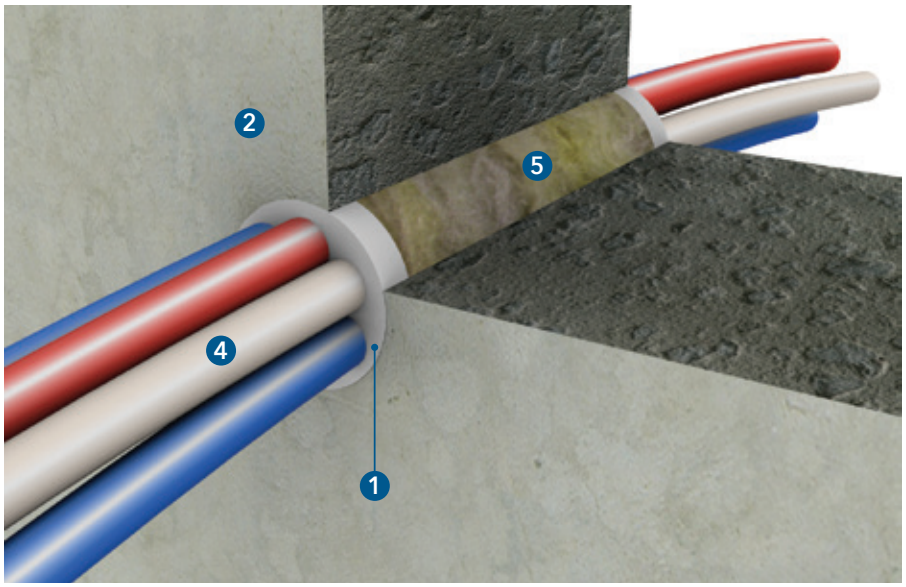
PROMASEAL®-HPEx SEALANT



Above: Electrical cables penetrating seal in rigid wall (See Detail F).

LEGEND (see also details A to I)
1. PROMASEAL®-HPEx Sealant
2. Supporting construction
3. Metal pipe/non-combustible pipes
4. Cable bundle
5. Stone wool backfilling
6. Pipe insulation
7. Combustible / plastic pipe

APPROVAL
UL-EU-01102-CPR

GENERAL DESCRIPTION

PROMASEAL®-HPEx Sealant is an acrylic based graphite sealant used to reinstate the fire resistance performance of wall and floor constructions where they are penetrated by various cables, plastic and insulated metal pipes.

PROMASEAL®-HPEx Sealant expands upon contact with heat, and is considered as an intumescent or reactive material.

PROMASEAL®-HPEx Sealant has a high expansion ratio that causes it to swell upon heating and can achieve fire rating up to 240 minutes.

FIELDS OF APPLICATION

Penetration seals in flexible wall, in rigid wall and floor construction and installed in PROMASEAL Fire Barrier seals.[1]

Penetration seals around insulated metallic pipes, non-metallic pipes, electrical cables, cable trays and ladders.

INSTALLATION

- For good adhesion the surfaces of the building elements shall be free of any dust or grease and may need to be primed. On good clean, virgin concrete and masonry, no priming required.
- Ensure that the aperture and services in question have been tested with PROMASEAL®-HPEx Sealant and that the site conditions are within the application specification. Services to be rigidly supported maximum 400mm from the seal on both sides of the wall and floor
- All services and apertures need to be clean and clear of all dust and loose particles. The aperture temperature needs to be at +5°C or above at time of installation. Services to be rigidly supported, minimum 400mm from the seal.
- An annular space needs to be present around the service to apply sufficient installation depth.
- The PROMASEAL®-HPEx Sealant is either gunned or towelled into the aperture in or between the separating element/elements to a specific depth, utilising various backing materials (see performance tables).
- Upon installation make sure that the annular gap is fully filled with the PROMASEAL®-HPEx sealant and that it is fully compacted in to the gap. Sealant minimum 25mm deep and maximum 20mm annular.
- Once compacted, smooth off the PROMASEAL®-HPEx Sealant to produce a professional finish.

