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Authorised and notified
according to Article 29 of the
Regulation (EU)
No 305/2011 of the European
Parliament and of the Council
of 9 March 2011

MEMBER OF EOTA
EOTA

European Technical Assessment ETA-21/0445 of 2021/01/01

I General Part

Technical Assessment Body issuing the ETA and designated according to Article 29 of the Regulation (EU) No 305/2011: ETA-Danmark A/S

Trade name of the construction product:

MULCOL® MULTIWRAP

Product family to which the above construction product belongs:

Fire Stopping and Sealing Product:

- Penetration Seals

Manufacturer:

Mulcol International BV
Arnesteinweg 18
4338 PD Middelburg
The Netherlands

Manufacturing plant:

A/003

This European Technical Assessment contains:

63 pages including 1 annex which form an integral part of the document

This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of:

EAD 350454-00-1104

This version replaces:

-

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I. **SPECIFIC PARTS OF THE EUROPEAN TECHNICAL ASSESSMENT**

1 **Technical description of the product**

- 1) Mulcol® Multiwrap is a pipe closure device used to form (mixed) penetration seals where combustible pipes and insulated metal pipes penetrate walls and floors.
- 2) The Mulcol® Multiwrap is supplied in single layer 10 meter rolls in boxes. The wrap is wrapped around the pipe and pushed into the aperture in the separating element / Mulcol® Multimastic FB coated board (Mulcol® Multimastic C System) or cast in with Mulcol® Multimortar. The Mulcol® Multimastic C System is subject of a separate ETA 16/0985 and the Mulcol® Multimortar is subject of the ETA 16/0566.
- 3) The applicant has submitted a written declaration that the product and/or constituents of the product contains no substances which have been classified as dangerous according to Directive 67/548/EEC and Regulation (EC) No. 1272/2008 and listed in the 'indicative list on dangerous substances' of the EGDS – taking into account the installation conditions of the construction product and the release scenarios resulting from there.
In addition to the specific clauses relating to dangerous substances contained in this European Technical Assessment, there may be other requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the Construction Products Regulation, these requirements need also to be complied with, when and where they apply.
- 4) The use category of Mulcol® Multiwrap in relation to BWR 3 (Hygiene, health and environment) is IA1, S/W3

2 **Specification of the intended uses of the product in accordance with the applicable European Assessment Document (Hereinafter EAD): EAD 350454-00-1104**

Detailed information and data is given in Annex A.

The intended use of Mulcol® Multiwrap is to reinstate the fire resistance performance of flexible wall and rigid wall and floor constructions, where they are penetrated by services.

- 1) The specific elements of construction that the system Mulcol® Multiwrap may be used to provide a penetration seal in, are as follows:

- | | |
|-----------------|--|
| Flexible walls: | The wall must have a minimum thickness of 100 mm and comprise steel studs lined on both faces with minimum 2 layers of 12.5 mm thick boards. |
| Rigid walls: | The wall must have a minimum thickness of 100 mm and comprise concrete, aerated concrete or masonry, with a minimum density of 650 kg/m ³ . |
| Rigid floors: | The floor must have a minimum thickness of 150 mm and comprise aerated concrete or concrete with a minimum density of 650 kg/m ³ . |

* no part of the penetration seal may be closer than 100 mm to a stud, the cavity must be closed between the penetration seal and the stud, and minimum 100 mm of insulation of class A1 or A2 according to EN 13501-1 must be provided within the cavity between the penetration seal and the stud.

The supporting construction must be classified in accordance with EN 13501-2 for the required fire resistance period.

- 3) Aperture sizes are given in Appendix A. Under EN 1366-3 rules, results from tests in floors with a penetration seal length of minimum 1000 mm apply to any length as long as the perimeter length to seal area ratio is not smaller than that of the tested penetration seal. The following aperture sizes are therefore allowed where 2400 mm x 1200 mm is described in floors:

Maximum Aperture Sizes within Floors or Between Floors and Walls
1200 mm width x 2400 mm length (tested)
1100 mm width x 2900 mm length
1000 mm width x 4000 mm length
900 mm width x 7000 mm length
≤800 mm width x ∞ (infinite) length

- 4) Services in floors shall be supported at 250 mm from the top face. Services in walls shall be supported at 270 mm from both faces of the wall.
- 5) The Mulcol® Multiwrap may be used to provide a penetration seal with specific supporting constructions and substrates (for details see Annex A).
- 6) Pipe Insulations
Equivalent classified insulation materials whose performance is the same or higher in accordance with EN 13501-1 may also be used in relation to the insulation types specified in this ETA.
- 7) The provisions made in this European Technical Assessment are based on an assumed working life of the Mulcol® Multiwrap of 25 years, provided that the conditions laid down in the manufacturers datasheet and instructions for the packaging/transport/storage/installation/use/repair are met. The indications given on the working life cannot be interpreted as a guarantee given by the producer or the technical assessment body, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.
- 8) Type X: intended for use at conditions exposed to weathering.

3 Performance of the product and references to the methods used for its assessment

Product-type: Pipe Wrap	Intended use: Penetration Seal
Essential Characteristics	Performance
BWR 1 Mechanical resistance and stability	
None	Not relevant
BWR 2 Safety in case of fire	
Reaction to fire	Class F (not tested)
Resistance to fire	Annex A
BWR 3 Hygiene, health and environment	
Air permeability (material property)	No performance determined
Water permeability (material property)	No performance determined
Release of dangerous substances	Use categories: IA1, S/W3 Declaration of manufacturer
BWR 4 Safety in use	
Mechanical resistance and stability	No performance determined
Resistance to impact/movement	No performance determined
Adhesion	No performance determined
BWR 5 Protection against noise	
Airborne sound insulation	No performance determined
BWR 6 Energy economy and heat retention	
Thermal properties	No performance determined
Water vapour permeability	No performance determined
General aspects relating to fitness for use	
Durability and serviceability	X

4 ASSESSMENT AND VERIFICATION OF CONSTANCY OF PERFORMANCE (HEREINAFTER AVCP) SYSTEM APPLIED, WITH REFERENCE TO ITS LEGAL BASE

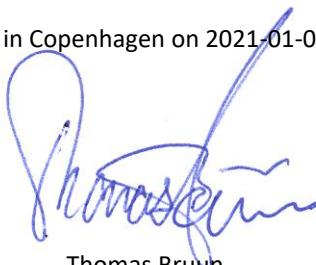
According to the decision 1999/454/EC – Commission Decision of date 22nd June 1999 on the procedure for attesting the conformity of construction products pursuant to Article 20(2) of Council Directive 89/106/EEC as regards fire stopping, fire sealing and fire protective products, published in the Official Journal of the European Union (OJEU) L178/52 of 14/07/1999, see <http://eur-lex.europa.eu/JOLIndex.do>) of the European Commission¹, as amended, the system(s) of assessment and verification of constancy of performance (see Annex V to Regulation (EU) No 305/2011) given in the following table(s) applies (apply).

