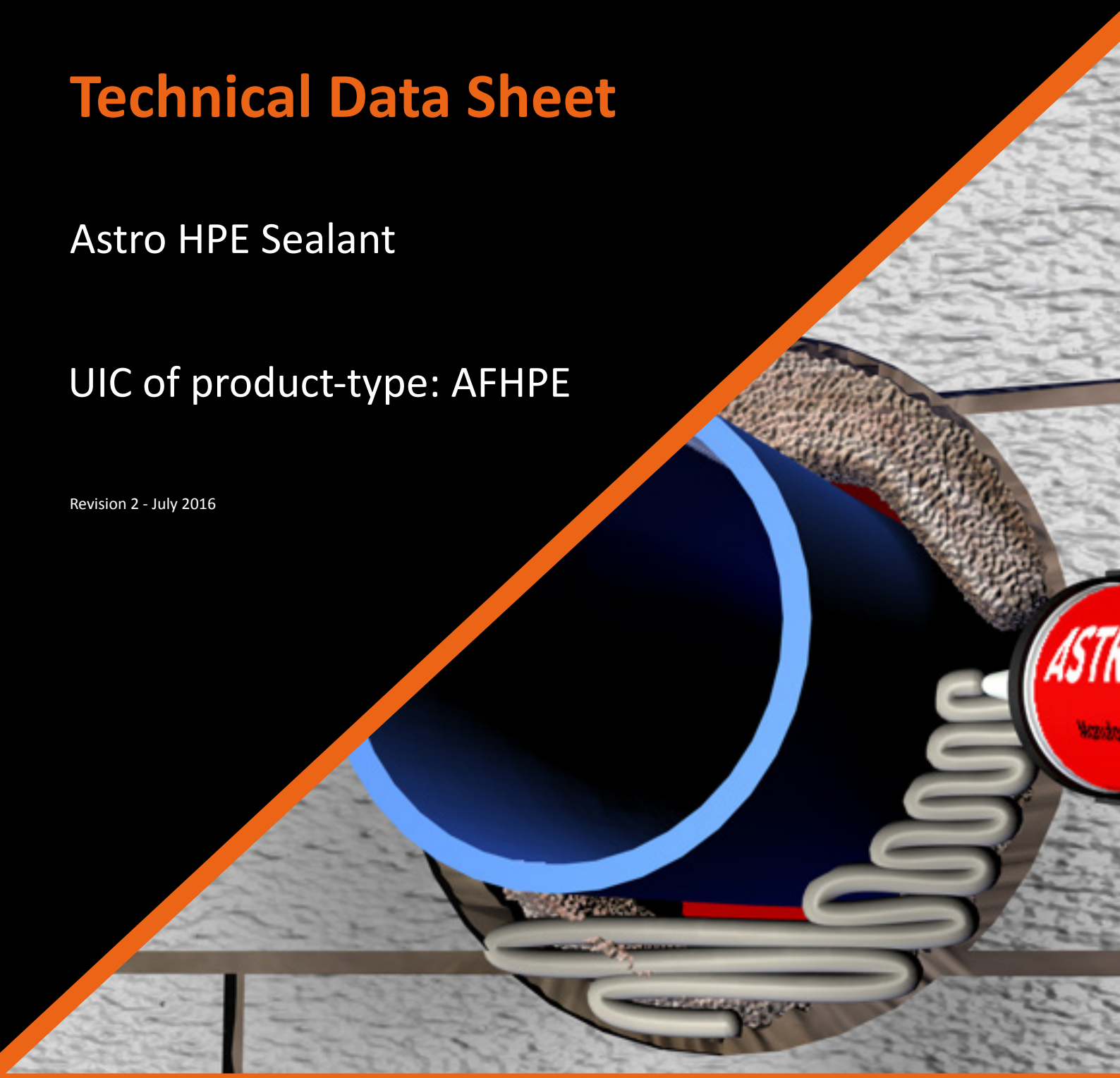


# Technical Data Sheet

## Astro HPE Sealant

UIC of product-type: AFHPE

Revision 2 - July 2016



Astroflame (Fireseals) LTD : Unit 8 , I.O Centre  
Stephenson Road : Segensworth : Fareham : PO15 5RU

Tel - 01329 844500 F - 01329 844600  
E - sales@astroflame.com W - www.astroflame.com



