × 10mm fillet both sides	-/30/30	
PVC pipe or conduit	**Services penetrating one side of wall:** Up to 40 × 1.9mm	Sealant to depth of plasterboard with additional 10mm × 10mm fillet both sides	-/120/120	
PE pipe	40 × 3.7mm	Sealant to depth of plasterboard in 20mm annular gap with additional 10mm × 10mm fillet both sides	-/30/30	
ABS pipe	Up to 40mm	Sealant to depth of plasterboard in 20mm annular gap with additional 10mm × 10mm fillet both sides	-/120/120	
Insulated copper pipe	Up to 159mm	32mm glass wool insulation around pipe min. 1000mm on both sides with sealant to a depth of 25mm in annular gap finished flush both sides.	-/120/120	WF FAS 190335 Table 19 Page 47
Insulated copper pipe	Up to 159mm	32mm Armaflex® insulation around pipe min. 1000mm on both sides with sealant to a depth of 25mm in annular gap finished with additional 10mm x 10mm fillet both sides.	-/120/120	
Uponor water valves	**Services penetrating one side of wall:** Up to 52mm	Sealed to depth of plasterboard in annular gap finished flush on penetrated side.	-/120/120	

Table 4.

Min 116mm thick double layer 13mm fire rated plasterboard walls

Service type	Service details	System details	FRL	Ref.
Power cable bundle*	Up to 22 × 2.5mm² 2C+E power cables.	Sealant to depth of plasterboard in 90mm aperture finished flush	-/120/60	WF FAS 190335 Table 35 Page 65
Power cable bundle* & HDPE Pipe	• A1 - Bundle of up to 10 × 5C × 1.5mm² PVC/PVC cables – Ø14mm • A2 - Bundle of up to 10 × 5C × 1.5mm² EPR/PO cables – Ø11.2mm – Ø14.4mm • A3 - Bundle of up to 10 × 5C × 1.5mm² XLPE/EVA cables – Ø13mm • B - Bundle of up to 2 × 1C × 1.5mm² PVC/PVC cables – Ø18mm – Ø21mm • Up to 63mm HDPE pipe	Sealant to depth of plasterboard applied in the voids around the cables and pipe in a maximum aperture of 300mm wide x 100mm high.	-/120/120	
Power cable bundle*	Up to 4 × 0.75mm² TPS (fire alarm) power cables.	Sealant 25mm deep in 30mm aperture finished flush	-/120/120	
Power cable bundle*	Up to 6 × 2.5mm² 2C+E power cables.	Sealant 25mm deep in 57mm aperture finished flush	-/120/120	
Power cable bundle*	Up to 1 × 16mm² 2C+E power cables.	Sealant 25mm deep in 40mm aperture finished flush	-/120/120	
Alarm cable bundle*	Up to 4 × ELV extra low voltage alarm cables.	Sealant to depth of plasterboard in 57mm aperture finished flush	-/120/90	WF FAS 190335 Table 35 Page 64
Fire alarm cable bundle*	Up to 8 x Fire alarm cables.	Sealant to depth of plasterboard with 15mm annular gap finished flush both sides	-/120/120	
Data cable bundle*	Up to 2 × RG6 coax cables, Up to 2 × CAT6 cables, Up to 2 × 4 core security cables (7/0.20mm). Up to 6 of any type of the above listed cables	20mm deep in 40mm aperture finished flush	-/120/120	
Data cable bundle*	Up to 38 x CAT6 data cables	Sealant to depth of 25mm finished flush on both sides	-/120/60	
cPVC pipe	Up to 32mm (43mm OD)a	Sealant to depth of plasterboard in 18.5mm annular gap with additional 15mm × 15mm fillet both sides	-/120/120	WF FAS 190335 Table 11 Page 32
uPVC pipe or conduit	Up to 20mm	0mm annular gap finished with a 15mm × 15mm fillet both sides	-/120/120	
uPVC pipe or conduit	Up to 20mm	Sealant to depth of plasterboard in 20mm annular gap with additional 20mm × 20mm fillet both sides	-/120/120	

Table 4.

Continued

Service type	Service details	System details	FRL	Ref.
uPVC pipe	Up to 32mm	Sealant 25mm deep in 20mm annular gap with additional 20mm × 20mm fillet both sides	-/120/120	
PEX/AL/PEX pipe	Up to 20mm	Sealant to depth of plasterboard in 5 – 20mm annular gap finished flush both sides	-/120/120	
PEX/AL/PEX pipe	Up to 25mm	Sealant to depth of plasterboard in 11.5mm annular gap with additional 20mm × 20mm fillet both sides	-/120/120	
Pair coil~	Up to 9.5mm OD copper pipes with up to 35.5mm OD lagging Up to 15.8mm OD Copper Pipes with up to 41.1mm OD lagging	Sealed to depth of plasterboard in annular gap with additional 10mm × 10mm fillet both sides	-/90/90	
HVAC bundle*~^	Polyaire insulated copper pipe, *Up to 1.5mm² 2C+E TPS power cable, *Up to 16mm PVC flexible outlet pipe.	Sealed to depth of 13mm in maximum 80mm aperture finished flush on both sides	-/60/60	WF FAS 190335 Table 52 Page 83
HVAC bundle*~^	Up to 10mm / 15mm insulated copper pipes with non-rated lagging, *Up to 2.5mm² 2C+E TPS power cable, *Up to 1.5mm² 2C data cable. *Up to 20mm uPVC conduit	Sealed to depth of plasterboard in maximum 80mm aperture finished flush on both sides	-/60/60	
HVAC bundle*~	• Up to 16mm × 10mm insulated copper with 13mm thick rubber foam lagging • *Up to 2.5mm² 2C+E TPS power cable, • *Up to 1.5mm² 2C data cable. • Up to 20mm uPVC conduit	Sealed 25mm deep in maximum 125mm aperture with additional 25mm × 25mm fillet both sides	-/120/120	
HVAC bundle*~	• Up to 16mm × 10mm insulated copper with 13mm thick rubber foam lagging • *Up to 1.5mm² 6 core electric cable.	Sealed 25mm deep in maximum 125mm aperture with additional 25mm × 25mm fillet both sides	-/120/120	
HVAC bundle*~	• Up to 3 x 20mm insulated copper with 13mm thick Armaflex foamed nitrile rubber lagging • *Up to 2.5mm² 2C+E TPS power cable • *Up to 1.5mm² 2C data cable.	Sealed 25mm deep in maximum 125mm aperture with additional 25mm × 25mm fillet both sides	-/120/120	

VARIATIONS

* Cables remain valid if the diameter of a single cable is reduced and/or the number of cables is reduced provided the overall outside diameter is not greater than tested. Ref Clause FAS190335 - 4.1.17

~ HVAC bundles represent the maximum number of services. Services are allowed to be removed from the bundle provided the annular gap, depth &/or fillet are maintained. Ref Clause FAS190335 4.1.25

^ Non fire rated lagging can be substituted for fire rated lagging. Ref Clause FAS190335 4.1.26

Table 5.