Product(s)	Intended use(s)	Level(s) or class(es)	System(s)
Fire stopping and Fire Sealing Products	For fire compartmentation and/or fire protection or fire performance	Any	1

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at ETA-Danmark A/S prior to CE marking

Issued in Copenhagen on 2021-01-01 by



Thomas Bruun

Managing Director, ETA-Danmark

Annex A - Resistance to fire classification - Mulcol® Multiwrap

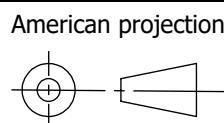
Fire test cable penetration seal

Mulcol® Multiwrap

Rigid/Flexible wall construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:15

Unit of measure : mm

Date : 9-5-2016

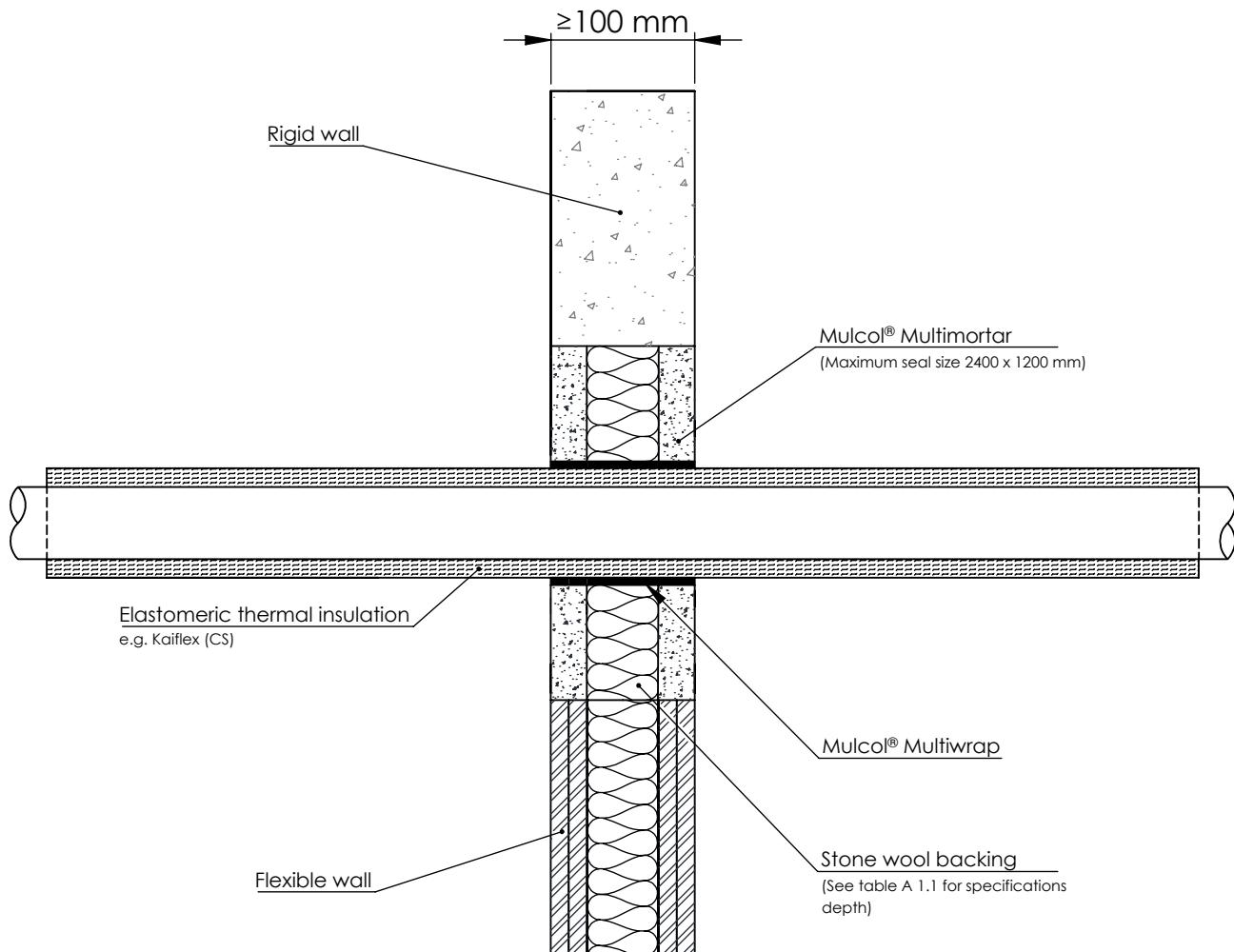
Company : Mulcol International B.V.

FW-ST-MW2.2.9

Department : Research & Development

A4

Draftsman : R.M.



A 1.1 Double side penetration seal with (stainless) steel pipes

Services	Classification	Position Mulcol® Multimortar	Insulation	Mulcol® Multiwrap	Position services	
Steel pipe Ø 40 mm / 1-14.2 mm wall th.	EI 120 C/U E 120 C/U, EI 60 C/U	Both sides of the wall 25 mm thick backed with 50 mm stone wool insulation, 150 kg/m ³	13 mm elastomeric insulation min. class B-s3,d0 or PE foam insulation	50 x 1.8 mm (1 layer) one fitted flush to each face of seal	Service fitted at any position within the aperture (min. separation 30 mm from seal edges and 0 mm from other services)	
Steel pipe Ø 40 mm / 1-14.2 mm wall th.				50 x 3.6 mm (2 layers) one fitted flush to each face of seal		
Steel pipe Ø 50 mm / 1.3-14.2 mm wall th.						
Steel pipe Ø 60 mm / 1.6-14.2 mm wall th.						
Steel pipe Ø 75 mm / 2.-14.2 mm wall th.						
Steel pipe Ø 90 mm / 2.4-14.2 mm wall th.						
Steel pipe Ø 100 mm / 2.7-14.2 mm wall th.						
Steel pipe Ø 115 mm / 3.1-14.2 mm wall th.						
Steel pipe Ø 140 mm / 3.8-14.2 mm wall th.						
Steel pipe Ø 165 mm / 4.5-14.2 mm wall th.						

See graph on page 10 for intermediate sizes

Annex A - Resistance to fire classification - Mulcol® Multiwrap

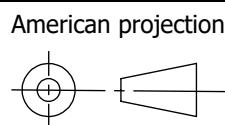
Fire test cable penetration seal

Mulcol® Multiwrap

Rigid/Flexible wall construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:15

Unit of measure : mm

Date : 9-5-2016

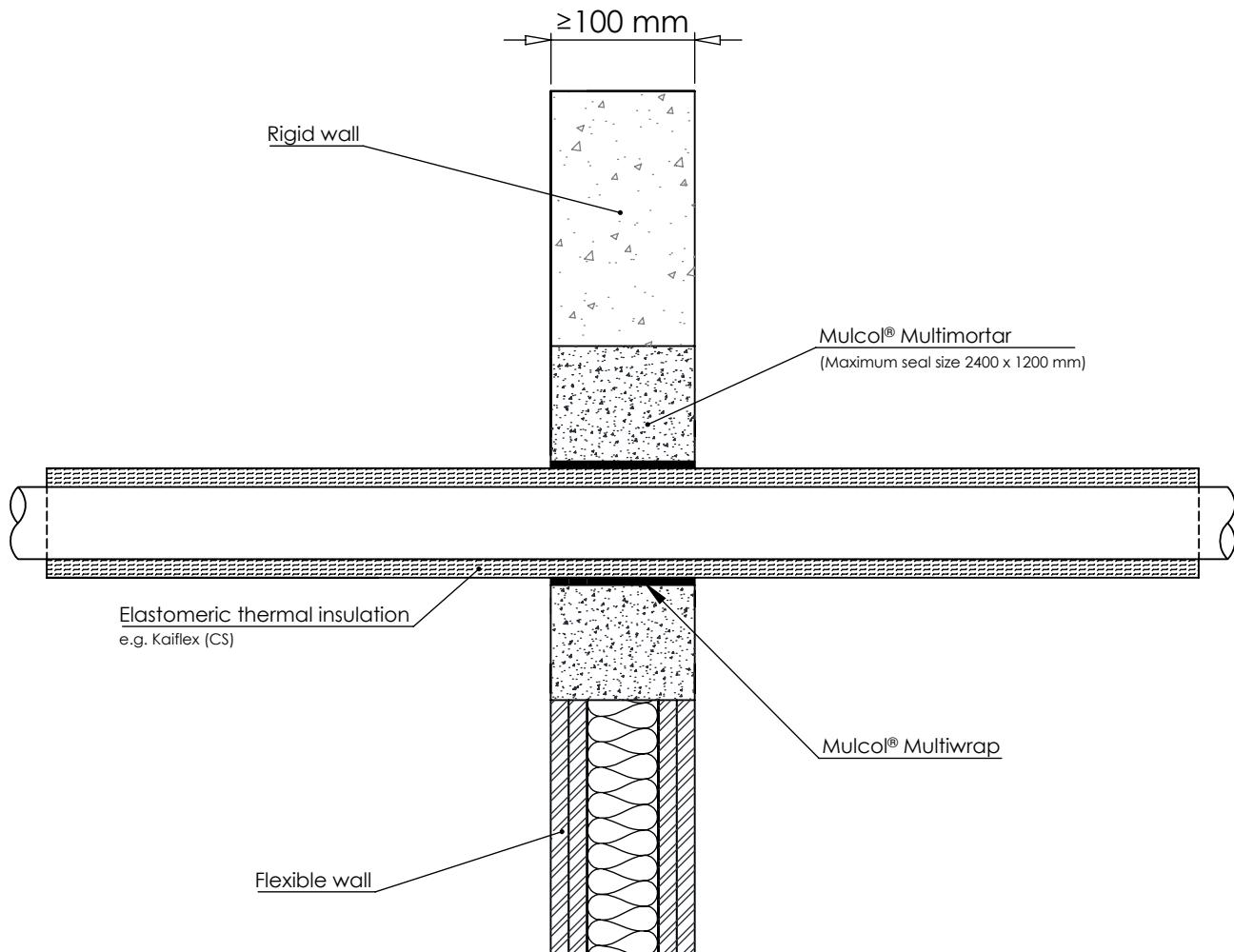
Company : Mulcol International B.V.