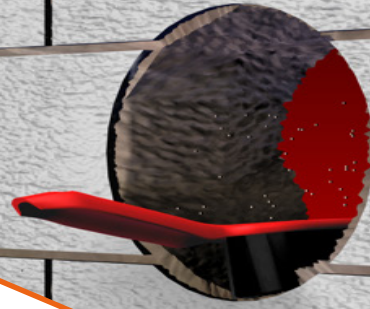
ETA - 14-0096

CE-1121-CPR-JA5024



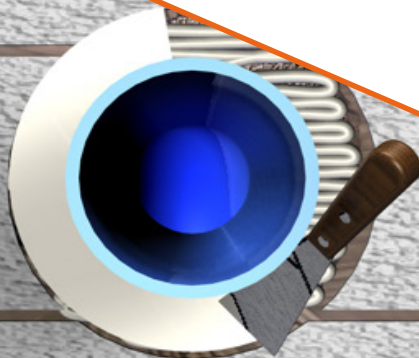
CF 5239





# Contents

> Technical Data	<a href="#"><u>Product Overview</u></a>	> Page 1 - 2
> Technical Data	<a href="#"><u>Floor Application</u></a>	> Page 3 - 4
> Technical Data	<a href="#"><u>Wall Application</u></a>	> Page 5 - 6
> Technical Data	<a href="#"><u>Batt Application</u></a>	> Page 7 - 10
> Technical Data	<a href="#"><u>Uponor Valve</u></a>	> Page 11



# Technical Data - Product Overview

## Technical Description of the Product

Astro HPE Sealant is an acrylic based graphite sealant used to reinstate the fire resistance performance of wall and floor constructions where they have been provided for the penetration of single or multiple services, to form penetration seals where gaps are present.

Astro HPE Sealant expands upon contact with heat, also known as intumescent or reactive material

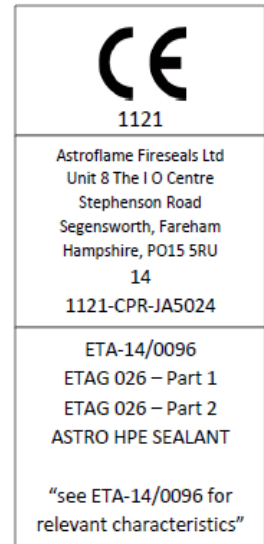
Astro HPE Sealant is supplied in liquid form constrained within 310ml cartridges, 600ml foils, 2.5, 5, 10, 20kg pails, 250kg drums. The sealant is gunned or trowelled into the annular space in or between the separating element/elements to a specific depth utilising various backing materials

## Intended Use

The intended use of Astro HPE Sealant is to reinstate the fire resistance performance of rigid and flexible wall and floor constructions where they are penetrated by various cables, plastic and insulated metallic pipes.

The specific elements of construction that the system Astro HPE Sealant may be used to provide a penetration seal in, are as follows:

- Suitable for use in rigid wall and floors, flexible wall and batts in wall and floor.
- Linear Joints up to 20mm wide.
- Large service openings up to 300 x 100mm.
- Batt aperture up to 1100mm x 750mm
- Metallic Pipes, Cables, Cable Bunches (inc Telecommunication), Cable Trays and Cable Ladders.
- Combustible Pipes up to 125mm dia - PVC, PE, PP, ABS and PEX.
- Use with sealing elastomeric foam and glass wool insulation.
- Suitable for use in irregular applications.
- Causes no known effects to plastic pipes, plastic cables, sheathing or metallic components.
- Contributes to Green Building.
- Easy clean up with water and is odourless.
- Long life and paintable.
- Smoke, gas, water tight and air tight.
- High Expansion Ratio.
- Resists fungi and vermin.



# Technical Data - Product Overview

Description	Result	Test Standards
Density	Ca. 1.23 - 1.33g/cm <sup>3</sup>	ISO 2811-1:2011
Shore Hardness A	68	ISO 7619-1:2010
Colour	Grey	
Application Temperature	+5 °C to 35 °C	
Expansion Onset Temperature	Ca. 180 °C	
Expansion	Up to 20 times	
Skin Time	15 minutes @ 25 °C/ 50%RH	
Cure Time	1.7mm per 24hrs	
Shelf Life	18 months in unopened	
pH	6 - 9	
Fire Resistance	EI 120	EN1366-3 and EN1366-4
Insulation	120	EN 1366-3
Air Permeability	600Pa - 100Pa 11.1/16.7 m <sup>3</sup> /h/m <sup>2</sup>	EN1026
Classification	EN 13501-2, ISO 11600	
Manufacture	ISO 9001:2008	
Certifire 3rd Party Accreditation	CF 5239	
Available in	310ml	
Acoustics	Rw (C;Ctr) : 52 (-1;-6) dB	EN ISO 10140-2:2010
Durability Services	Type Z, intended for use in internal conditions	