COLOUR
Grey

CONSISTENCY
Liquid

DENSITY
1.23 -1.33g/cm³

EXPANSION ONSET TEMPERATURE
+ 180°C

EXPANSION PRESSURE
7 bar

APPLICATION TEMPERATURE
+5 to +35°C

EXPANSION
Up to 20 times

ACOUSTIC ISOLATION (EN 10140)
R_W52dB

pH
6-9

DURABILITY
Z1, intended for use in internal condition

SKIN TIME
15 mins @ 25°C/50% RH

CURE TIME
1.7mm per 24 hours

1. See PROMASEAL® Fire Barrier Data Sheet (EN) for further information.

AUTHORITY: UL-EU CERTIFICATION (APPROVAL UL-EU-01102-CPR)

SYSTEM ADVANTAGES / CUSTOMER BENEFIT

- Tested in rigid walls and floors, flexible walls and in PROMASEAL® Fire Barrier seals.[1]
- Tested in accordance with: EN10140-2:2010 (airborne sound insulation) and EN1026:2000 (air permeability).
- Seals elastmoric foam and glass wool insulation
- Paintable and odourless
- Air, water, smoke and gas tight
- CE marked.

PACKAGING

PROMASEAL®-HPEx Sealant is supplied in 310ml cartridges.

STORAGE REQUIREMENTS

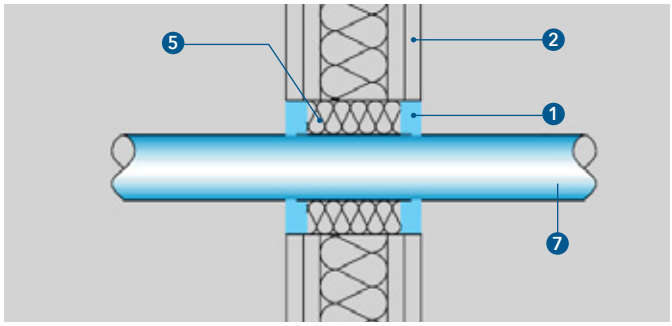
- Store in cool and dry conditions – +5°C to 25°C
- Shelf life for original sealed containers is at least 18 months
- Once opened the container should be used swiftly.

SAFETY INSTRUCTIONS

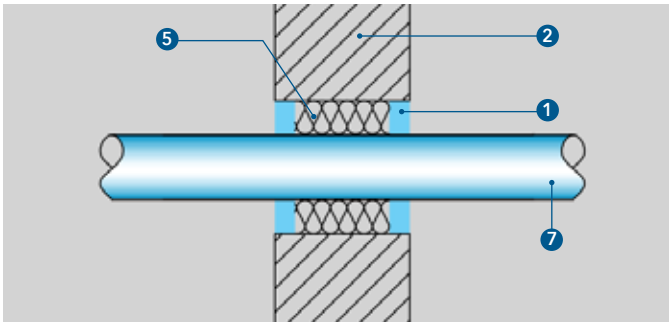
Please refer to the safety data sheet for additional advice.

1. See PROMASEAL® Fire Barrier Data Sheet (EN) for further information.

Detail A – Combustible pipe penetrating seal in flexible wall



Detail B – Combustible pipe penetrating seal in rigid wall



Detail A/B - Combustible pipe in flexible wall and rigid wall

Description	Technical specification
Wall thickness	≥100mm
Annular gap width	≤ 20mm
Minimum seal depth	≥ 25mm

Refer to Table 1: Overview of combustible pipe installation, dimensions and classification for flexible and rigid wall.