Min 118mm thick single layer 13mm fire rated plasterboard walls

Service type	Service details	System details	FRL	Ref.
Power cable	16mm² 2C+E power cables.	Sealant to depth of plasterboard in 24mm aperture finished flush	-/60/60	PF 23029 Specimen 7
Power cable bundle	16mm² 2C+E power cables.	Sealant to depth of plasterboard in Max 3mm annular gap with additional 15mm × 15mm fillet both sides	-/60/60	PF 23031 Specimen 2
Power cable	4 × 2.5mm² 2C+E TPS cable bundle.	Sealant to depth of plasterboard in 4.5-6mm annular gap with additional 15mm × 15mm fillet both sides	-/60/60	PF 23029 Specimen 10
Power cable bundle	Services penetrating one side of wall: 4 × 2.5mm² 2C+E TPS cable bundle.	Sealant to depth of plasterboard in Max 4mm annular gap finished flush to penetrated side	-/60/60	PF 23030 Specimen 6
Fire alarm cable bundle	4 × 1.5mm² 2C+E fire alarm cable bundle.	Sealant to depth of plasterboard in Max 2.5mm annular gap finished flush both sides	-/60/60	PF 23031 Specimen 3
Data cable bundle	2 × Cat6, 2 × COAX, 1 × security cable bundle.	Sealant to depth of plasterboard with Max 5.5mm annular gap finished flush both sides	-/60/60	PF 23029 Specimen 8
Data cable bundle	2 × Cat6, 2 × COAX, 1 × security cable bundle.	Sealant to depth of plasterboard with Max 6mm annular gap with additional 15mm × 15mm fillet both sides	-/60/60	PF 23029 Specimen 9
Data cable bundle	Services penetrating one side of wall: 2 × Cat6, 2 × COAX, 1 × security cable bundle.	Sealant to depth of plasterboard in Max 7.5mm annular gap finished flush on penetrated side	-/60/60	PF 23030 Specimen 8
cPVC pipe	Up to 32mm (43mm OD)	Sealant to depth of plasterboard in Max 6.5mm annular gap with additional 15mm × 15mm fillet both sides	-/60/60	PF 23029 Specimen 11
cPVC	Up to 40mm (48.5mm OD)	Sealant to depth of plasterboard in Max 7mm annular gap with additional 15mm × 15mm fillet both sides	-/60/60	PF 23030 Specimen 9
uPVC – NBN Conduit	25mm	Sealant to depth of plasterboard in 6mm annular gap with additional 15mm × 15mm fillet both sides	-/60/60	PF 23029 Specimen 6
uPVC pipe or conduit	Services penetrating one side of wall: Up to 43mm	Sealant to depth of plasterboard in 21.5mm annular gap finished flush one side	-/90/90	WF FAS 190335 Table 11 Page 32
PVC pipe or conduit	Services penetrating one side of wall: 43mm	Sealant to depth of plasterboard in 88mm aperture finished flush	-/90/90	
PEX pipe	25mm	Sealant to depth of plasterboard in 5.5mm annular gap finished flush	-/45/30	PF 23030 Specimen 1
PEX pipe	25mm	Sealant to depth of plasterboard in Max 4.5mm annular gap finished flush. Additional BOSS 32mm MaxiCollar both sides.	-/60/60	PF 23030 Specimen 3
PEX pipe	20mm	Sealant to depth of plasterboard in Max 6mm annular gap finished flush	-/60/60	PF 23029 Specimen 4
PEX pipe	Services penetrating one side of wall: 20mm	Sealant to depth of plasterboard in Max 5mm annular gap finished flush to penetrated side	-/60/60	PF 23030 Specimen 11

Table 5.

Continued

Service type	Service details	System details	FRL	Ref.
PE-Xa pipe	Services penetrating one side of wall: Up to 20mm	Sealant to depth of plasterboard in 17.5mm annular gap finished flush	-/90/90	WF FAS 190335 Table 11 Page 32
PE-Xa pipe	Services penetrating one side of wall: Up to 20mm	Sealant to depth of plasterboard in 55mm annular gap finished flush to penetrated side	-/60/60	WF FAS 190335 Table 11 Page 32
PEX/AL/PEX pipe	Up to 20mm	Sealant to depth of plasterboard in Max 20mm annular gap with additional 15mm × 15mm fillet both sides	-/60/60	PF 23029 Specimen 3
PEX/AL/PEX pipe	Up to 20mm	Sealant to depth of plasterboard in Max 5mm annular gap both sides finished flush	-/60/60	PF 23029 Specimen 5
PEX/AL/PEX pipe	Services penetrating one side of wall: Up to 20mm	Sealant to depth of plasterboard in Max 5.5mm annular gap both sides finished flush	-/60/60	PF 23031 Specimen 9
HVAC bundle	1 × 15.5mm + 9.5mm pair coil with 19mm + 17.5mm insulation, 1 × TPS cable, 1 × Instrolex® control cable, 1 × 20mm uPVC condensate drain.	Sealed to depth of plasterboard in Max 6.5mm annular gap with additional 15mm × 15mm fillet both sides	-/60/60	PF 23031 Specimen 1
Steel pipe	40mm	Sealant to a depth of plasterboard in Max 8.5mm annular gap with additional 30mm × 30mm fillet both sides	-/60/60	PF 23031 Specimen 10

Table 6.

Min 130mm thick double layer 13mm fire rated plasterboard walls

Service type	Service details	System details	FRL	Ref.
Steel pipe	Up to 324mm	75mm insulation installed around pipe 300mm on exposed face and 400mm on non-exposed face with sealant to a depth of plasterboard in 5mm annular gap finished flush both sides.	-/90/90	WF FAS 190335 Table 19 Page 47
Insulated copper pipe	Up to 15mm	13mm Armaflex® insulation around pipe 580mm each side with sealant to a depth of 25mm in annular gap finished flush both sides.	-/120/120	
Insulated copper pipe	Up to 25mm	25mm stone wool insulation around pipe 400mm on each side with sealant to a depth of 16mm in annular gap with additional 35mm × 35mm fillet both sides.	-/120/120	
Insulated copper pipe	Up to 60mm	32mm Armaflex® insulation around pipe min. 600mm on both sides. Additional wrapping with P40 MAK Wrap extending 600mm on both sides, with sealant to a depth of 25mm finished flush both sides.	-/120/120	
Insulated copper pipe	Up to 100mm	50mm stone wool insulation around pipe min. 600mm on both sides with sealant to a depth of 16mm in annular gap with additional 35mm × 35mm fillet both sides.	-/120/120	

Table 7.

Min 144mm thick double layer 13mm fire rated plasterboard walls

Service type	Service details	System details	FRL	Ref.
Power cable bundle	16mm² 2C+E power cables.	Sealant to depth of plasterboard in 24mm aperture finished flush	-/60/60	PF 23029 Specimen 7
cPVC pipe	Up to 50mm (60.3mm OD)	Sealant to depth of plasterboard in 20mm annular gap finished flush both sides	-/120/60	WF FAS 190335 Table 11 Page 32
uPVC pipe or conduit	Up to 40mm	Sealant to depth of plasterboard in 20mm annular gap finished flush both sides	-/120/120	
uPVC pipe or conduit	Up to 50mm	Sealant to depth of plasterboard in 20mm annular gap finished flush both sides	-/120/120	
uPVC pipe or conduit	Up to 80mm	Sealant to depth of plasterboard in 20mm annular gap finished flush both sides	-/90/90	
PEX/AL/PEX pipe	Up to 25mm	Sealant to depth of plasterboard in 20mm annular gap finished flush both sides	-/120/30	

Table 8.

Min 156mm thick double layer 13mm fire rated plasterboard walls

Service type	Service details	System details	FRL	Ref.
PVC pipe	Services penetrating one side of wall: 43mm	Sealant to depth of plasterboard in 90mm aperture finished flush. with an additional baffle of 13mm plasterboard both sides and 12mm plywood fixed to steel angles inside cavity to penetrated side	-/120/120	WF FAS 190335 Table 11 Page 32

Table 9.

Shaftliner / Shaftwall system with at least 2 layers of 13mm fire-rated plasterboard

Service type	Service details	System details	FRL	Ref.
Power cable Bundle	16mm² 2C+E power cables.	Sealant to depth of plasterboard in 24mm aperture finished flush	-/60/60	PF 23029 Specimen 7
Power cable Bundle*	Up to 22 × 2.5mm² 2C+E power cables.	Sealant to depth of plasterboard in 90mm aperture finished flush	-/120/60	WF FAS 190335 Table 11 Page 32
Power cable Bundle*	• A1 - Bundle of up to 10 × 5C × 1.5mm² PVC/PVC cables – Ø14mm • A2 - Bundle of up to 10 × 5C × 1.5mm² EPR/PO cables – Ø11.2mm – Ø14.4mm	Sealant to depth of plasterboard applied in the voids around the cables and pipe in a maximum aperture of 300mm wide x 100mm high.	-/120/120	
HDPE pipe	• A3 - Bundle of up to 10 × 5C × 1.5mm² XLPE/EVA cables – Ø13mm • B - Bundle of up to 2 × 1C × 1.5mm² PVC/PVC cables – Ø18mm – Ø21mm • Up to 63mm HDPE pipe			

VARIATIONS

* Cables remain valid if the diameter of a single cable is reduced and/or the number of cables is reduced provided the overall outside diameter is not greater than tested. Ref Clause FAS190335 - 4.1.17

~ HVAC bundles represent the maximum number of services. Services are allowed to be removed from the bundle provided the annular gap, depth &/or fillet are maintained. Ref Clause FAS190335 4.1.25

^ Non fire rated lagging can be substituted for fire rated lagging. Ref Clause FAS190335 4.1.26

Table 9.