FW-ST-MW2.2.2

Department : Research & Development

A4

Draftsman : R.M.



A 1.2 Penetration seal with (stainless) steel pipes

Services	Classification	Position Mulcol® Multimortar	Insulation	Mulcol® Multiwrap	Position services
Steel pipe Ø 40 mm / 1-14.2 mm wall th.	E 120 C/U, EI 60 C/U	Entire wall thickness 100 mm	13-32 mm elastomeric insulation min. class B-s3,d0 or PE foam insulation	50 x 3.6 mm (2 layers) one fitted flush to each face of seal	Service fitted at any position within the aperture (min. separation 30 mm from seal edges and 0 mm from other services)
Steel pipe Ø 50 mm / 1.3-14.2 mm wall th.					
Steel pipe Ø 60 mm / 1.6-14.2 mm wall th.					
Steel pipe Ø 75 mm / 2.-14.2 mm wall th.					
Steel pipe Ø 90 mm / 2.4-14.2 mm wall th.					
Steel pipe Ø 100 mm / 2.7-14.2 mm wall th.					
Steel pipe Ø 115 mm / 3.1-14.2 mm wall th.					
Steel pipe Ø 140 mm / 3.8-14.2 mm wall th.					
Steel pipe Ø 165 mm / 4.5-14.2 mm wall th.					

See graph on page 10 for intermediate sizes

Annex A - Resistance to fire classification - Mulcol® Multiwrap

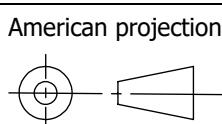
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid/Flexible wall construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:5

Unit of measure : mm

Date : 9-5-2016

Company : Mulcol International B.V.

FW-ST-MW2.2.2

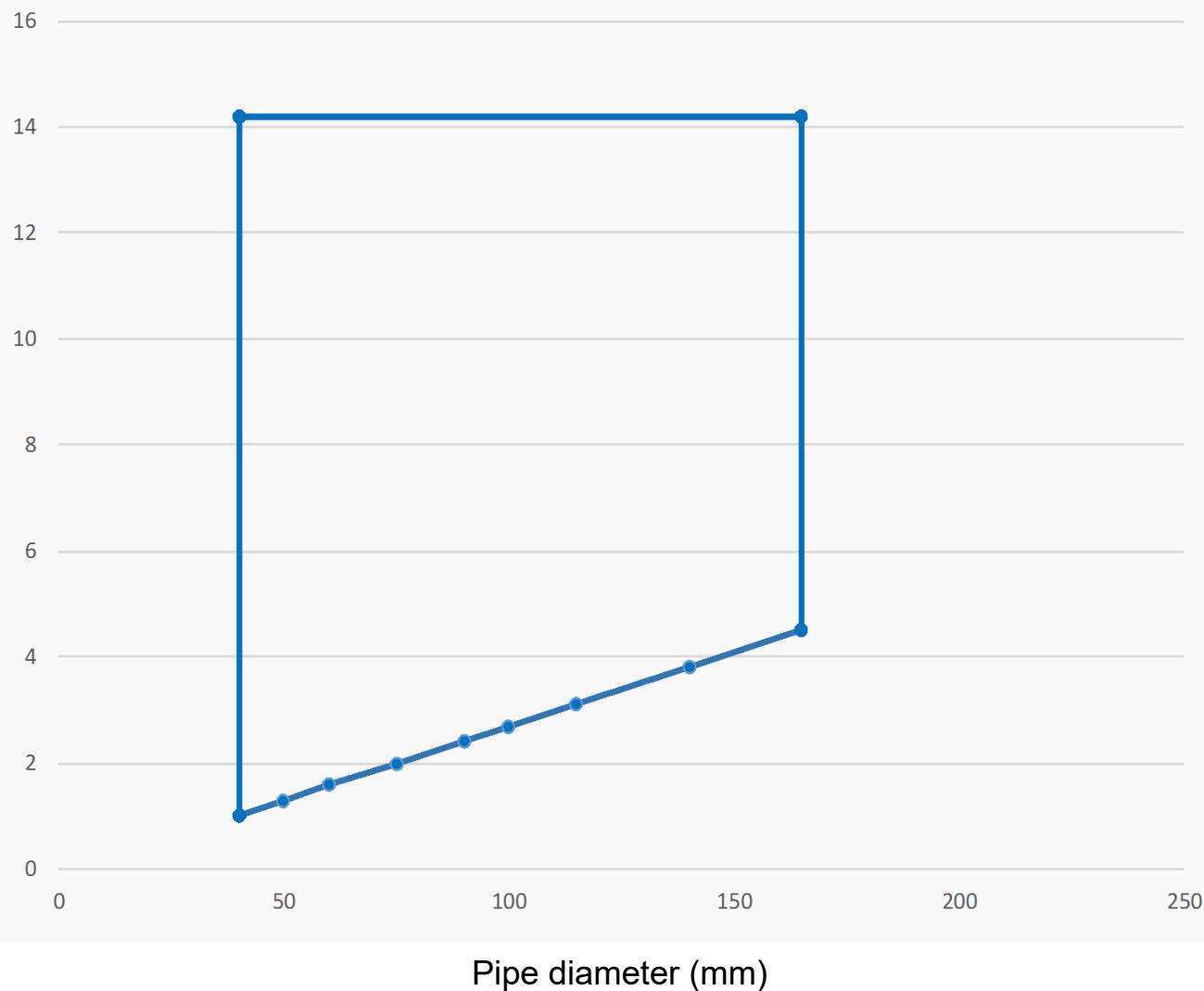
Department : Research & Development

A4

Draftsman : R.M.

Pipe wall thickness (mm)

Intermediate sizes



Annex A - Resistance to fire classification - Mulcol® Multiwrap

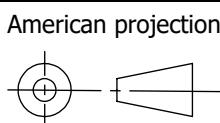
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid/Flexible wall construction according tot I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:15

Unit of measure : mm

Date : 9-5-2016

Company : Mulcol International B.V.