TABLE 1: OVERVIEW OF COMBUSTIBLE PIPE INSTALLATION, DIMENSIONS AND CLASSIFICATION FOR FLEXIBLE WALL AND RIGID WALL

Penetrating Services	Min wall thickness	Annular gap	Min seal depth	Seal position	Backfilling material	Fire resistance (mins)	
						E	EI
40mm diameter PVC pipe with 1.9-3mm wall thickness	120mm	10mm	25mm	Both sides	None	120 U/C	120 U/C
125mm diameter PVC pipe with 4.8-7.4mm wall thickness		16mm			Rock fibre mineral wool 30mm deep and 80 kg/m³		
63mm diameter HDPE pipe with 7.2mm wall thickness		300mm x 100mm (max seal size)			None		
90mm diameter HDPE pipe with 9.2mm wall thickness		12.5mm					
90mm diameter ABS pipe with 6mm wall thickness		12.5mm					
40mm diameter PVC pipe with 1.9mm wall thickness	100mm	20mm				120 C/U	120 C/U
125mm diameter PVC pipe with 9.2mm wall thickness						60 C/U	60 C/U
40mm diameter ABS pipe with 1.9mm wall thickness						120 C/U	120 C/U
40mm diameter HDPP pipe with 2mm wall thickness						120 C/U	120 C/U

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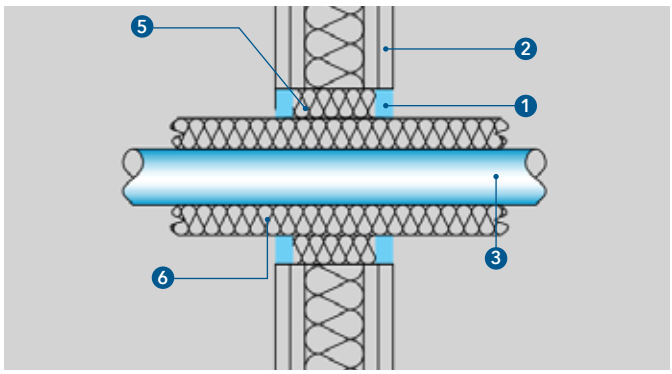
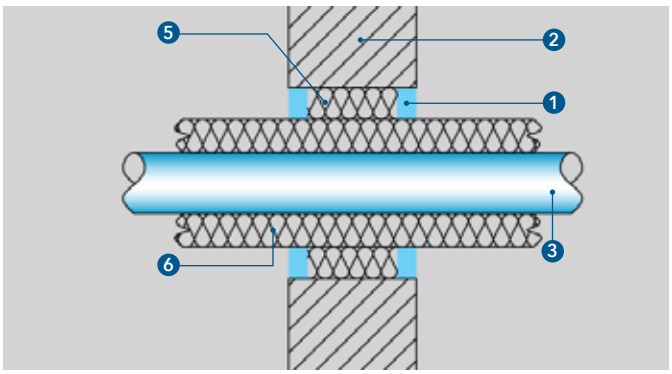
Detail C – Insulated pipe penetrating seal in flexible wall



Detail D – Insulated pipe penetrating seal in rigid wall



Detail C/D – Insulated pipe in flexible wall and rigid wall

Description	Technical specification
Wall thickness	≥100mm
Annular gap width	≤ 20mm
Minimum seal depth	≥ 25mm

Refer to Table 2: Overview of combustible pipe installation, dimensions and classification for flexible and rigid wall.

TABLE 2: OVERVIEW OF INSULATED METAL PIPE INSTALLATION, DIMENSIONS AND CLASSIFICATION FOR FLEXIBLE WALL AND RIGID WALL

Penetrating Services	Minimum wall thickness	Annular gap	Minimum seal depth	Seal position	Backfilling material	Fire resistance (mins)	
						E	EI
60mm diameter Copper or Steel pipe with 0.8-14.2mm wall thickness and insulated with 32mm Armaflex AF*	120mm	20mm	25mm	Both sides	None	120 U/C	90 U/C
15mm diameter Copper or Steel pipe with 0.8-7mm wall thickness and insulated with 13mm Armaflex AF*		15mm				120 U/C	120 U/C
40mm diameter Copper or Steel pipe with 1.5-14.2mm wall thickness and insulated with 32mm Armaflex AF**	100mm	20mm				120 C/U	30 C/U
40-159mm diameter Copper or Steel pipe with 2.0-14.2mm wall thickness and insulated with 32mm Armaflex AF**							
159mm diameter Copper or Steel pipe with 2.0-14.2mm wall thickness and insulated with 30mm Pipelane SGR glass wool tube (80kg/m^3) **							