Continued

Service type	Service details	System details	FRL	Ref.
Power cable bundle*	Up to 4 × 0.75mm² TPS (fire alarm) power cables.	Sealant 25mm deep in 30mm aperture finished flush	-/120/120	
Power cable bundle*	Up to 6 × 2.5mm² 2C+E power cables.	Sealant 25mm deep in 57mm aperture finished flush	-/120/120	
Power cable bundle*	Up to 1 × 16mm² 2C+E power cables.	Sealant 25mm deep in 40mm aperture finished flush	-/120/120	
Alarm cable bundle*	Up to 4 × ELV extra low voltage alarm cables.	Sealant to depth of plasterboard in 57mm aperture finished flush	-/120/90	WF FAS 190335 Table 35 Page 64
Fire alarm cable bundle*	Up to 8 x Fire alarm cables.	Sealant to depth of plasterboard with 15mm annular gap finished flush both sides	-/120/120	
Data cable bundle*	Up to 2 × RG6 coax cables, Up to 2 × CAT6 cables, Up to 2 × 4 core security cables (7/0.20mm). Up to 6 of any type of the above listed cables	20mm deep in 40mm aperture finished flush	-/120/120	
Data cable bundle*	*Up to 38 x CAT6 data cables	Sealant to depth of 25mm finished flush on both sides	-/120/60	
cPVC pipe	Up to 32mm (43mm OD)	Sealant to depth of plasterboard in 18.5mm annular gap with additional 15mm × 15mm fillet both sides	-/120/120	WF FAS 190335 Table 11 Page 32
cPVC pipe	Up to 50mm (60.3mm OD)	Sealant to depth of plasterboard in 20mm annular gap finished flush both sides	-/120/60	
uPVC pipe or conduit	Up to 20mm	0mm annular gap finished with a 15mm × 15mm fillet both sides	-/120/120	
uPVC pipe or conduit	Up to 20mm	Sealant to depth of plasterboard in 20mm annular gap with additional 20mm × 20mm fillet both sides	-/120/120	
uPVC pipe or conduit	Up to 32mm	Sealant 25mm deep in 20mm annular gap with additional 20mm × 20mm fillet both sides	-/120/120	
uPVC pipe or conduit	Up to 40mm	Sealant to depth of plasterboard in 20mm annular gap finished flush both sides	-/120/120	
uPVC pipe or conduit	Up to 50mm	Sealant to depth of plasterboard in 20mm annular gap finished flush both sides	-/120/120	
uPVC pipe or conduit	Up to 80mm	Sealant to depth of plasterboard in 20mm annular gap finished flush both sides	-/90/90	
PVC pipe or conduit	Up to 40 × 1.9mm	Sealant to depth of plasterboard in 20mm annular gap with additional 10mm × 10mm fillet both sides	-/120/120	
PVC pipe or conduit	Up to 125 × 9.2mm	Sealant to depth of plasterboard in 20mm annular gap with additional 10mm × 10mm fillet both sides	-/60/60	
PVC pipe or conduit	Up to 125 × 1.8mm	Sealant to depth of plasterboard in 20mm annular gap with additional 10mm × 10mm fillet both sides	-/30/30	

Table 9.

Continued

Service type	Service details	System details	FRL	Ref.
PVC pipe or conduit	**Services penetrating one side of wall:** Up to 40 × 1.9mm	Sealant to depth of plasterboard with additional 10mm × 10mm fillet both sides	-/120/120	WF FAS 190335 Table 11 Page 32
PVC pipe or conduit	**Services penetrating one side of wall:** 43mm	Sealant to depth of plasterboard in 90mm aperture finished flush with an additional baffle of 13mm plasterboard both sides and 12mm plywood fixed to steel angles inside cavity to penetrated side	-/120/120	
PE pipe	40 × 3.7mm	Sealant to depth of plasterboard in 20mm annular gap with additional 10mm × 10mm fillet both sides	-/30/30	
ABS pipe	Up to 40mm	Sealant to depth of plasterboard in 20mm annular gap with additional 10mm × 10mm fillet both sides	-/120/120	
PEX/AL/PEX pipe	Up to 20mm	Sealant to depth of plasterboard in 5 – 20mm annular gap finished flush both sides	-/120/120	
PEX/AL/PEX pipe	Up to 25mm	Sealant to depth of plasterboard in 11.5mm annular gap with additional 20mm × 20mm fillet both sides	-/120/120	
PEX/AL/PEX pipe	Up to 25mm	Sealant to depth of plasterboard in 20mm annular gap finished flush both sides	-/120/30	
Uponor water valves	**Services penetrating one side of wall:** Up to 52mm	Sealed to depth of plasterboard in annular gap finished flush on penetrated side.	-/120/120	WF FAS 190335 Table 19 Page 47
Steel pipe	Up to 324mm	75mm insulation installed around pipe 300mm on exposed face and 400mm on non-exposed face with sealant to a depth of plasterboard in 5mm annular gap finished flush both sides.	-/90/90	
Insulated copper pipe	Up to 15mm	13mm Armaflex® insulation around pipe 580mm each side with sealant to a depth of 25mm in annular gap finished flush both sides.	-/120/120	
Insulated copper pipe	Up to 25mm	25mm stone wool insulation around pipe 400mm on each side with sealant to a depth of 16mm in annular gap with additional 35mm × 35mm fillet both sides.	-/120/120	
Insulated copper pipe	Up to 60mm	32mm Armaflex® insulation around pipe min. 600mm on both sides. Additional wrapping with P40 MAK Wrap extending 600mm on both sides, with sealant to a depth of 25mm finished flush both sides.	-/120/120	
Insulated copper pipe	Up to 100mm	50mm stone wool insulation around pipe min. 600mm on both sides with sealant to a depth of 16mm in annular gap with additional 35mm × 35mm fillet both sides.	-/120/120	
Insulated copper pipe	Up to 159mm	32mm glass wool insulation around pipe min. 1000mm on both sides with sealant to a depth of 25mm in annular gap finished flush both sides.	-/120/120	
Insulated copper pipe	Up to 159mm	32mm Armaflex® insulation around pipe min. 1000mm on both sides with sealant to a depth of 25mm in annular gap finished with additional 10mm x 10mm fillet both sides.	-/120/120	

Table 9.

Continued

Service type	Service details	System details	FRL	Ref.
Pair coil	Up to 9.5mm OD copper pipes with up to 35.5mm OD lagging Up to 15.8mm OD Copper Pipes with up to 41.1mm OD lagging,	Sealed to depth of plasterboard in annular gap with additional 10mm × 10mm fillet both sides	-/90/90	WF FAS 190335 Table 52 Page 83
HVAC bundle*~^	Polyaire© insulated copper pipe, Up to 1.5mm² 2C+E TPS power cable, Up to 16mm PVC flexible outlet pipe.	Sealed to depth of 13mm in maximum 80mm aperture finished flush on both sides	-/60/60	
HVAC bundle*~^	Up to 10mm / 15mm insulated copper pipes with non-rated lagging, Up to 2.5mm² 2C+E TPS power cable, Up to 1.5mm² 2C data cable. Up to 20mm uPVC conduit	Sealed to depth of plasterboard in maximum 80mm aperture finished flush on both sides	-/60/60	
HVAC bundle*~	Up to 16mm × 10mm insulated copper with 13mm thick rubber foam lagging Up to 2.5mm² 2C+E TPS power cable, Up to 1.5mm² 2C data cable. Up to 20mm uPVC conduit	Sealed 25mm deep in maximum 125mm aperture with additional 25mm × 25mm fillet both sides	-/120/120	
HVAC bundle*~	Up to 16mm × 10mm insulated copper with 13mm thick rubber foam lagging Up to 1.5mm² 6 core electric cable.	Sealed 25mm deep in maximum 125mm aperture with additional 25mm × 25mm fillet both sides	-/120/120	
HVAC bundle*~	Up to 3 x 20mm insulated copper with 13mm thick Armaflex foamed nitrile rubber lagging Up to 2.5mm² 2C+E TPS power cable, Up to 1.5mm² 2C data cable.	Sealed 25mm deep in maximum 125mm aperture with additional 25mm × 25mm fillet both sides	-/120/120	

Table 10.