VOC	%w/w Non volatiles (105°C)	%w/w water	% Nonaqueous volatiles (105°C)
Astro HPE Sealant	64.67	26.17	8.5
	65.29	26.85	
Mean	65.0	26.5	

## Backing Material

The backing material that can be used for Astro HPE Sealant, Mineral wool (min. 80kg/m<sup>3</sup>) or PE backing rod where required. Backing material is not needed within all installations, though the Astro HPE Sealant should be installed correctly to achieve the performance needed.

## Installation

Ensure that the aperture and services in question are tested with Astro HPE Sealant, and the site conditions are within the application specification. Efficient annular space needs to be present around the service to apply sufficient installation depth.

All service's and apertures need to be clean and clear of all dust and loose particles. The aperture temperature needs to at 5°C or above at time of installation.

Upon installation make sure that you install the Astro HPE Sealant 20mm annular and 25mm deep around all services effectively, make sure that you fill all of the annulus and to compact the Astro HPE Sealant into the annular gap.

Once compacted smooth off the Astro HPE Sealant to produce a nice professional looking finish.

# Technical Data - Floor Application

## Substrates

The floors shall be a minimum of 150mm thick. Masonry / Concrete floors shall have a minimum density for concrete or brick of 780kg/m<sup>3</sup> and for aerated concrete blocks of 600kg/m<sup>3</sup>. All floors shall have at least the same fire rating as that required for the Sealing system.

## Service support Requirements

Services should be rigidly supported via steel angles, hangars or channels, not further than 450mm from the surface of the sealing system on both faces unless specified otherwise in the performance data.

## Terminology

Fire performance in accordance with EN1366-3, EN1366-4, Classification 13501-2:2007 + A1:2009, ETAG-026, Air Permeability EN1026, Sound EN10140. Fire resistance classes are: E = Integrity, the product can withstand the fire from the non-fire side, I = Insulation, the product can withstand the temperature traveling down the service, U/U = Uncapped inside and outside the furnace, U/C = Uncapped inside and Capped outside the furnace, C/U = Capped inside and Uncapped outside the furnace.

### Rigid floor constructions with floor thickness of minimum 150mm - Insulated Metallic Pipes

Penetration Specification	Astro HPE (installed both faces)	Aperture Size (mm)	Backing Material	Classification
Copper/Steel Pipe and Cast iron 41mm - 159mm $\phi$ 2.5mm - 14.2mm wall thickness, insulated with 16mm - 32mm 'Armaflex' (CS) Continued Sustained	25mm deep	20mm annulus	100mm Deep stone wool 45kg/m <sup>3</sup>	EI20 U/C

### Rigid floor constructions with floor thickness of minimum 150mm - Plastic Pipes

Penetration Specification	Astro HPE (installed both faces)	Aperture Size (mm)	Backing Material	Classification
PP Pipe 110mm $\phi$ 3.7mm wall thickness	25mm deep	20mm annulus	100mm Deep stone wool 45kg/m <sup>3</sup>	EI30 U/C
PP Pipe 110mm $\phi$ 10.7mm wall thickness				EI120 U/C
PP Pipe 50mm $\phi$ 2.1mm wall thickness				EI240 U/C

Penetration Specification	Astro HPE (installed both faces)	Aperture Size (mm)	Backing Material	Classification
PE Pipe 40mm $\phi$ 4.1mm wall thickness	25mm deep	20mm annulus	100mm Deep stone wool 45kg/m <sup>3</sup>	EI240 U/C
PE Pipe 125mm $\phi$ 7.6mm wall thickness				EI60 U/C
PE Pipe 125mm $\phi$ 11.4mm wall thickness				EI90 U/C

Penetration Specification	Astro HPE (installed both faces)	Aperture Size (mm)	Backing Material	Classification
PVC Pipe 40mm $\phi$ 2mm wall thickness	25mm deep	20mm annulus	100mm Deep stone wool 45kg/m <sup>3</sup>	EI240 U/C
PVC Pipe 114mm $\phi$ 3.6mm wall thickness				E90 U/C EI45 U/C
PVC Pipe 114mm $\phi$ 8.1mm wall thickness				EI120 U/C