* Continuous through seal and full length of the pipe (CS).
** Continuous through seal and extending minimum 650mm from both faces of the seal (LS).

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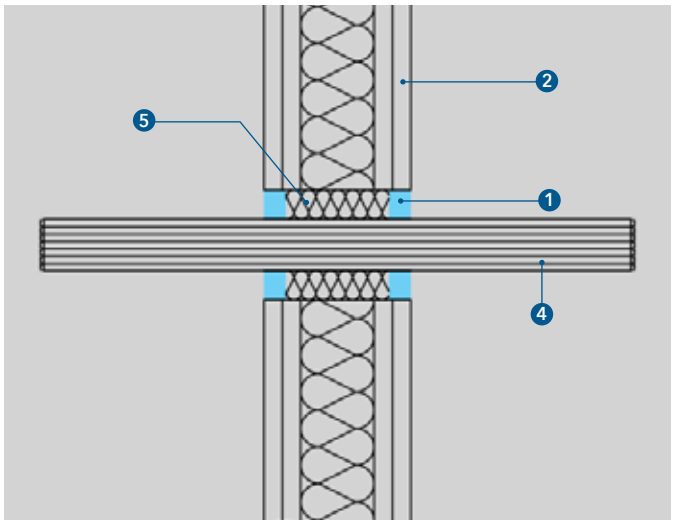
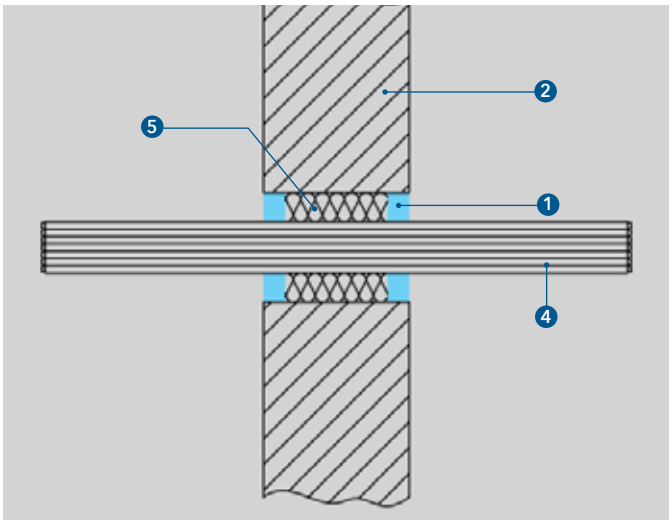
Detail E - Cables penetrating seal in flexible wall



Detail F - Cables penetrating seal in rigid wall



Detail E/F - Cables in flexible wall and rigid wall

Description	Technical specification
Wall thickness	≥120mm
Annular gap width	≤ 20mm
Minimum seal depth	≥ 25mm

Refer to Table 3: Overview of combustible pipe installation, dimensions and classification for flexible and rigid wall.