Min 75mm thick Rigid walls – AAC/Hebel, Speedpanel/Korok, Concrete/Masonry

Service type	Service details	System details	FRL	Ref.
Power cable bundle*	Bundle of 22 × TPS cables - 2C+E 2.5mm²	25mm deep in 90mm aperture annular gap finished flush both sides	-/120/60	WF FRT 180473 Penetration system A
Power cable bundle*	Up to 22 × 2.5mm² 2C+E power cables.	Full depth of the wall and finished with 25 x 25mm fillet on both sides	-/90/90	WF FAS 190335 Table 37 Page 67
Power cable bundle* in conduit	Up to 32mm conduit (WT1.9mm) Up to 8 × 2.5mm² 2C+E TPS power cable inside the 32mm conduit	20mm deep in maximum 70mm aperture finished flush both sides	-/90/90	
Data cable bundle*	Up to 38 x CAT6 data cables	Full depth of wall in annular gap finished flush both sides.	-/120/60	
Alarm cable bundle*	Up to 4 × ELV extra low voltage alarm cables.	25mm deep in annular gap finished flush both sides	-/120/120	
Fire alarm cable bundle*	Up to 4 × 0.75mm² TPS (fire alarm) power cables.	25mm deep in annular gap finished flush both sides	-/120/120	
Data cable bundle*	Up to 2 × RG6 coax cables Up to 2 × CAT6 cable Up to 2 × 4 core security cables (7/0.20mm)	20mm deep in maximum 40mm aperture finished flush both sides	-/120/120	
cPVC pipe	Up to 32mm	20mm deep in maximum aperture 83mm with additional 15mm × 15mm fillet both sides	-/120/120	WF FAS 190335 Table 13 Page 39
cPVC pipe	60mm	25mm deep in 20mm annular gap finished flush both sides	-/120/-	WF FRT 180473 Penetration system M
uPVC pipe	Up to 20mm	24mm aperture with a surface seal only both sides	-/120/120	WF FAS 190335 Table 13 Page 39
uPVC pipe	Up to 25mm	25mm deep in annular gap with additional 20mm × 20mm fillet both sides	-/120/120	
uPVC pipe	40mm	10mm deep in annular gap with additional 25mm × 25mm fillet both sides	-/120/90	
PE-Xa pipe	Up to 32mm	25mm deep with 19mm annular gap finished flush both sides.	-/120/-	WF FRT 180473 Penetration system L
PE-Xa pipe	Up to 32mm	25mm deep in a maximum 60mm aperture with additional 20mm × 20mm fillet both sides	-/120/120	WF FAS 190335 Table 11 Page 32
PEX/AL/PEX pipe	Up to 20mm	25mm deep in annular gap finished flush both sides – 40mm aperture	-/120/120	
PEX/AL/PEX pipe	Up to 25mm	20mm deep in maximum 48mm aperture with additional 20mm × 20mm fillet both sides – 48mm aperture	-/120/120	

Table 10.

Continued

Service type	Service details	System details	FRL	Ref.
HVAC bundle*~	Up to 1 x 3/8" × 3/4" pair coil with 19mm thick FR lagging Up to 1 × 2.5mm² 3C+E TPS power cable Up to 1 × Cat6 cable Up to 1 × 20mm uPVC condensate pipe (WT 1.4mm).	20mm deep in maximum 127mm aperture with additional 25mm × 25mm fillet both sides	-/120/120	WF FAS 190335 Table 54 Page 86
HVAC bundle*~	Up to 1 × 3/8" × 5/8" pair coil with 13mm thick FR lagging Up to 1 × 2.5mm² 3C+E TPS power cable Up to 1 × Cat6 cable Up to 1 × 20mm uPVC condensate pipe (WT 1.4mm).	20mm deep in maximum 127mm aperture with additional 25mm × 25mm fillet both sides	-/120/120	
HVAC bundle*~	Up to 1 × 3/8" × 3/4" pair coil with 19mm thick FR lagging Up to 1 × 3/8" × 5/8" pair coil with 13mm thick FR lagging Up to 1 × 32mm type B copper pipe (WT 1.2mm) with 25mm thick lagging	20mm deep in maximum 152mm aperture with additional 25mm × 25mm fillet both sides	-/120/120	
HVAC bundle*~	Up to 1 × 3/8" × 5/8" pair coil with 9mm thick FR lagging Up to 2 × 2.5mm² 3C+E TPS power cable Up to 2 × Cat6 cable Up to 1 × 20mm uPVC condensate pipe (WT 1.4mm)	20mm deep in maximum 80mm aperture with additional 25mm × 25mm fillet both sides	-/120/120	
HVAC bundle*~	Up to 1 × 3/8" × 5/8" pair coil with 19mm thick FR lagging Up to 1 × 2.5mm² 3C+E TPS power cable Up to 1 × Cat6 cable Up to 1 × 20mm uPVC condensate pipe (WT 1.4mm)	20mm deep in maximum 127mm aperture with additional 25mm × 25mm fillet both sides	-/120/120	

VARIATIONS

* Cables remain valid if the diameter of a single cable is reduced and/or the number of cables is reduced provided the overall outside diameter is not greater than tested. Ref Clause FAS190335 - 4.1.17

~ HVAC bundles represent the maximum number of services. Services are allowed to be removed from the bundle provided the annular gap, depth &/or fillet are maintained. Ref Clause FAS190335 4.1.25

^ Non fire rated lagging can be substituted for fire rated lagging. Ref Clause FAS190335 4.1.26

Table 11.

Min 101mm thick Rigid walls – AAC/Hebel, Speedpanel/Korok, Concrete/Masonry with local thickening

Service type	Service details	System details	FRL	Ref.
Power cable bundle*	Up to 22 × 2.5mm² 2C+E power cables.	Full depth of wall in maximum 90mm aperture gap finished flush both sides.	-/120/120	WF FAS 190335 Table 37 Page 67
Data cable bundle*	Up to 38 x CAT6 data cables.	Full depth of wall in annular gap finished flush both sides.	-/120/120	
uPVC pipe	30 - 40mm	10mm deep in annular gap with additional 25mm × 25mm fillet both sides	-/120/120	WF FAS 190335 Table 13 Page 39

VARIATIONS

* Cables remain valid if the diameter of a single cable is reduced and/or the number of cables is reduced provided the overall outside diameter is not greater than tested. Ref Clause FAS190335 - 4.1.17

Table 12.