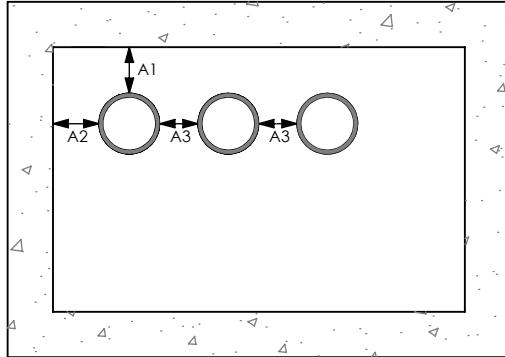
FW-PP-MW2.2.9

Department : Research & Development

Draftsman : R.M.

A4

Option 1

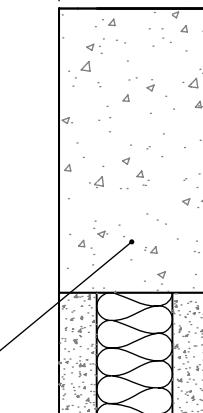


A1 : Pipe / top edge of seal separation min. 30 mm

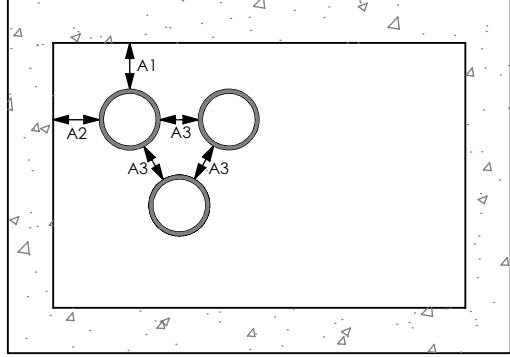
A2 : Pipe / side edge of seal separation min. 30 mm

A3 : Pipe / pipe separation min. 30 mm

≥ 100 mm



Option 2



A1 : Pipe / top edge of seal separation min. 30 mm

A2 : Pipe / side edge of seal separation min. 30 mm

A3 : Pipe / pipe separation min. 30 mm



Mulcol® Multimortar
(Maximum seal size 2400 x 1200 mm)

Flexible wall

Mulcol® Multiwrap

Stone wool backing
(See table A.1.3 for specifications depth)

A 1.3 Double side penetration seal with combustible pipes

Services	Classification	Position Mulcol® Multimortar	Mulcol® Multiwrap (Both sides)	Configuration
PVC-U pipe according to EN 1329-1, EN 1452 and EN 1453-1**, PVC-C according to EN 1566-1				
up to \varnothing 40 mm / 3 - 4.3 mm wall th.	EI 120 U/C, EI 60 U/C	Both sides of the wall 25 mm thick backed with 50 mm stone wool insulation, 140 kg/m ³	50 x 1.8 mm (1 layer)	1 & 2 between PVC-U/PVC-C, PE/ABS/SAN+PVC and PP pipes in any combination
up to \varnothing 110 mm / 2.7 - 6.6 mm wall th.	EI 120 U/C, EI 90 U/C		50 x 3.6 mm (2 layers)	
up to \varnothing 125 mm / 3.7 - 7.4 mm wall th.	EI 120 U/C		50 x 5.4 mm (3 layers)	
up to \varnothing 160 mm / 3.2 - 9.5 mm wall th.	EI 60 U/C		50 x 7.2 mm (4 layers)	
PE (PE-HD) pipe according to EN 1519-1, EN 12201-2 and EN 12006-1*, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1				
up to \varnothing 40 mm / 3.2 - 3.7 mm wall th.	EI 120 U/C	Both sides of the wall 25 mm thick backed with 50 mm stone wool insulation, 140 kg/m ³	50 x 1.8 mm (1 layer)	1 & 2 between PVC-U/PVC-C, PE/ABS/SAN+PVC and PP pipes in any combination
up to \varnothing 110 mm / 4.2 - 10 mm wall th.	EI 60 U/C		50 x 3.6 mm (2 layers)	
up to \varnothing 125 mm / 12 mm wall th.	EI 120 U/C		50 x 5.4 mm (3 layers)	
up to \varnothing 160 mm / 4.9 - 12 mm wall th.	EI 120 U/C		50 x 7.2 mm (4 layers)	
up to \varnothing 160 mm / 12 mm wall th.	EI 90 U/C			

* In Germany the pipes have addditionally to comply with DIN 19535-10

** In Germany the pipes have addditionally to comply with DIN 19531-10

Annex A - Resistance to fire classification - Mulcol® Multiwrap

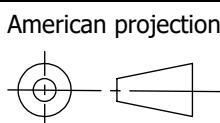
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid/Flexible wall construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:15

Unit of measure : mm

Date : 9-5-2016

Company : Mulcol International B.V.

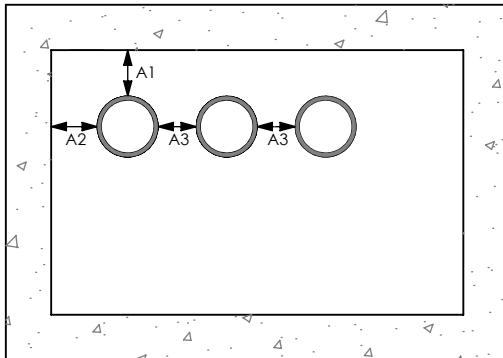
FW-PP-MW2.2.9

Department : Research & Development

Draftsman : R.M.

A4

Option 1

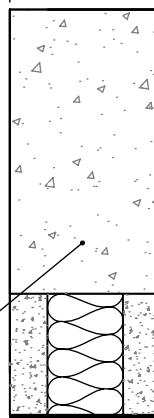


A1 : Pipe / top edge of seal separation min. 30 mm

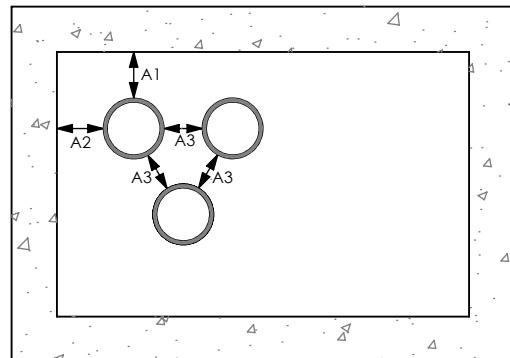
A2 : Pipe / side edge of seal separation min. 30 mm

A3 : Pipe / pipe separation min. 30 mm

$\geq 100 \text{ mm}$



Option 2



A1 : Pipe / top edge of seal separation min. 30 mm

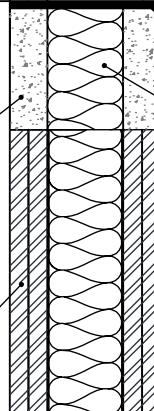
A2 : Pipe / side edge of seal separation min. 30 mm

A3 : Pipe / pipe separation min. 30 mm



Mulcol® Multimortar
(Maximum seal size 2400 x 1200 mm)

Flexible wall



A 1.3.1 Double side penetration seal with combustible pipes

Services	Classification	Position Mulcol® Multimortar	Mulcol® Multiwraps (both sides)	Configuration
PP pipe according to EN 1852-1:2009				
up to $\varnothing 40 \text{ mm} / 4 - 5.5 \text{ mm}$ wall th.	EI 120 U/C	Both sides of the wall 25 mm thick backed with 50 mm stone wool insulation, 140 kg/m ³	50 x 1.8 mm (1 layer)	1 & 2 between PVC-U/PVC-C, PE/ABS/SAN+PVC and PP pipes in any combination
up to $\varnothing 110 \text{ mm} / 6.6 \text{ mm}$ wall th.	E 120 U/C, EI 90 U/C		50 x 3.6 mm (2 layers)	
up to $\varnothing 125 \text{ mm} / 17.1 \text{ mm}$ wall th.	E 120 U/C, EI 90 U/C		50 x 5.4 mm (3 layers)	
up to $\varnothing 160 \text{ mm} / 4 - 21.9 \text{ mm}$ wall th.	E 120 U/C		50 x 7.2 mm (4 layers)	
up to $\varnothing 160 \text{ mm} / 21.9 \text{ mm}$ wall th.	EI 60 U/C			