TABLE 3: OVERVIEW OF CABLE INSTALLATION, DIMENSIONS AND CLASSIFICATION FOR FLEXIBLE WALL AND RIGID WALL

Penetrating Services	Minimum wall thickness	Annular gap	Minimum seal depth	Seal position	Backfilling material	Fire resistance (mins)	
						E	EI
Electrical cables up to 21mm diameter	120mm	300mm x 100mm (max seal size)	25mm	Both sides	None	120	120

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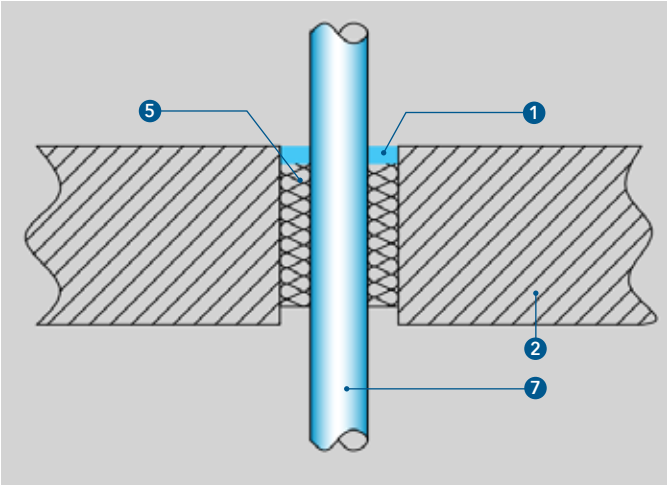
Detail G – Combustible pipe penetrating seal in rigid floor



Detail G – Combustible pipe in Rigid floor

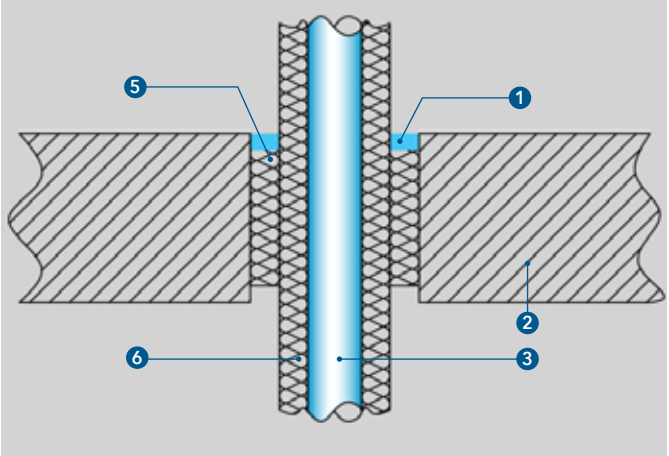
Description	Technical specification
Floor thickness	≥150mm
Annular gap width	≤ 20mm
Minimum seal depth	≥ 25mm

Refer to Table 4: Overview of combustible pipe installation, dimensions and classification for rigid floor.

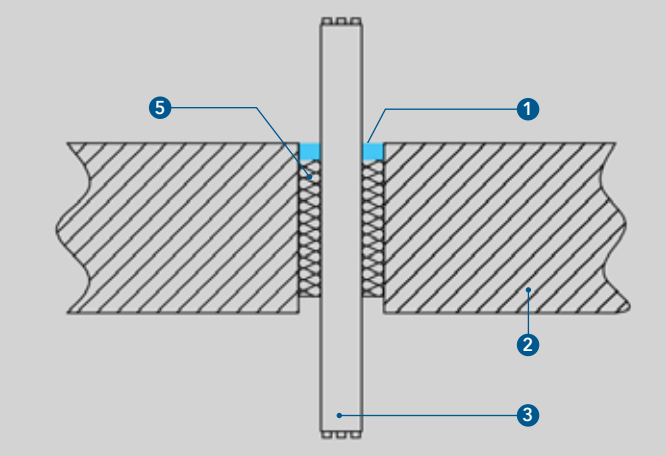
TABLE 4: OVERVIEW OF COMBUSTIBLE PIPE INSTALLATION, DIMENSIONS AND CLASSIFICATION FOR RIGID FLOOR