Cross Laminated Timber – Min 130mm Thick

Service type	Service details	System details	FRL	Ref.
Power cable bundle*	32mm conduit – 1.9mm thick Up to 6 × 2.5mm² 2C+E cable TPS cables inside 32mm conduit	20mm deep in annular gap both sides finished flush	-/90/90	WF FAS 190335 Table 45 Page 76
Power cable bundle*	Up to 16mm² 3C+E cable	20mm deep in annular gap both sides finished flush	-/90/90	
Power cable bundle*	40mm aperture incorporating the following cables: Up to 2 x CAT6 cables Up to 2 x RG6 Coax cables Security cable 1 × Fig 8 cable 2 x Fire alarm cables	20mm deep in annular gap both sides finished flush	-/90/90	
PEXa pipe	Up to 20mm	20mm deep in 20mm annular gap in maximum 60mm aperture, finished flush on both sides.	-/90/90	WF FAS 190335 Table 15 Page 41
	Up to 20.4mm	25mm deep in 12.5mm annular gap in maximum 45mm aperture, finished flush on both sides.	-/90/90	
PEX/AL/PEX and PE-Xb pipe	Up to 20mm	25mm deep in 20mm annular gap in maximum 60mm aperture, finished with 20mm × 20mm fillet of sealant on both sides.	-/90/90	
Kelox Plus pipe	Up to 25mm (with additional 13mm thick insulation)	20mm deep in 16.5mm annular gap in maximum 83mm aperture, finished flush on both sides.	-/90/90	
HVAC bundle*~	Up to 3/8" × 3/4" pair coil with 19mm thick FR lagging – 1.4mm / 2.8 wall thickness Up to 20mm condensation drainpipe – 1.8mm wall thickness Up to 2.5mm2 3C+E TPS cable Instrolex control cable	20mm deep in annular gap in maximum 121mm aperture, finished flush on both sides.	-/90/90	WF FAS 190335 Table 56 Page 88

VARIATIONS

* Cables remain valid if the diameter of a single cable is reduced and/or the number of cables is reduced provided the overall outside diameter is not greater than tested. Ref Clause FAS190335 - 4.1.17

~ HVAC bundles represent the maximum number of services. Services are allowed to be removed from the bundle provided the annular gap, depth &/or fillet are maintained. Ref Clause FAS190335 4.1.25

^ Non fire rated lagging can be substituted for fire rated lagging. Ref Clause FAS190335 4.1.26

Table 13.

BOSS Batt aperture in walls -Min 100mm Thick

Service type	Service details	System details	FRL	Ref.
Power cable bundle*	Up to 8 × 2.5mm² 3 core power cables.	Sealant to depth of plasterboard in max. 60mm aperture finished flush	-/60/60	WF FAS 190335 Table 33 Page 63
Power cable	Up to 22 × 2.5mm² 2C+E power cables.	Sealant to depth of plasterboard in 90mm aperture finished flush	-/120/60	WF FAS 190335 Table 35 Page 65
Power cable bundle*	• A1 - Bundle of up to 10 × 5C × 1.5mm² PVC/PVC cables – Ø14mm • A2 - Bundle of up to 10 × 5C × 1.5mm² EPR/PO cables – Ø11.2mm – Ø14.4mm • A3 - Bundle of up to 10 × 5C × 1.5mm² XLPE/EVA cables – Ø13mm • B - Bundle of up to 2 × 1C × 1.5mm² PVC/PVC cables – Ø18mm – Ø21mm • Up to 63mm HDPE pipe	Sealant to depth of plasterboard applied in the voids around the cables and pipe in a maximum aperture of 300mm wide x 100mm high.	-/120/120	
Power cable bundle*	Up to 4 × 0.75mm² TPS (fire alarm) power cables.	Sealant 25mm deep in 30mm aperture finished flush	-/120/120	
Power cable bundle*	Up to 6 × 2.5mm² 2C+E power cables.	Sealant 25mm deep in 57mm aperture finished flush	-/120/120	
Power cable bundle*	Up to 1 × 16mm² 2C+E power cables.	Sealant 25mm deep in 40mm aperture finished flush	-/120/120	
Power cable bundle*	Up to 22 × 2.5mm² 2C+E power cables.	Full depth of wall in maximum 90mm aperture gap finished flush both sides.	-/120/120	WF FAS 190335 Table 37 Page 67
Power (Conduit)*	Up to 32mm conduit (WT1.9mm) Up to 8 × 2.5mm² 2C+E TPS power cable inside the 32mm conduit	20mm deep in maximum 70mm aperture finished flush both sides	-/90/90	
Power cable bundle*	32mm conduit – 1.9mm thick Up to 6 × 2.5mm² 2C+E cable TPS cables inside 32mm conduit	20mm deep in annular gap both sides finished flush	-/90/90	WF FAS 190335 Table 45 Page 76
Power cable bundle*	Up to 16mm² 3C+E cable	20mm deep in annular gap both sides finished flush	-/90/90	
Power cable bundle*	40mm aperture including: Up to 2 x CAT6 cables Up to 2 x RG6 Coax cables Security cable 1 × Fig 8 cable 2 x Fire alarm cables	20mm deep in annular gap both sides finished flush	-/90/90	

BOSS Batts – Ref Clause FAS190335 – 4.1.24

VARIATIONS

* Cables remain valid if the diameter of a single cable is reduced and/or the number of cables is reduced provided the overall outside diameter is not greater than tested. Ref Clause FAS190335 - 4.1.17

~ HVAC bundles represent the maximum number of services. Services are allowed to be removed from the bundle provided the annular gap, depth &/or fillet are maintained. Ref Clause FAS190335 4.1.25

^ Non fire rated lagging can be substituted for fire rated lagging. Ref Clause FAS190335 4.1.26

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Table 13.

Continued

Service type	Service details	System details	FRL	Ref.
Optical cable*	Single core 5mm OD NBN cable	20mm × 20mm fillet on non-exposed side only OR exposed side only	-/60/60	WF FAS 190335 Table 35 Page 64
Alarm cables*	Up to 4 × ELV extra low voltage alarm cables.	Sealant to depth of plasterboard in 57mm aperture finished flush	-/120/90	WF FAS 190335 Table 35 Page 64
Fire alarm cable*	Up to 8 x Fire alarm cables.	Sealant to depth of plasterboard with 15mm annular gap finished flush both sides	-/120/120	
Data cable bundle*	Up to 2 × RG6 coax cables, Up to 2 × CAT6 cables, Up to 2 × 4 core security cables (7/0.20mm). Up to 6 of any type of the above listed cables	20mm deep in 40mm aperture finished flush	-/120/120	
Data cable bundle*	Up to 38 x CAT6 data cables	Sealant to depth of 25mm finished flush on both sides	-/120/60	
cPVC pipe	Up to 32mm (43mm OD)	Sealant to depth of plasterboard in 18.5mm annular gap with additional 15mm × 15mm fillet both sides	-/120/120	WF FAS 190335 Table 11 Page 32
cPVC pipe	Up to 50mm	Sealant to depth of plasterboard in 20mm annular gap finished flush both sides	-/120/60	
	(60.3mm OD)			
uPVC pipe or conduit	Up to 20mm	0mm annular gap finished with a 15mm × 15mm fillet both sides	-/120/120	
uPVC pipe or conduit	Up to 20mm	Sealant to depth of plasterboard in 20mm annular gap with additional 20mm × 20mm fillet both sides	-/120/120	
uPVC pipe or conduit	Up to 32mm	Sealant 25mm deep in 20mm annular gap with additional 20mm × 20mm fillet both sides	-/120/120	
uPVC pipe or conduit	Up to 40mm	Sealant to depth of plasterboard in 20mm annular gap finished flush both sides	-/120/120	
uPVC pipe or conduit	Up to 50mm	Sealant to depth of plasterboard in 20mm annular gap finished flush both sides	-/120/120	
uPVC pipe or conduit	Up to 80mm	Sealant to depth of plasterboard in 20mm annular gap finished flush both sides	-/90/90	
PVC pipe or conduit	Up to 40 × 1.9mm	Sealant to depth of plasterboard in 20mm annular gap with additional 10mm × 10mm fillet both sides	-/120/120	
PVC pipe or conduit	Up to 125 × 9.2mm	Sealant to depth of plasterboard in 20mm annular gap with additional 10mm × 10mm fillet both sides	-/60/60	

Table 13.