# Technical Data - Floor Application

## Rigid floor constructions with floor thickness of minimum 150mm - Plastic Pipes, Conduits and Cables

Penetration Specification	Astro HPE	Aperture Size (mm)	Backing Material	Classification
Three PE pipes; 40mm $\varnothing$ x 4.1mm wall thickness, 60mm $\varnothing$ x 4.0mm thick and 125mm $\varnothing$ 7.6mm thick, all fitted central in the aperture. 60mm $\varnothing$ pipe filled with electrical cables; three A1, three A2 and three A3 cables and one B cable	25mm deep	250mm x 250mm	100mm Deep stone wool 45kg/m <sup>3</sup>	E120 U/C EI90 U/C

## Rigid floor constructions with floor thickness of minimum 150mm - Metallic Pipes With Insulation

Penetration Specification	Astro HPE	Aperture Size (mm)	Backing Material	Classification
Copper / Steel Pipe and Cast Iron 41mm $\varnothing$ 1.4mm - 14.2mm wall thickness, insulated with 16mm 'Armaflex' (CS) Continued Sustained	25mm deep	20mm annulus	100mm Deep stone wool 45kg/m <sup>3</sup>	E240 U/C EI60 U/C

## Rigid floor constructions with floor thickness of minimum 150mm - Cables and Cable Trays

Penetration Specification	Astro HPE (installed both faces)	Aperture Size (mm)	Backing Material	Classification
Electrical Cables 0 - 21mm $\varnothing$	25mm deep	Max 200 x 200 Min 50 x 50	100mm Deep stone wool 45kg/m <sup>3</sup>	E180 EI 20
Electrical Cables 22mm - 80mm $\varnothing$				E120 EI20
Non sheathed electrical 0 -24mm $\varnothing$				E180 EI15
Up to 21mm $\varnothing$ telecomm cables in bundles of up to 100mm diameter				E180 EI20

# Technical Data - Wall Application

## Substrates

The walls shall be a minimum of 100mm thick. Drywalls shall comprise a minimum of 2 layers of 'Type F' Gypsum board on both faces, with minimum 50mm studs. Masonry / Concrete walls shall have a minimum density for concrete or brick of 780kg/m<sup>3</sup> and for aerated concrete blocks of 600kg/m<sup>3</sup>. All walls shall have at least the same fire resistance as that required for the sealing system.

## Service support Requirements

Services should be rigidly supported via steel angles, hangars or channels, not further than 450mm from the surface of the sealing system on both faces unless specified otherwise in the performance data.

## Terminology

Fire performance in accordance with EN1366-3, EN1366-4, Classification 13501-2:2007 + A1:2009, ETAG-026, Air Permeability EN1026, Sound EN10140. Fire resistance classes are: E = Integrity, the product can withstand the fire from the non-fire side, I = Insulation, the product can withstand the temperature traveling down the service, U/U = Uncapped inside and outside the furnace, U/C = Uncapped inside and Capped outside the furnace, C/U = Capped inside and Uncapped outside the furnace.

### Flexible and Rigid wall constructions with wall thickness of minimum 100mm - Plastic Pipes

Penetration Specification	Astro HPE (installed both faces)	Backing Material	Classification
PVC Pipe 40mm ø 1.9mm wall thickness	20mm annulus x 25mm deep	N/A	EI120 C/U
PVC Pipe 125mm ø 9.2mm wall thickness	20mm annulus x 25mm deep	N/A	EI60 C/U
ABS Pipe 40mm ø 1.9mm wall thickness	20mm annulus x 25mm deep	N/A	EI120 C/U
HDPP Pipe 40mm ø 2mm wall thickness	20mm annulus x 25mm deep	N/A	EI120 C/U

### Flexible and Rigid wall constructions with wall thickness of minimum 100mm Penetration seal with PS Coating and Astro HPE Sealant - Metallic Pipes

Penetration Specification (Mild Steel or Copper and Cast Iron)	Astro HPE (installed both faces)	Backing Material	Classification
40mm diameter and 1.5 - 14.2mm wall thickness	15mm deep x 15mm wide annulus Astro HPE Sealant to both faces of the seal	20mm thick foil faced glass wool insulation (min 80kg/m <sup>3</sup> )	EI60 U/C
40 - 159mm diameter and 2.3 - 14.2mm wall thickness		30mm thick foil faced glass wool insulation (min 80kg/m <sup>3</sup> )	E60 U/C EI45 U/C