Penetrating Services	Minimum floor thickness	Annular gap	Minimum backing depth	Seal position	Backfilling material	Fire resistance (mins)	
						E	EI
50-110mm diameter PP Pipe with 2.1 to 10.7mm wall thickness	150mm	20mm	25mm	Upper face	Rock fibre mineral wool 100mm deep and 45 kg/m³	30 U/C	30 U/C
50mm diameter PP Pipe with 2.1mm wall thickness						240 U/C	240 U/C
110mm diameter PP Pipe with 10.7mm wall thickness						120 U/C	120 U/C
40-125mm diameter PE Pipe with 4.1 to 11.4mm wall thickness						60 U/C	60 U/C
40mm diameter PE Pipe with 4.1mm wall thickness						240 U/C	240 U/C
125mm diameter PE Pipe with 11.4mm wall thickness						90 U/C	90 U/C
40-114mm diameter PVC Pipe with 2.0 to 8.1mm wall thickness						90 U/C	30 U/C
40mm diameter PVC Pipe with 2.0mm wall thickness						240 U/C	240 U/C
114mm diameter PVC Pipe with 8.1mm wall thickness						120 U/C	120 U/C

Detail H – Insulated pipe penetrating seal in rigid floor



Detail I – Cables penetrating seal in rigid floor



Detail H – Insulated pipe in rigid floor

Description	Technical specification
Floor thickness	≥150mm
Annular gap width	≤ 20mm
Minimum seal depth	≥ 25mm

Refer to Table 5: Overview of insulated pipe installation, dimensions and classification for rigid floor.

Detail H – cables in rigid floor

Description	Technical specification
Floor thickness	≥150mm
Annular gap width	≤ 200 x 200mm
Minimum seal depth	≥ 25mm

Refer to Table 6: Overview of cable pipe installation, dimensions and classification for rigid floor.

TABLE 5: OVERVIEW OF INSULATED PIPE INSTALLATION, DIMENSIONS AND CLASSIFICATION FOR RIGID FLOOR

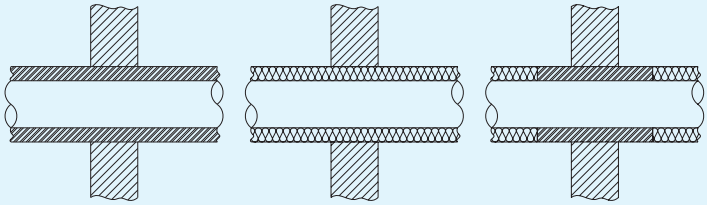
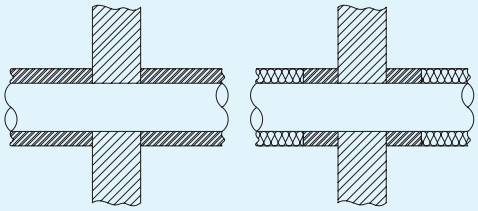
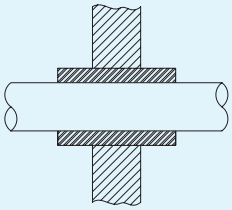
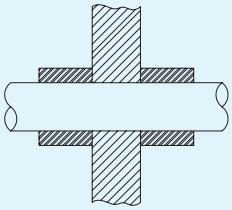
Penetrating Services	Minimum floor thickness	Annular gap	Minimum seal depth	Seal position	Backfilling material	Fire resistance (mins)	
						E	EI
41-159mm diameter Copper or Steel pipe with 2.5-14.2mm wall thickness and insulated with 16-32mm Armaflex AF*	150mm	20mm	25mm	Upper face	Rock fibre mineral wool 100mm deep and 45 kg/m³	120 U/C	120 U/C

*Continuous through seal and full length of the pipe (CS).