Continued

Service type	Service details	System details	FRL	Ref.
PVC pipe or conduit	Up to 125 × 1.8mm	Sealant to depth of plasterboard in 20mm annular gap with additional 10mm × 10mm fillet both sides	-/30/30	
PVC pipe or conduit	Services penetrating one side of wall: Up to 40 × 1.9mm	Sealant to depth of plasterboard with additional 10mm × 10mm fillet both sides	-/120/120	
PVC pipe or conduit	Services penetrating one side of wall: 43mm	Sealant to depth of plasterboard in 90mm aperture finished flush. with an additional baffle of 13mm plasterboard both sides and 12mm plywood fixed to steel angles inside cavity to penetrated side	-/120/120	
PE pipe	40 × 3.7mm	Sealant to depth of plasterboard in 20mm annular gap with additional 10mm × 10mm fillet both sides	-/30/30	
ABS pipe	Up to 40mm	Sealant to depth of plasterboard in 20mm annular gap with additional 10mm × 10mm fillet both sides	-/120/120	
PEX pipe	Up to 20mm	Sealant to depth of plasterboard in annular gap of up to 20mm finished flush both sides	-/60/60	
PEX pipe	Up to 20mm	Sealant to depth of plasterboard in maximum 20mm annular gap finished flush both sides	-/90/90	WF FAS 190335 Table 11 Page 32
PEX/AL/PEX pipe	Up to 20mm	Sealant to depth of plasterboard in 5 – 20mm annular gap finished flush both sides	-/120/120	
PEX/AL/PEX pipe	Up to 25mm	Sealant to depth of plasterboard in 11.5mm annular gap with additional 20mm × 20mm fillet both sides	-/120/120	
PEX/AL/PEX pipe	Up to 25mm	Sealant to depth of plasterboard in 20mm annular gap finished flush both sides	-/120/30	
PE-Xa pipe	Services penetrating one side of wall: Up to 20mm	Sealant to depth of plasterboard in 17.5mm annular gap finished flush	-/90/90	
PE-Xa pipe	Services penetrating one side of wall: Up to 20mm	Sealant to depth of plasterboard in 55mm annular gap finished flush to penetrated side	-/60/60	

Table 13.

Continued

Service type	Service details	System details	FRL	Ref.
Steel pipe	Up to 324mm	75mm insulation installed around pipe 300mm on exposed face and 400mm on non-exposed face with sealant to a depth of plasterboard in 5mm annular gap finished flush both sides.	-/90/90	WF FAS 190335 Table 19 Page 47
Insulated copper pipe	Up to 15mm	13mm Armaflex® insulation around pipe 580mm each side with sealant to a depth of 25mm in annular gap finished flush both sides.	-/120/120	
Insulated copper pipe	Up to 25mm	25mm stone wool insulation around pipe 400mm on each side with sealant to a depth of 16mm in annular gap with additional 35mm × 35mm fillet both sides.	-/120/120	
Insulated copper pipe	Up to 60mm	32mm Armaflex® insulation around pipe min. 600mm on both sides. Additional wrapping with P40 MAK Wrap extending 600mm on both sides, with sealant to a depth of 25mm finished flush both sides.	-/120/120	
Insulated copper pipe	Up to 100mm	50mm stone wool insulation around pipe min. 600mm on both sides with sealant to a depth of 16mm in annular gap with additional 35mm × 35mm fillet both sides.	-/120/120	
Copper	Up to 159mm	32mm glass wool insulation around pipe min. 1000mm on both sides with sealant to a depth of 25mm in annular gap finished flush both sides.	-/120/120	
Insulated copper pipe	Up to 159mm	32mm Armaflex® insulation around pipe min. 1000mm on both sides with sealant to a depth of 25mm in annular gap finished with additional 10mm x 10mm fillet both sides.	-/120/120	
Pair coil	Up to 9.5mm OD copper pipes with up to 35.5mm OD lagging Up to 15.8mm OD Copper Pipes with up to 41.1mm OD lagging,	Sealed to depth of plasterboard in annular gap with additional 10mm × 10mm fillet both sides	-/90/90	WF FAS 190335 Table 54 Page 86
HVAC bundle*~^	Polyaire© insulated copper pipe, Up to 1.5mm² 2C+E TPS power cable, Up to 16mm PVC flexible outlet pipe.	Sealed to depth of 13mm in maximum 80mm aperture finished flush on both sides	-/60/60	
HVAC bundle*~^	Up to 10mm / 15mm insulated copper pipes with non-rated lagging, Up to 2.5mm² 2C+E TPS power cable, Up to 1.5mm² 2C data cable. Up to 20mm uPVC conduit	Sealed to depth of plasterboard in maximum 80mm aperture finished flush on both sides	-/60/60	WF FAS 190335 Table 54 Page 86
HVAC bundle*~	Up to 16mm × 10mm insulated copper with 13mm thick rubber foam lagging Up to 2.5mm² 2C+E TPS power cable, Up to 1.5mm² 2C data cable. Up to 20mm uPVC conduit	Sealed 25mm deep in maximum 125mm aperture with additional 25mm × 25mm fillet both sides	-/120/120	

Table 13.

Continued

Service type	Service details	System details	FRL	Ref.
HVAC bundle*~	Up to 16mm × 10mm insulated copper with 13mm thick rubber foam lagging Up to 1.5mm² 6 core electric cable.	Sealed 25mm deep in maximum 125mm aperture with additional 25mm × 25mm fillet both sides	-/120/120	
HVAC bundle*~	Up to 3 x 20mm insulated copper with 13mm thick Armaflex foamed nitrile rubber lagging Up to 2.5mm² 2C+E TPS power cable, Up to 1.5mm² 2C data cable.	Sealed 25mm deep in maximum 125mm aperture with additional 25mm × 25mm fillet both sides	-/120/120	

Table 14.

Minimum 150mm Thick Concrete / AAC Floors

Service type	Service details	System details	FRL With 600mm P40-MAK Wrap	FRL Without P40-MAK Wrap	Ref.
Power cable bundle*	Aperture 500mm wide × 130mm high incorporating a 500mm wide steel cable tray supporting the following cables: • A1 - Bundle of up to 10 × 5C × 1.5mm² PVC/PVC cables – Ø14mm • A2 - Bundle of up to 10 × 5C × 1.5mm² EPR/PO cables – Ø11.2mm – Ø14.4mm • A3 - Bundle of up to 10 × 5C × 1.5mm² XLPE/EVA cables – Ø13mm • B - Bundle of up to 2 × 1C × 1.5mm² PVC/PVC cables – Ø18mm – Ø21mm • C1 - 4C × 95mm² PVC/PVC cable – Ø40mm – Ø47mm • C2 - 4C × 95mm² EPR/PO cable – Ø48.4mm – Ø61mm • C3 - 4C × 95mm² XLPE/EVA cable – Ø42mm	HPE 25mm deep to both faces, with a 300mm 'coatback' of FireMastic 300 along the cables to the top side of the system.	-/120/120	-/120/60	WF FAS 190335 Table 41 Page 72

VARIATIONS

* Cables remain valid if the diameter of a single cable is reduced and/or the number of cables is reduced provided the overall outside diameter is not greater than tested. Ref Clause FAS190335 - 4.1.17

~ HVAC bundles represent the maximum number of services. Services are allowed to be removed from the bundle provided the annular gap, depth &/or fillet are maintained. Ref Clause FAS190335 4.1.25

^ Non fire rated lagging can be substituted for fire rated lagging. Ref Clause FAS190335 4.1.26

Table 14.

Continued

Service type	Service details	System details	FRL With 600mm P40-MAK Wrap	FRL Without P40-MAK Wrap	Ref.
Power cable bundle*	Aperture 200mm wide × 200mm high incorporating the following cables: • C1 - 4C × 95mm² PVC/PVC cable – Ø40mm – Ø47mm • C2 - 4C × 95mm² EPR/PO cable – Ø48.4mm – Ø61mm • C3 - 4C × 95mm² XLPE/EVA cable – Ø42mm	25mm deep finished flush with the upper face of the floor, including a 100mm deep infill of friction fitted stonewool insulation.	-/180/120	-/180/30	WF FAS 190335 Table 41 Page 72
Power cable bundle*	Aperture 200mm wide × 200mm high incorporating the following cables: • D1 - 4C × 185mm² PVC/PVC cable – Ø52mm • D2 - 4C × 185mm² EPR/PO cable – Ø64mm – Ø80mm • D3 - 4C × 185mm² XLPE/EVA cable – Ø58mm		-/120/120	-/120/30	WF FAS 190335 Table 41 Page 72
Power cable bundle*	Aperture 200mm wide × 200mm high incorporating the following cables: • A1 - Bundle of up to 10 × 5C × 1.5mm² PVC/PVC cables – Ø14mm • A2 - Bundle of up to 10 × 5C × 1.5mm² EPR/PO cables – Ø11.2mm – Ø14.4mm • A3 - Bundle of up to 10 × 5C × 1.5mm² XLPE/EVA cables – Ø13mm		-/180/120	-/180/30	
Data cable bundle*	Aperture 200mm wide × 200mm high incorporating the following cables: • F – 20 × 2 (20 pair) × 0.6mm²		-/240/120	-/240/45	
Power cable bundle*	Aperture 200mm wide × 200mm high incorporating the following cables: • G1 - 1C × 95mm² non-sheathed PVC/- cable – Ø14.1mm – Ø17.1mm • G2 - 1C × 185mm² non-sheathed PVC/- cable – Ø19.3mm – Ø23.3mm		-/180/120	-/180/-	

Table 14.