Penetration Specification Mild Steel	Astro HPE (installed both faces)	Backing Material	Classification
40mm diameter and 1.7 - 14.2mm wall thickness	15mm deep x 15mm wide annulus Astro HPE Sealant to both faces of the seal	20mm thick foil faced glass wool insulation (min 80kg/m <sup>3</sup> )	EI60 U/C
40 - 150mm diameter and 2.3 - 14.2mm wall thickness		30mm thick foil faced glass wool insulation (min 80kg/m <sup>3</sup> )	

# Technical Data - Wall Application

## Flexible and Rigid wall constructions with wall thickness of minimum 120mm - Plastic Pipes and Cables

Penetration Specification	Astro HPE (installed both faces)	Backing Material	Classification
PVC Pipe 40mm $\phi$ 1.9 - 3mm wall thickness	10mm annulus x 25mm deep	N/A	E120 U/C
PVC Pipe 125mm $\phi$ 4.8 - 7.4mm wall thickness	16mm annulus x 25mm deep	30mm deep, 80kg/m <sup>3</sup>	E120 U/C
HDPE Pipe 63mm $\phi$ 7.2mm wall thickness, Cables up to 21mm $\phi$	300mm wide x 100mm high x 25mm deep	N/A	E120 U/C
HDPE Pipe 90mm $\phi$ 9.2mm wall thickness	12.5mm annulus x 25mm deep	N/A	E120 U/C
ABS Pipe 90mm $\phi$ 6mm wall thickness	12.5mm annulus x 25mm deep	N/A	E120 U/C
Cables up to 21mm $\phi$	300mm wide x 100mm high x 25mm deep	N/A	E120 U/C

## Flexible and Rigid wall constructions with wall thickness of minimum 120mm - Insulated Metallic Pipes

Penetration Specification	Astro HPE (installed both faces)	Backing Material	Classification
Copper / Steel Pipe / Cast Iron 60mm $\phi$ 0.8mm - 14.2mm wall thickness, insulated with 32mm 'Armaflex AF' (CS) Continued Sustained	20mm annulus x 25mm deep	N/A	E120 U/C EI90 U/C
Copper / Steel Pipe / Cast Iron 15mm $\phi$ 0.8mm - 7mm wall thickness, insulated with 13mm 'Armaflex AF' (CS) Continued Sustained	15mm annulus x 25mm deep	N/A	E120 U/C

### Astro HPE Linear Joint Seals. Min 120mm thick Flexible or Rigid Wall.

Substrate	Depth (mm)	Backing Material	Classification
Flexible Wall to Rigid Wall	25mm. (Both Sides)	PE backing Rod	E120 - V - X - F - W 00 to 20

### Rigid wall with a minimum thickness of 150mm

Services	Aperture Size	Seal Composition	Classification
Electrical cables up to 21mm dia	180mm x 180mm	The apertures were sealed using a 25mm depth of Astro HPE sealant. The sealant was applied flush to both sides of the wall with a backing of 20mm thick Rockwool RWA45 insulation with a measured density of 45kg/m <sup>3</sup> .	E 180, EI 45
Electrical cables 33mm to 80mm dia			E 180, EI 45
100mm diameter bundle telecommunication cable type "F"			EI 240
Steel or Copper Conduits up to 16mm			E 240, EI 45
Plastic conduits up to 16mm			E 240, EI 90

Services	Aperture Size	Seal Composition	Classification
Blank Seal	180mm x 180mm	The apertures were sealed using a 25mm depth of Astro HPE sealant. The sealant was applied flush to both sides of the wall with a backing of 20mm thick Rockwool RWA45 insulation with a measured density of 45kg/m <sup>3</sup> .	EI 240



# Technical Data - Batt Application

## Substrates

The walls shall be a minimum of 100mm thick. Drywalls shall comprise a minimum of 2 layers of 'Type F' Gypsum board on both faces, with minimum 50mm studs. Masonry / Concrete walls shall have a minimum density for concrete or brick of 780kg/m<sup>3</sup> and for aerated concrete blocks of 600kg/m<sup>3</sup>. All walls shall have at least the same fire resistance as that required for the sealing system.

## Service support Requirements

Services should be rigidly supported via steel angles, hangars or channels, not further than 450mm from the surface of the sealing system on both faces unless specified otherwise in the performance data.