Annex A - Resistance to fire classification - Mulcol® Multiwrap

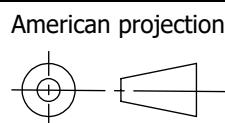
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid/Flexible wall construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:5

Unit of measure : mm

Date : 9-5-2016

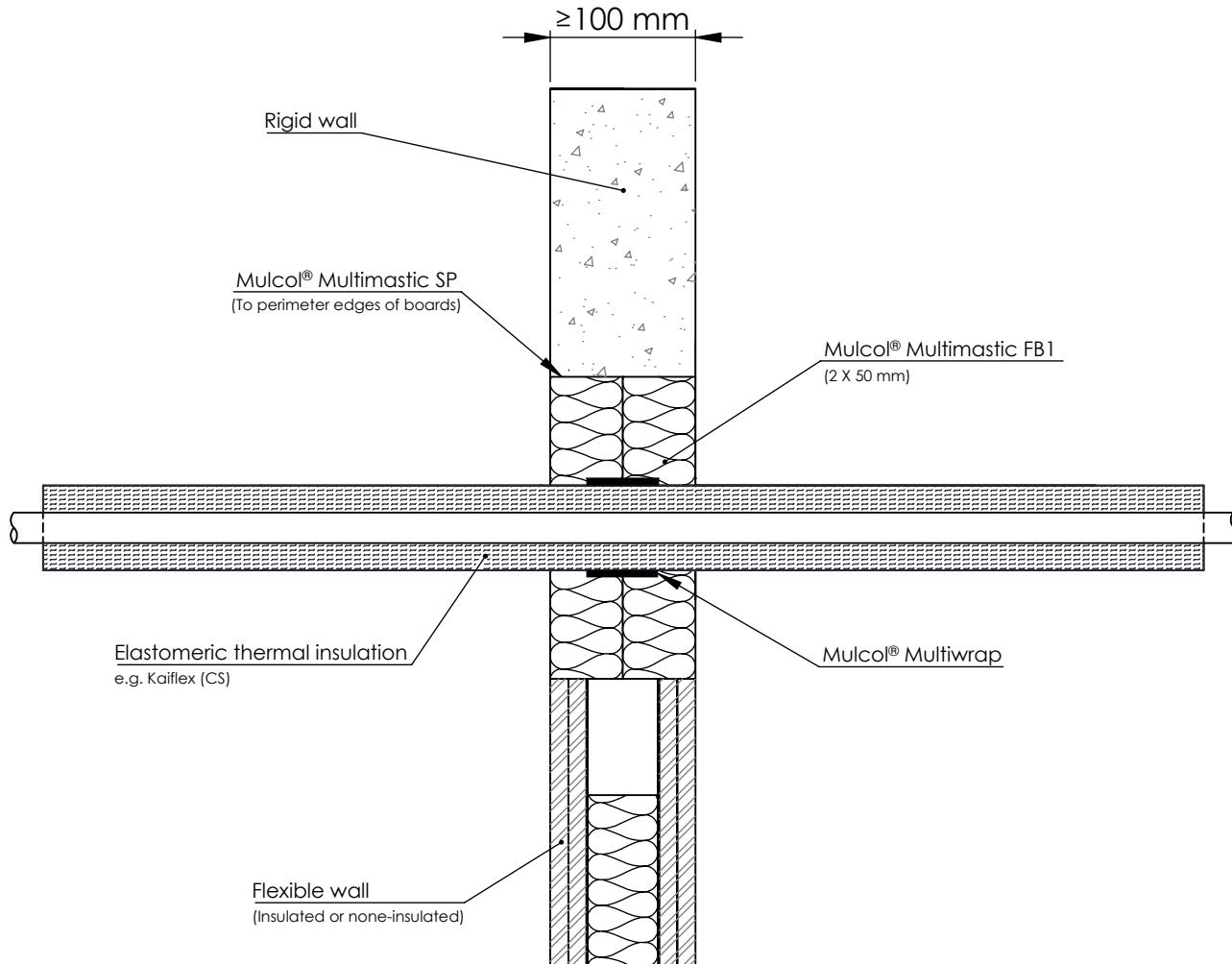
Company : Mulcol International B.V.

FW-ST-MW4.1.1

Department : Research & Development

A4

Draftsman : R.M.



A 1.4 Double side penetration seal with (stainless) steel pipes

Services	Classification	Position Mulcol® Multimastic FB1	Insulation	Mulcol® Multiwrap	Position services
Steel pipe Ø 40 mm / 1-14.2 mm wall thickness	EI 120 U/C, EI 120 U/U	Both sides of the wall with a maximum seal of 2400 x 1200 mm	13 mm elastomeric insulation min. class B-s3, d0 or PE foam insulation	50 x 1.8 mm (1 layer) centrally fitted	Service fitted at any position within the aperture (min. separation 40 mm from seal edges and 100 mm from other services)

Annex A - Resistance to fire classification - Mulcol® Multiwrap

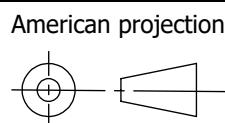
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid/Flexible wall construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:5