Continued

Service type	Service details	System details	FRL With 600mm P40-MAK Wrap	FRL Without P40-MAK Wrap	Ref.
Power cable bundle*	Aperture 50mm wide × 50mm high incorporating the following cables: • E - 1C × 185mm² PVC/- cable – Ø23mm – Ø27mm		-/240/120	-/240/-	
Power cable bundle* in conduit	60mm diameter PE pipe filled with the following cables: • A1 - Bundle of up to 3 × 5C × 1.5mm² PVC/PVC cables – Ø14mm • A2 - Bundle of up to 3 × 5C × 1.5mm² EPR/PO cables – Ø11.2mm – Ø14.4mm • A3 - Bundle of up to 3 × 5C × 1.5mm² XLPE/EVA cables – Ø13mm • B - 1 × 1C × 1.5mm² PVC/PVC cables – Ø18mm – Ø21mm	25mm deep finished flush with the upper face of the floor, including a 100mm deep infill of friction fitted stonewool insulation.	-/120/120	-/120/90	
Cable tray	Aperture 200mm wide × 200mm high incorporating a perforated cable tray		-/120/120	-/120/30	

Table 15.

Minimum 150mm Thick Concrete Floors

Service type	Service details	System details	FRL	Ref.
Power cable bundle*	Up to 6 × 2.5mm² TPS cable in maximum 30mm aperture	25mm deep – Both sides with backing rod finished flush.	-/240/240	WF FAS 190335 Table 41 Page 74
Power cable bundle*	50mm aperture incorporating the following cables: • Up to 4 x RG6 Coax cables • Up to 4 x CAT6 cables • Up to 2 x Fire alarm cables • Security cable	25mm deep – Both sides with backing rod finished flush.	-/240/240	

VARIATIONS

* Cables remain valid if the diameter of a single cable is reduced and/or the number of cables is reduced provided the overall outside diameter is not greater than tested. Ref Clause FAS190335 - 4.1.17

~ HVAC bundles represent the maximum number of services. Services are allowed to be removed from the bundle provided the annular gap, depth &/or fillet are maintained. Ref Clause FAS190335 4.1.25

^ Non fire rated lagging can be substituted for fire rated lagging. Ref Clause FAS190335 4.1.26

Table 15.

Continued

Service type	Service details	System details	FRL	Ref.
PEX-Xa pipe	Up to 20mm	25mm deep finish flush both sides, sealant was supported by 10mm PE backing rod maximum 40mm aperture	-/240/240	WF FAS 190335 Table 27 Page 56
PEX/AL/PEX pipe	Up to 20mm	25mm deep finish flush both sides, sealant was supported by 10mm PE backing rod maximum 40mm aperture	-/240/240	
PVC pipe	40mm x 2mm wall thickness	25mm deep finished flush on both sides, including a 100mm deep infill of friction fitted stonewool insulation. Maximum 77mm aperture	-/240/240	
uPVC pipe	Up to 32mm	25mm deep finish flush both sides, sealant was supported by 10mm PE backing rod maximum 50mm aperture	-/240/240	
PP pipe	50mm with 2.1mm wall thickness	25mm deep finished flush on both sides, including a 100mm deep infill of friction fitted stonewool insulation.	-/240/240	
HVAC bundle*~	Up to 1 1/8" (28.6mm) copper pipe with 25mm thick E-Flex ST lagging – 1.2mm wall thickness Up to 7/8" (22mm) copper pipe with 25mm thick E-Flex ST lagging – 1.6mm wall thickness Up to DN 18 copper pipe with 19mm lagging – 1.3mm wall thickness Up to 20mm condensation drainpipe – 1.5mm wall thickness Up to 2.5mm2 2C+E TPS cable Up to 2.5mm2 3C+E TPS cable Instrolex control cable	25mm deep in annular gap in maximum 150mm aperture, finished flush on both sides.	-/240/120	WF FAS 190335 Table 60 Page 91
HVAC bundle*~	Up to 3/8" × 3/4" Paircoil with 19mm thick FR lagging – 1.4mm / 2.8 wall thickness Up to 2.5mm2 2C+E TPS cable Up to 2.5mm2 3C+E TPS cable Up to 1 × Cat6 cable Instrolex control cable Up to 20mm condensation drainpipe – 1.5mm wall thickness	25mm deep to backing rods in annular gap in maximum 100mm aperture, finished flush on both sides.	-/240/240	
Insulated copper pipe	Up to Ø25mm with 25mm thick insulation	16mm deep in 10mm annular gap with 10mm × 10mm fillet to both sides	-/120/120	WF FAS 190335 Table 29 Page 60
Insulated copper pipe	Ø25mm – Ø100mm with 25mm – 50mm thick insulation	16mm deep in 10mm annular gap with 10mm × 10mm fillet to both sides	-/120/90	
Insulated copper pipe	Up to Ø100mm with 50mm thick insulation	16mm deep in 10mm annular gap with 10mm × 10mm fillet to both sides	-/120/90	
Insulated copper pipe	Ø100mm – Ø200mm with 32mm thick insulation	25mm deep in 20mm annular gap on top side only, finished flush, backed with stonewool insulation	-/60/30	

Table 16.

Minimum 150mm Thick AAC Floors

Service type	Service details	System details	FRL	Ref.
PEX pipe	Up to 40mm with maximum 4mm wall thickness	25mm deep both sides, finished flush	-/120/120	WF FAS 190335 Table 25 Page 53
	110mm with 10mm wall thickness	25mm deep both sides, finished flush	-/120/60	
PVC pipe	Up to 125mm with maximum 7.6mm wall thickness	25mm deep finished flush on both sides, including a 100mm deep infill of friction fitted stonewool insulation.	-/120/120	
	114mm with 3.6mm wall thickness	25mm deep finished flush on both sides, including a 100mm deep infill of friction fitted stonewool insulation.	-/90/30	
	114mm with 8.1mm wall thickness	25mm deep finished flush on both sides, including a 100mm deep infill of friction fitted stonewool insulation.	-/120/30	
	50mm with 2.4mm wall thickness	25mm 25mm deep finish flush both sides, sealant was supported by 10mm PE backing rod maximum 90mm aperture	-/120/120	
	50mm with 3.7mm wall thickness	25mm 25mm deep finish flush both sides, sealant was supported by 10mm PE backing rod maximum 90mm aperture	-/120/120	
	125mm with 4.8mm wall thickness	25mm 25mm deep finish flush both sides, sealant was supported by 10mm PE backing rod maximum 165mm aperture	-/120/90	
	125mm with 7.4mm wall thickness	25mm 25mm deep finish flush both sides, sealant was supported by 10mm PE backing rod maximum 165mm aperture	-/120/120	

Table 17.