## Terminology

Fire performance in accordance with EN1366-3, EN1366-4, Classification 13501-2:2007 + A1:2009, ETAG-026, Air Permeability EN1026, Sound EN10140. Fire resistance classes are: E = Integrity, the product can withstand the fire from the non-fire side, I = Insulation, the product can withstand the temperature traveling down the service, U/U = Uncapped inside and outside the furnace, U/C = Uncapped inside and Capped outside the furnace, C/U = Capped inside and Uncapped outside the furnace.

### Flexible and Rigid wall constructions with wall thickness of minimum 100mm Astro Batt Penetration Seal and Astro HPE Sealant - Insulated Metallic Pipes

Penetration Specification	Astro HPE (installed both faces)	Backing Material	Classification
Steel Pipe / Cast Iron 40mm Ø 1.7mm - 14.2mm wall thickness, insulated with 20mm Glass Wool Foil Faced 80kg/m <sup>2</sup> (CS) Continued / Sustained	15mm annulus x 15mm deep	N/A	E90 U/C EI60 U/C
Copper / Steel Pipe / Cast Iron 40mm - 159mm Ø 2.4mm - 14.2mm wall thickness, insulated with 30mm Glass Wool Foil Faced 80kg/m <sup>2</sup> (CS) Continued / Sustained	15mm annulus x 15mm deep	N/A	EI60 U/C

### Flexible and Rigid wall constructions with wall thickness of minimum 100mm PS Coating Penetration Seal and Astro HPE Sealant - Insulated Metallic Pipes

Penetration Specification	Astro HPE (installed both faces)	Backing Material	Classification
Steel Pipe / Cast Iron 40mm Ø 1.5mm - 14.2mm wall thickness, insulated with 20mm Glass Wool Foil Faced 80kg/m <sup>2</sup> (CS) Continued / Sustained	15mm annulus x 15mm deep	N/A	E90 U/C EI60 U/C
Copper / Steel Pipe / Cast Iron 40mm - 159mm Ø 2.3mm - 14.2mm wall thickness, insulated with 30mm Glass Wool Foil Faced 80kg/m <sup>2</sup> (CS) Continued / Sustained	15mm annulus x 15mm deep	N/A	EI60 U/C

### Astro HPE Penetration Seals. Single Layer of 50mm Thick Astro Batt Installed Within Min. 150mm Thick Rigid Wall - Plastic Pipes

Penetration Specification	Astro HPE	Astro Batt	Classification
PVC Pipe 50mm -125mm Ø 2.4 - 7.4mm wall thickness	20mm annulus full 50mm depth of the Astro Batt	Single layer of 50mm Astro Batt max 1100mm high x 750mm wide	EI45 U/C

# Technical Data - Batt Application

## Cables and Cable Trays

Penetration Specification	Astro HPE	Astro Batt	Classification
*500mm perforated cable tray	20mm gap full 50mm depth of the Astro batt	Single layer of 50mm Astro Batt max 1100mm high x 750mm wide	EI30
*Electrical cable up to cable tray			EI45
*1 off 'C1' Cable			
*1 off 'C2' Cable			
*1 off 'C3' Cable			

\*All cables coated with DFT 2mm PST Coating 300mm along the cables both sides of the seal

## Astro HPE Penetration Seals. Single layer of 50mm thick Astro Batt Installed Within Min. 150mm Thick Rigid Wall

Penetration Specification	Astro HPE	Astro Batt	Classification
PEX / MLC (Multilayer Composite) Pipe 40mm Ø 4mm wall thickness	20mm annulus full 50mm depth of the Astro Batt	Single layer of 50mm Astro Batt max 1100mm high x 750mm wide	E45 U/C EI30 U/C
PEX / MLC (Multilayer Composite) Pipe 50mm Ø 4.5mm wall thickness			
PEX / MLC (Multilayer Composite) Pipe 63mm Ø 6mm wall thickness			
PEX / MLC (Multilayer Composite) Pipe 75mm Ø 7.5mm wall thickness			
PEX / MLC (Multilayer Composite) Pipe 90mm Ø 8.5mm wall thickness			
PEX / MLC (Multilayer Composite) Pipe 110mm Ø 10mm wall thickness			

## Astro HPE Penetration Seals. Double Layer of 50mm Thick Astro Batt Installed Within Min. 150mm Thick Rigid Floor.

Penetration Specification	Astro HPE	Astro Batt	Classification
PVC Pipe 50mm - 125mm Ø 2.4 - 7.4mm wall thickness	20mm annulus 25mm deep both faces of the Astro Batt	Double layer of 50mm Astro Batt max 1100mm high x 750mm wide	EI120 U/C