TABLE 6: OVERVIEW OF CABLE INSTALLATION, DIMENSIONS AND CLASSIFICATION FOR RIGID FLOOR

Penetrating Services	Minimum floor thickness	Annular gap	Minimum seal depth	Seal position	Backfilling material	Fire resistance (mins)	
						E	EI
Electrical cables up to 21mm diameter	150mm	50 x 50 – 200 x 200mm Max. (seal size)	25mm	Upper face	Rock fibre mineral wool 100mm deep and 45 kg/m³	180	120
Electrical cables 22 to 80mm diameter						120	120
Non-sheathed electrical cables up to 24mm diameter						180	15
Telecoms cables up to 21mm diameter (bundles up to 100mm diameter)						180	20

PIPE INSULATION ACCORDING TO EN 1366-3: 2009

	Local Sustained	Local Interrupted
Local: (sustained along the tube length)	 Example CS (Continued Sustained)	 Example CI (Continued Interrupted)
Local: (sectional insulation)	 Example LS (Local Sustained)	 Example LI (Local Interrupted)

The table above shows the possible arrangement of pipe insulation according to EN 1366-3.

CONFIGURATION OF PIPE END ACCORDING TO EN 1366-3: 2009

Test Condition	Pipe and configuration		Type of pipes
	Oriented inside (in furnace)	Oriented outside (outside the furnace)	
U/U	Uncapped	Uncapped	Plastic: rainwater, ventilated sewage (drainage channel)
U/C	Uncapped	Capped	Plastic: unventilated sewage; gas; drinking water, water for heating; (supply channel); metal: non-fire resistant suspension/coupling systems
C/U	Capped	Uncapped	Metal: fire-resistant suspension/coupling systems
C/C	Capped	Capped	–

It is important to ensure that sealing systems have been tested with appropriate pipe end conditions.

The conditions the pipe and sealing system must endure in a fire situation depend on whether one or both ends of the pipe are sealed in practice, as pressures and the flow of hot gases will vary depending on whether the pipe is ventilated or not.

There are rules that determine which tested end configurations are valid for additional pipe end situations.

For metal pipes

		Tested			
		U/U	C/U	U/C	C/C
Covered	U/U	Y	N	N	N
	C/U	Y	Y	Y	N
	U/C	Y	N	Y	N
	C/C	Y	Y	Y	Y

For plastic pipes

		Tested			
		U/U	C/U	U/C	C/C
Covered	U/U	Y	N	N	N
	C/U	Y	Y	N	N
	U/C	Y	Y	Y	N
	C/C	Y	Y	Y	Y

Y = Acceptable N = Not acceptable

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Terms	
UL Listing	UL certifies, validates, tests, inspects and audits. The UL Mark is the most common Certification Mark in the United States and Europe. If a product carries one of these marks, it means UL found that the representative product samples met UL's requirements.
Flexible Walls	A wall made from steel stud, 2 layers of Type F gypsum boards and mineral wool cavity with a thickness and make up appropriate to the required fire resistance classification.
Rigid Walls	A wall made of aerated concrete slabs, lightweight concrete or high density concrete and a thickness appropriate to the required fire resistance classification. Masonry/concrete walls to have minimum density of 700kg/m³ for concrete or brick and 600kg/m³ for aerated concrete blocks.
Rigid Floors	A floor made of aerated concrete slabs, lightweight concrete or high density concrete and a thickness appropriate to the required fire resistance classification. Masonry/concrete floors to have minimum density of 700kg/m³ for concrete or brick and 600kg/m³ for aerated concrete blocks.
EN 1366-3 EN 1366-4	Fire Resistance tests for service installations. Penetration seals. Fire Resistance tests for service installations. Linear joint seals.
EN 13501-1 EN 13501-2	Reaction to Fire Classification. Resistance to Fire Classification.
BS 476	Pt 20: Fire tests on building materials and structures. Method for determination of the fire resistance of elements of construction (general).Pt 22: Fire tests on building materials and structures. Methods for determination of the contribution of components to the fire resistance of a structure.

Supplement markings	Denomination / Characteristics / Requirements
E	Integrity (ignition of cotton pad, cracks and opening occurrence of sustained flaming on unexposed side)
I (I1, I2)	Thermal insulation (average temperature rise, maximum temperature rise)
U	Pipe end configuration »uncapped«
C	Pipe end configuration »capped«

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