Bondek / Comflor Slabs less than 150mm thick with BOSS Batt thickening

Service type	Service details	System details	FRL With 600mm P40-MAK Wrap	FRL Without P40-MAK Wrap	Ref.
Power cable bundle*	Aperture 500mm wide × 130mm high incorporating a 500mm wide steel cable tray supporting the following cables: • A1 - Bundle of up to 10 × 5C × 1.5mm² PVC/PVC cables – Ø14mm • A2 - Bundle of up to 10 × 5C × 1.5mm² EPR/PO cables – Ø11.2mm – Ø14.4mm • A3 - Bundle of up to 10 × 5C × 1.5mm² XLPE/EVA cables – Ø13mm • B - Bundle of up to 2 × 1C × 1.5mm² PVC/PVC cables – Ø18mm – Ø21mm • C1 - 4C × 95mm² PVC/PVC cable – Ø40mm – Ø47mm • C2 - 4C × 95mm² EPR/PO cable – Ø48.4mm – Ø61mm • C3 - 4C × 95mm² XLPE/EVA cable – Ø42mm	HPE 25mm deep to both faces, with a 300mm 'coatback' of FireMastic 300 along the cables to the top side of the system.	-/120/120	-/120/60	WF FAS 190335 Table 41 Page 72
Power cable bundle*	Aperture 200mm wide × 200mm high incorporating the following cables: • C1 - 4C × 95mm² PVC/PVC cable – Ø40mm – Ø47mm • C2 - 4C × 95mm² EPR/PO cable – Ø48.4mm – Ø61mm • C3 - 4C × 95mm² XLPE/EVA cable – Ø42mm	25mm deep finished flush with the upper face of the floor, including a 100mm deep infill of friction fitted stonewool insulation.	-/180/120	-/180/30	
Power cable bundle*	Aperture 200mm wide × 200mm high incorporating the following cables: • D1 - 4C × 185mm² PVC/PVC cable – Ø52mm • D2 - 4C × 185mm² EPR/PO cable – Ø64mm – Ø80mm • D3 - 4C × 185mm² XLPE/EVA cable – Ø58mm		-/120/120	-/120/30	
Power cable bundle*	Aperture 200mm wide × 200mm high incorporating the following cables: • A1 - Bundle of up to 10 × 5C × 1.5mm² PVC/PVC cables – Ø14mm • A2 - Bundle of up to 10 × 5C × 1.5mm² EPR/PO cables – Ø11.2mm – Ø14.4mm • A3 - Bundle of up to 10 × 5C × 1.5mm² XLPE/EVA cables – Ø13mm		-/180/120	-/180/30	
Data cable bundle*	Aperture 200mm wide × 200mm high incorporating the following cables: • F – 20 × 2 (20 pair) × 0.6mm²		-/240/120	-/240/45	

Bondek & Comflor slabs – Ref Clause FAS190335 – 4.1.9

VARIATIONS

* Cables remain valid if the diameter of a single cable is reduced and/or the number of cables is reduced provided the overall outside diameter is not greater than tested. Ref Clause FAS190335 - 4.1.17

~ HVAC bundles represent the maximum number of services. Services are allowed to be removed from the bundle provided the annular gap, depth &/or fillet are maintained. Ref Clause FAS190335 4.1.25

^ Non fire rated lagging can be substituted for fire rated lagging. Ref Clause FAS190335 4.1.26

Table 17.

Continued

Service type	Service details	System details	FRL With 600mm P40-MAK Wrap	FRL Without P40-MAK Wrap	Ref.
Power cable bundle*	Aperture 200 mm wide × 200 mm high incorporating the following cables: • G1 - 1C × 95 mm² non-sheathed PVC/- cable – Ø14.1 mm – Ø17.1 mm • G2 - 1C × 185 mm² non-sheathed PVC/- cable – Ø19.3 mm – Ø23.3 mm		-/180/120	-/180/-	
Power cable bundle*	Aperture 50 mm wide × 50 mm high incorporating the following cables: • E - 1C × 185 mm² PVC/- cable – Ø23 mm – Ø27 mm		-/240/120	-/240/-	
Power cable bundle in conduit*	60 mm diameter PE pipe filled with the following cables: • A1 - Bundle of up to 3 × 5C × 1.5 mm² PVC/PVC cables – Ø14 mm • A2 - Bundle of up to 3 × 5C × 1.5 mm² EPR/PO cables – Ø11.2 mm – Ø14.4mm • A3 - Bundle of up to 3 × 5C × 1.5 mm² XLPE/EVA cables – Ø13 mm • B - 1 × 1C × 1.5 mm² PVC/PVC cables – Ø18 mm – Ø21 mm	25 mm deep finished flush with the upper face of the floor, including a 100 mm deep infill of friction fitted stonewool insulation.	-/120/120	-/120/90	WF FAS 190335 Table 41 Page 72
Cable tray	Aperture 200 mm wide × 200 mm high incorporating a perforated cable tray		-/120/120	-/120/30	
Power cable bundle*	Up to 6 × 2.5 mm² TPS cable in maximum 30 mm aperture	25 mm deep – Both sides with backing rod finished flush.	-/240/240	-/240/240	WF FAS 190335 Table 41 Page 74
Power cable bundle*	50 mm aperture incorporating the following cables: • Up to 4 x RG6 Coax cables • Up to 4 x CAT6 cables • Up to 2 x Fire alarm cables • Security cable	25 mm deep – Both sides with backing rod finished flush.	-/240/240		
PEX-Xa pipe	Up to 20 mm	25 mm deep finish flush both sides, sealant was supported by 10 mm PE backing rod maximum 40 mm aperture	-/240/240		WF FAS 190335 Table 27 Page 56
PEX/AL/PEX pipe	Up to 20 mm	25 mm deep finish flush both sides, sealant was supported by 10 mm PE backing rod maximum 40 mm aperture	-/240/240		
PVC pipe	40 mm x 2 mm wall thickness	25 mm deep finished flush on both sides, including a 100 mm deep infill of friction fitted stonewool insulation. Maximum 77 mm aperture	-/240/240		

Table 17.

Continued

Service type	Service details	System details	FRL With 600mm P40-MAK Wrap	FRL Without P40-MAK Wrap	Ref.
uPVC pipe	Up to 32 mm	25 mm deep finish flush both sides, sealant was supported by 10 mm PE backing rod maximum 50 mm aperture	-/240/240		
PP pipe	50 mm with 2.1 mm wall thickness	25 mm deep finished flush on both sides, including a 100 mm deep infill of friction fitted stonewool insulation.	-/240/240		
HVAC bundle*~	Up to 1 1/8" (28.6 mm) copper pipe with 25 mm thick E-Flex ST lagging – 1.2 mm wall thickness Up to 7/8" (22 mm) copper pipe with 25 mm thick E-Flex ST lagging – 1.6 mm wall thickness Up to DN 18 copper pipe with 19 mm lagging – 1.3 mm wall thickness Up to 20 mm condensation drainpipe – 1.5 mm wall thickness Up to 2.5 mm2 2C+E TPS cable Up to 2.5 mm2 3C+E TPS cable Instrolex control cable	25 mm deep in annular gap in maximum 150 mm aperture, finished flush on both sides.	-/240/120		WF FAS 190335 Table 60 Page 91
HVAC bundle*~	Up to 3/8" × 3/4" Paircoil with 19 mm thick FR lagging – 1.4 mm / 2.8 wall thickness Up to 2.5 mm2 2C+E TPS cable Up to 2.5 mm2 3C+E TPS cable Up to 1 × Cat6 cable Instrolex control cable Up to 20 mm condensation drainpipe – 1.5 mm wall thickness	25 mm deep to backing rods in annular gap in maximum 100 mm aperture, finished flush on both sides.	-/240/240		WF FAS 190335 Table 60 Page 91
Insulated copper pipe	Up to Ø25 mm with 25 mm thick insulation	16 mm deep in 10 mm annular gap with 10 mm × 10 mm fillet to both sides	-/120/120		WF FAS 190335 Table 29 Page 60
Insulated copper pipe	Ø25 mm – Ø100 mm with 25 mm – 50 mm thick insulation	16 mm deep in 10 mm annular gap with 10 mm × 10 mm fillet to both sides	-/120/90		
Insulated copper pipe	Up to Ø100 mm with 50 mm thick insulation	16 mm deep in 10 mm annular gap with 10 mm × 10 mm fillet to both sides	-/120/90		
Insulated copper pipe	Ø100 mm – Ø200 mm with 32 mm thick insulation	25 mm deep in 20 mm annular gap on top side only, finished flush, backed with stonewool insulation	-/60/30		

Health and Safety

To learn more about the safe handling of BOSS fire products, refer to the relevant products Safety Data Sheet available at bossfire.com.au.

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