## Astro HPE Penetration Seals. Double Layer of 50mm Thick Astro Batt Installed Within Min. 150mm Thick Rigid Wall - Cables and Cable Trays

Penetration Specification	Astro HPE	Astro Batt	Classification
*500mm perforated cable tray	20mm annulus 25mm deep both faces of the Astro Batt	Double layer of 50mm Astro Batt max 1100mm high x 750mm wide	EI120

Penetration Specification	Astro HPE	Astro Batt	Classification
*500mm perforated cable tray	20mm annulus, 25mm deep both faces of the Astro Batt	Double layer of 50mm Astro Batt max 1100mm high x 750mm wide	EI120
*Electrical cable up to 21mm Ø			
*1 off 'C1' Cable			E 120 EI90
*1 off 'C2' Cable			
*1 off 'C3' Cable			EI120

\*All cables coated with DFT 2mm PST Coating 300mm along the cables both sides of the seal

# Technical Data - Batt Application

## Astro HPE Penetration Seals. Double layer of 50mm thick Astro Batt Installed Within Min. 150mm Thick Rigid Wall

Penetration Specification	Astro HPE	Astro Batt	Classification
PEX / MLC (Multilayer Composite) Pipe 40mm Ø 4mm wall thickness	20mm annulus, 25mm deep both faces of the Astro Batt	Double layer of 50mm Astro Batt max 1100mm high x 750mm wide	EI120 U/C
PEX / MLC (Multilayer Composite) Pipe 50mm Ø 4.5mm wall thickness			
PEX / MLC (Multilayer Composite) Pipe 63mm Ø 6mm wall thickness			
PEX / MLC (Multilayer Composite) Pipe 75mm Ø 7.5mm wall thickness			
PEX / MLC (Multilayer Composite) Pipe 90mm Ø 8.5mm wall thickness			
PEX / MLC (Multilayer Composite) Pipe 110mm Ø 10mm wall thickness			

## Astro HPE Penetration Seals. Double Layer of 50mm Thick Astro Batt Installed Within Min. 150mm Thick Rigid Floor.

### Plastic Pipes

Penetration Specification	Astro HPE	Astro Batt	Classification
PVC Pipe 50mm - 125mm Ø 2.4 - 7.4mm wall thickness	20mm annulus 25mm deep both faces of the Astro Batt	Double layer of 50mm Astro Batt max 1100mm high x 750mm wide	EI120 U/C
PVC Pipe 50mm - 125mm Ø 2.4 - 7.4mm wall thickness	20mm annulus 25mm deep both faces of the Astro Batt	Double layer of 50mm Astro Batt max 1100mm high x 750mm wide	EI90 U/C

### Cables and Cable Trays

Penetration Specification	Astro HPE	Astro Batt	Classification
*500mm perforated cable tray	20mm annulus, 25mm deep both faces of the Astro batt	Double layer of 50mm Astro Batt max 1100mm high x 750mm wide	EI120
*Electrical cables up to 21mm Ø			
*1 off 'C1' Cable			E 120 EI60
*1 off 'C2' Cable			
*1 off 'C1' Cable			

\*All cables coated with DFT 2mm PST Coating 300mm along the cables upper sides of the seal

## Astro HPE Penetration Seals. Double layer of 50mm thick Astro Batt Installed Within Min. 150mm Thick Rigid Floor

Penetration Specification	Astro HPE	Astro Batt	Classification
PEX / MLC (Multilayer Composite) Pipe 40mm Ø 4mm wall thickness	20mm annulus, 25mm deep both faces of the Astro Batt	Double layer of 50mm Astro Batt max 1100mm high x 750mm wide	EI120 U/C
PEX / MLC (Multilayer Composite) Pipe 50mm Ø 4.5mm wall thickness			
PEX / MLC (Multilayer Composite) Pipe 63mm Ø 6mm wall thickness			
PEX / MLC (Multilayer Composite) Pipe 75mm Ø 7.5mm wall thickness			
PEX / MLC (Multilayer Composite) Pipe 90mm Ø 8.5mm wall thickness			
PEX / MLC (Multilayer Composite) Pipe 110mm Ø 10mm wall thickness			

# Technical Data - Batt Application

Flexible and Rigid wall constructions with minimum wall thickness of 100mm,  
 Penetration seal with Astro Batt and Astro HPE Sealant installed centrally within the wall.