Unit of measure : mm

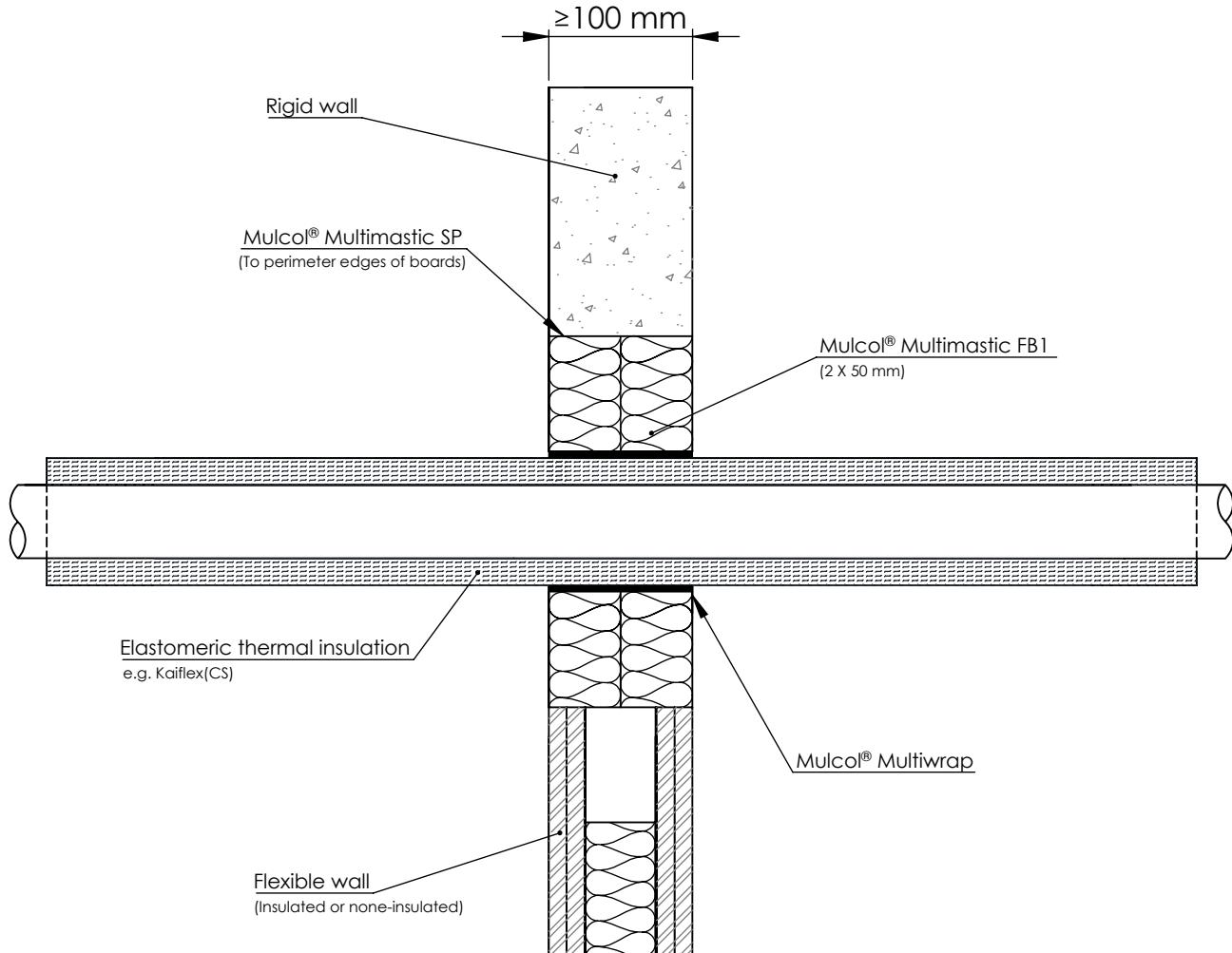
Date : 9-5-2016

Company : Mulcol International B.V.

FW-ST-MW2.2.2

Department : Research & Development

A4



A 1.4.1 Double side penetration seal with (stainless) steel pipes

Services	Classification	Position Mulcol® Multimastic FB1	Insulation	Mulcol® Multiwrap	Minimum from seal edge
Steel pipe Ø 40 mm / 1-14.2 mm wall th.					
Steel pipe Ø 50 mm / 1.3-14.2 mm wall th.					
Steel pipe Ø 60 mm / 1.6-14.2 mm wall th.					
Steel pipe Ø 75 mm / 2.-14.2 mm wall th.					
Steel pipe Ø 90 mm / 2.4-14.2 mm wall th.					
Steel pipe Ø 100 mm / 2.7-14.2 mm wall th.					
Steel pipe Ø 115 mm / 3.1-14.2 mm wall th.					
Steel pipe Ø 140 mm / 3.8-14.2 mm wall th.					
Steel pipe Ø 165 mm / 4.5-14.2 mm wall th.					
See graph on page 15 for intermediate sizes					

Annex A - Resistance to fire classification - Mulcol® Multiwrap

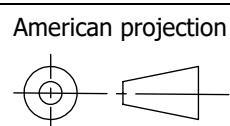
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid/Flexible wall construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:5

Unit of measure : mm

Date : 9-5-2016

Company : Mulcol International B.V.

FW-ST-MW2.2.2

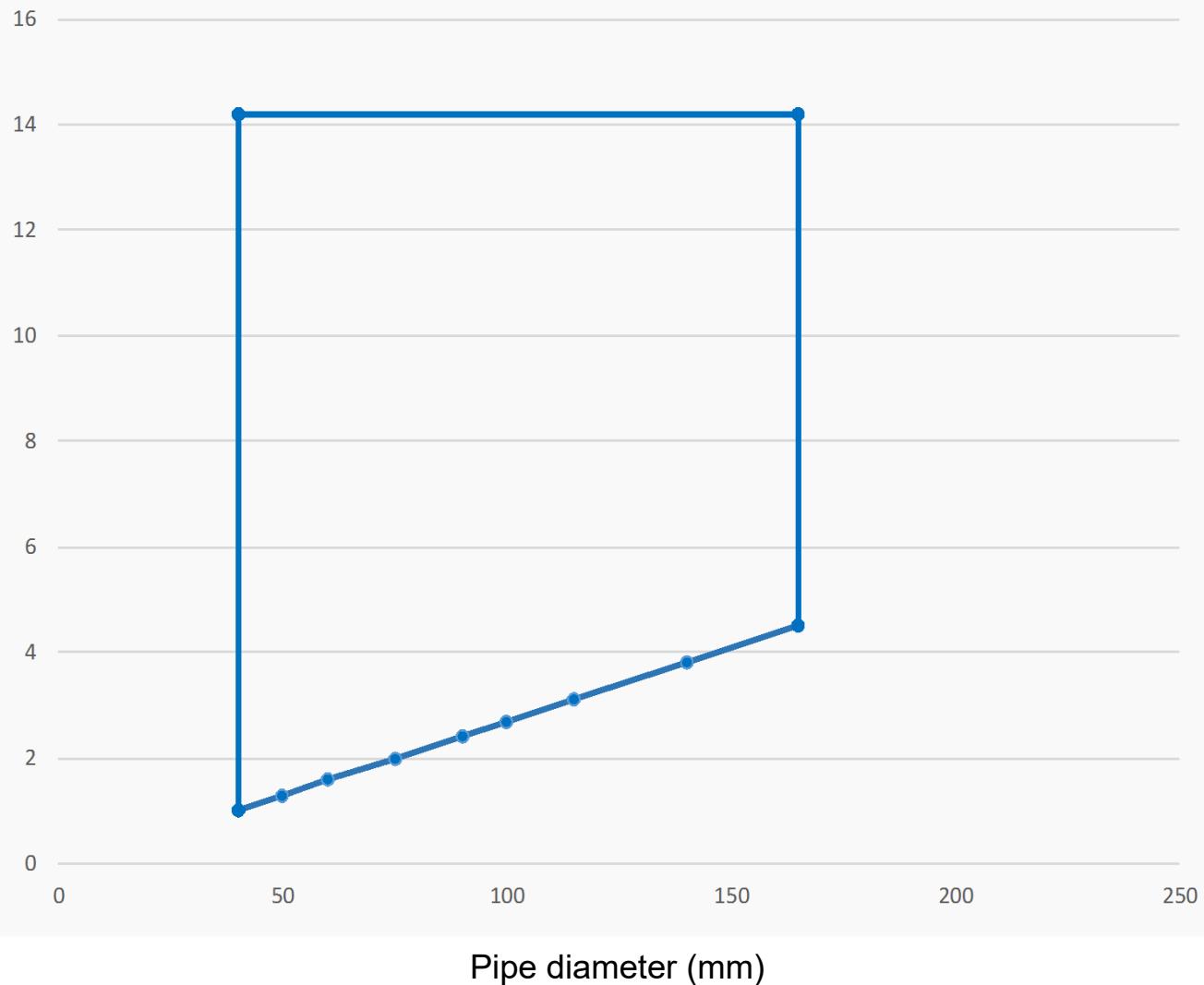
Department : Research & Development

A4

Draftsman : R.M.