Penetration Specification	Astro HPE (installed both faces)	Backing Material	Classification
Copper / Steel Pipe and Cast Iron 40mm $\phi$ 1.5mm - 14.2mm wall thickness insulated with 32mm 'Armaflex AF' (LS 650mm) Local Sustained 650mm	20mm annulus x 25mm deep	N/A	E120 C/U EI30 C/U
Copper / Steel Pipe and Cast Iron 40mm - 159mm $\phi$ 2.0mm - 14.2mm wall thickness insulated with 32mm 'Armaflex AF' (LS 650mm) Local Sustained 650mm	20mm annulus x 25mm deep	N/A	E120 C/U EI30 C/U
Copper / Steel Pipe and Cast Iron 40mm - 159mm $\phi$ 2.0mm - 14.2mm wall thickness insulated with 32mm 'Armaflex AF' (LS 650mm) Local Sustained 650mm	20mm annulus x 25mm deep	N/A	E120 C/U EI30 C/U
Copper / Steel and Cast Iron Pipe 40mm diameter and 1.5 - 14.2mm wall	15mm deep x 15mm wide annulus Astro HPE Sealant to both faces of the seal	20mm thick foil faced glass wool insulation (min 80kg/m <sup>3</sup> )	E90 U/C EI60 U/C
Copper / Steel and Cast Iron Pipe 40 - 159mm diameter and 2.3 - 14.2mm wall		30mm thick foil faced glass wool insulation (min 80kg/m <sup>3</sup> )	EI60 U/C
Steel Pipe / Cast Iron 40mm diameter and 1.7 - 14.2mm wall	15mm deep x 15mm wide annulus Astro HPE Sealant to both faces of the seal	20mm thick foil faced glass wool insulation (min 80kg/m <sup>3</sup> )	E90 U/C EI60 U/C
Steel Pipe / Cast Iron 40 - 150mm diameter and 2.3 - 14.2mm wall		30mm thick foil faced glass wool insulation (min 80kg/m <sup>3</sup> )	EI60 U/C

# Technical Data - Uponor Application

## Uponor Valve System

The drywall construction was of overall dimensions 3000mm wide by 3000mm high by 100mm thick. The framing comprised 50mm wide galvanised mild steel studs, at maximum 600mm centres, friction fitted into galvanised steel head and base channels. Each side of the stud frame was faced with two layers of 12.5mm thick 'Gypsum' Type F plasterboard. The framework was infilled with 50mm thick mineral wool insulation having a nominal density of 100kg/m<sup>3</sup>. The wall was provided with eight circular apertures, which was penetrated by a range of shower units.

Aperture	Seal type	Service
2no. 75mm diameter apertures	The aperture was sealed with a nominally 10mm wide by 25mm depth of Astroflame Limited "Astro HPE Sealant (high pressure exerting)" Sealant, applied flush with the unexposed face of the wall	Uponor water valve with tap unit fitted to project from the unexposed face of the partition
2no. 75mm diameter apertures	The aperture was sealed with a nominally 10mm wide by 25mm depth of Astroflame Limited "Astro HPE Sealant (high pressure exerting)" Sealant, applied flush with the exposed face of the wall	Uponor water valve with tap unit fitted to project from the unexposed face of the partition
2no. 75mm diameter apertures	The aperture was sealed with a nominally 10mm wide by 25mm depth of Astroflame Limited "Astro HPE Sealant (high pressure exerting)" Sealant, applied flush with the unexposed face of the wall	Uponor water valve with tap unit fitted to project from the unexposed face of the partition
2no. 75mm diameter apertures	The aperture was sealed with a nominally 10mm wide by 25mm depth of Astroflame Limited "Astro HPE Sealant (high pressure exerting)" Sealant, applied flush with the exposed face of the wall	Uponor water valve with tap unit fitted to project from the unexposed face of the partition

Integrity (minutes)	insulation (minutes)
132*	132*
132*	132*
132*	132*
132*	132*

\* The test duration. The test was discontinued after a period of 132 minutes.

Astroflame has Technical Representatives who provide assistance in the selection and specification of Astroflame products. For more information, specification and technical advice, please call our Head Office on Tel: +44 (0) 1329 844500. Guarantee / Warranty: Astroflame products are manufactured to rigid standards of quality. Any product which has been applied in accordance with Astroflame's written instructions and in any application recommended by Astroflame, but which is proved to be defective in product quality, will be replaced free of charge. No liability can be accepted for the information provided in this document although it is published in good faith and believed to be correct. Astroflame Limited reserves the right to alter product specifications without prior notice, in line with our Company policy of continuous development and improvement.