Pipe wall thickness (mm)

Intermediate sizes



Annex A - Resistance to fire classification - Mulcol® Multiwrap

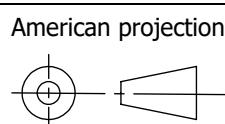
Fire test pipe penetration seal

Mulcol® Multiwrap

Flexible wall construction according to I.2.2

MULCOL

FIRE PROTECTION



Scale : 1:5

Unit of measure : mm

Date : 17-9-2018

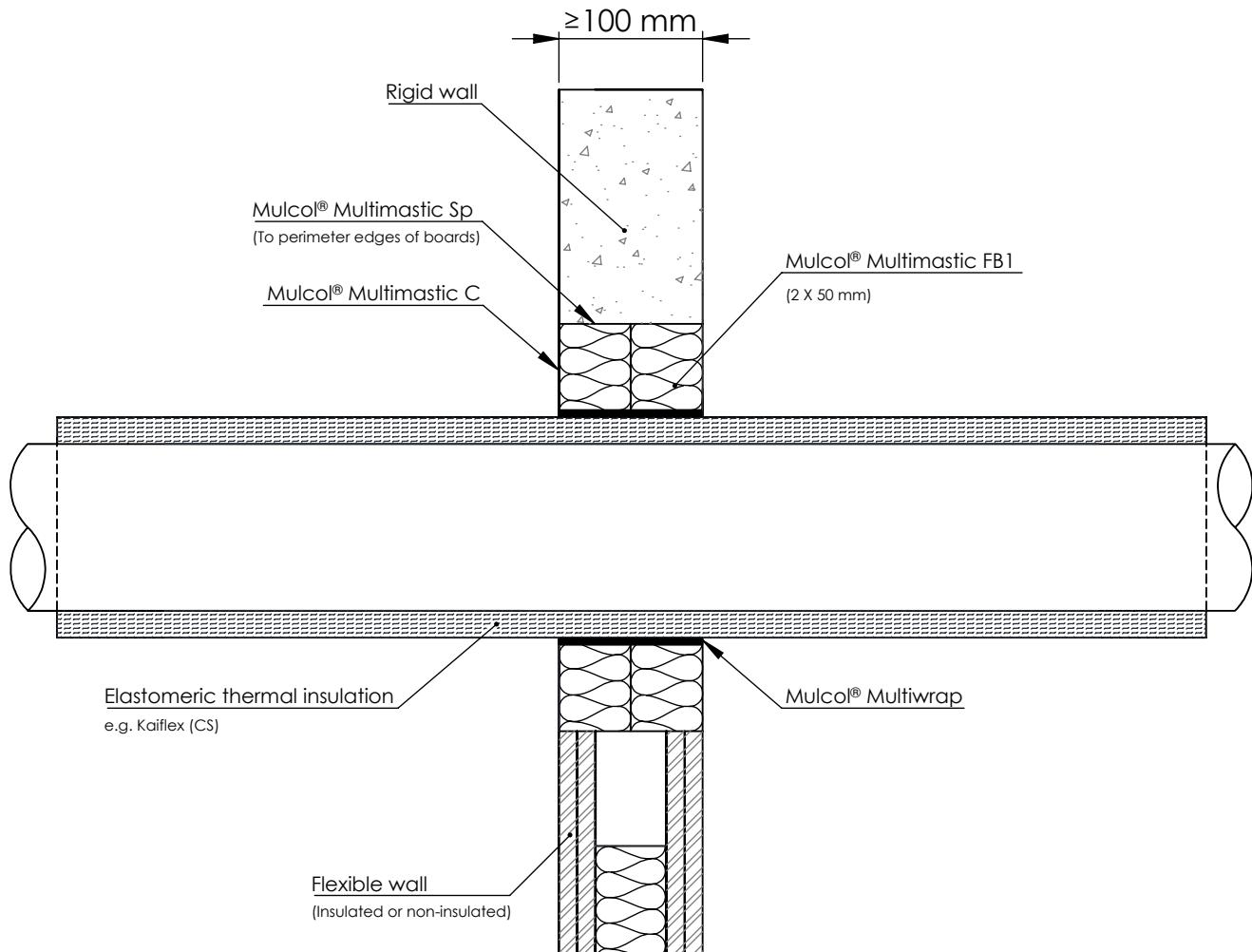
Company : Mulcol International B.V.

FW-ST-MW2.2.3

Department : Research & Development

A4

Draftsman : R.M.



A 1.4.2 Double side penetration seal with (stainless) steel pipes

Services	Classification	Position Mulcol® Multimastic FB1	Insulation	Mulcol® MultiWrap	Minimum from seal edge
Steel pipe Ø 40 mm / 1-14.2 mm wall th.			32 mm elastomeric insulation min. class B-s3, d0 or PE foam insulation		
Steel pipe Ø 40 mm / 1-14.2 mm wall th.					
Steel pipe Ø 50 mm / 1.2-14.2 mm wall th.					
Steel pipe Ø 60 mm / 1.6-14.2 mm wall th.					
Steel pipe Ø 75 mm / 2.-14.2 mm wall th.					
Steel pipe Ø 90 mm / 2.4-14.2 mm wall th.					
Steel pipe Ø 100 mm / 2.7-14.2 mm wall th.					
Steel pipe Ø 115 mm / 3.1-14.2 mm wall th.					
Steel pipe Ø 140 mm / 3.8-14.2 mm wall th.					
Steel pipe Ø 165 mm / 4.5-14.2 mm wall th.					
Steel pipe Ø 180 mm / 3.6-14.2 mm wall th.					
Steel pipe Ø 200 mm / 4.0-14.2 mm wall th.					
Steel pipe Ø 219 mm / 4.3-14.2 mm wall th.					
Steel pipe Ø 250 mm / 5.0-14.2 mm wall th.					
Steel pipe Ø 300 mm / 5.9-14.2 mm wall th.					
Steel pipe Ø 324 mm / 6.35-14.2 mm wall th.					
See graph on page 17 for intermediate sizes					

Annex A - Resistance to fire classification - Mulcol® Multiwrap

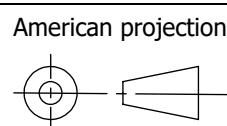
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid/Flexible wall construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:5

Unit of measure : mm

Date : 17-9-2018

Company : Mulcol International B.V.

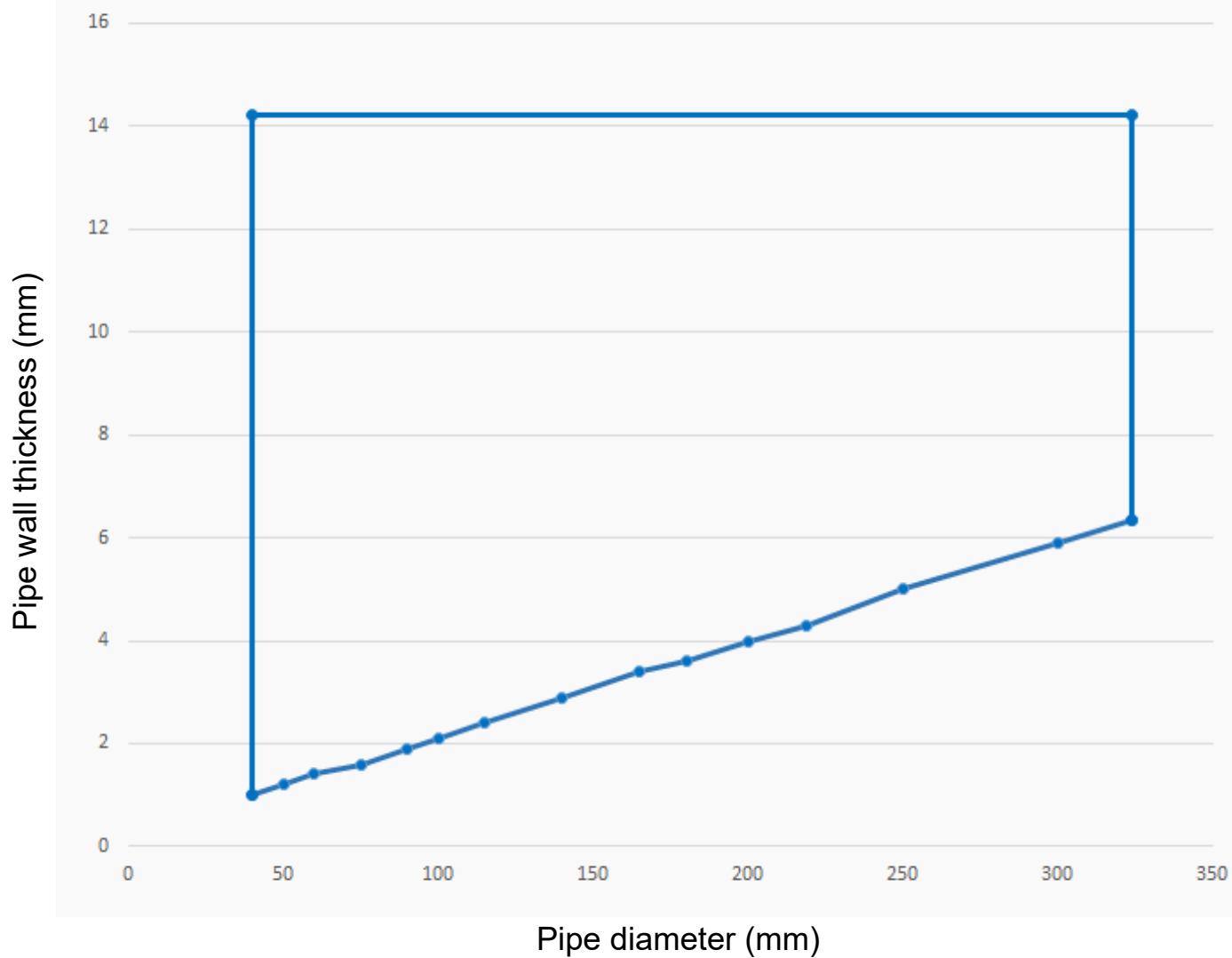
FW-ST-MW2.2.3

Department : Research & Development

A4

Draftsman : R.M.

Intermediate sizes



Annex A - Resistance to fire classification - Mulcol® Multiwrap

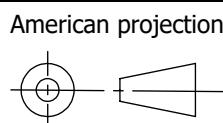
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid/Flexible wall construction according tot I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:15

Unit of measure : mm

Date : 9-5-2016

Company : Mulcol International B.V.

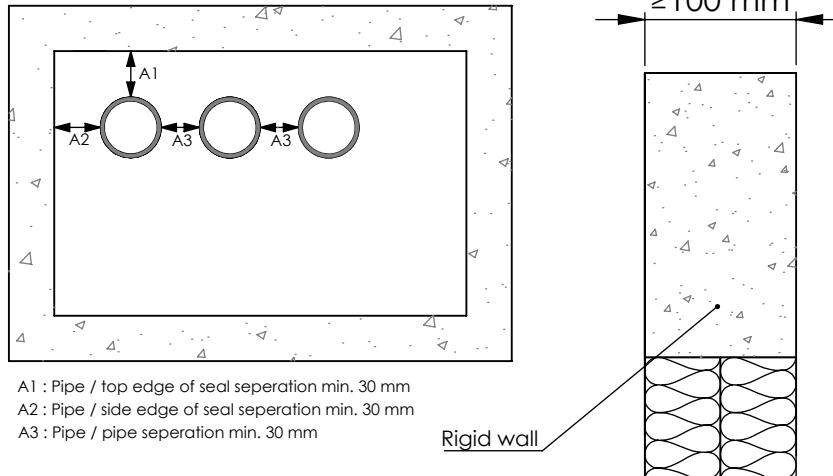
FW-PP-MW2.2.9

Department : Research & Development

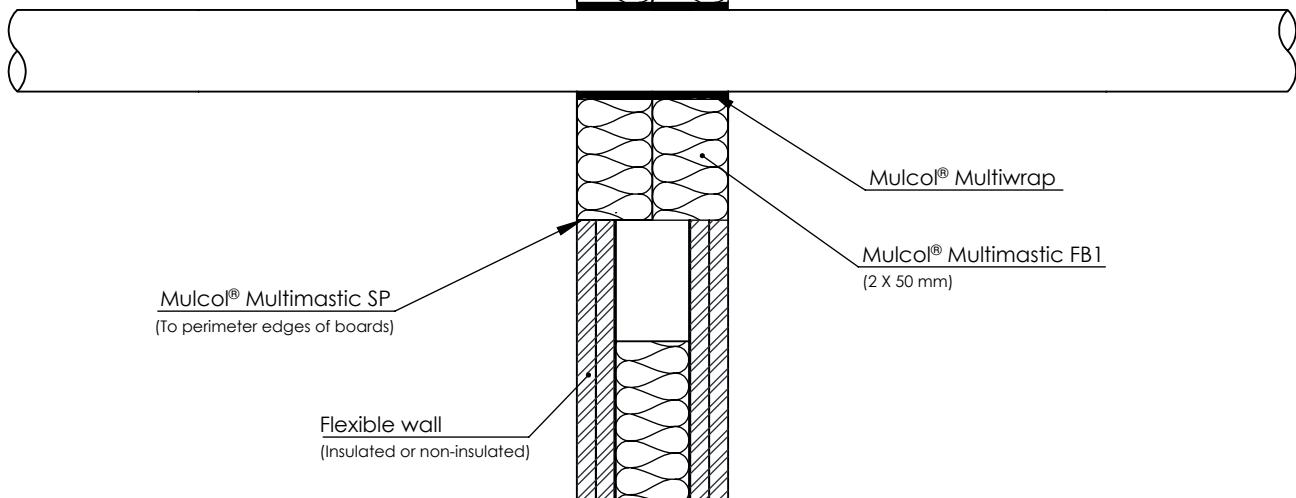
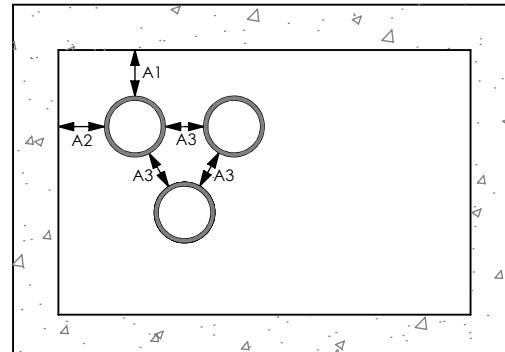
Draftsman : R.M.

A4

Option 1



Option 2



A 1.5 Double side penetration seal with combustible pipes

Services	Classification	Position Mulcol® Multimastic FB1	Mulcol® Multiwrap (both sides)	Configuration	Maximum seal	
PVC-U pipe according to EN 1329-1, EN 1452 and EN 1453-1**, PVC-C according to EN 1566-1						
up to Ø 40 mm / 1.9 - 3.0 mm wall th.	EI 120 U/U	Both sides of the wall	50 x 1.8 mm (1 layer)	1 & 2 between PVC-U/PVC-C, PE/ABS/SAN+PVC and PP pipes in any combination	2400 x 1200 mm	
up to Ø 110 mm / 2.7 - 6.6 mm wall th.	E 120 U/C, EI 90 U/C		50 x 3.6 mm (2 layers)			
up to Ø 125 mm / 3.7 - 7.4 mm wall th.			50 x 5.4 mm (3 layers)			
up to Ø 160 mm / 9.5 mm wall th.			50 x 7.2 mm (4 layers)			
PE (PE-HD) pipe according to EN 1519-1, EN 12201-2 and EN 12006-1*, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1						
up to Ø 40 mm / 2.4 - 3.7 mm wall th.	EI 120 U/U	Both sides of the wall	50 x 1.8 mm (1 layer)	1 & 2 between PVC-U/PVC-C, PE/ABS/SAN+PVC and PP pipes in any combination	2400 x 1200 mm	
up to Ø 110 mm / 4.2 - 10 mm wall th.	E 120 U/C, EI 90 U/C		50 x 3.6 mm (2 layers)			
up to Ø 125 mm / 4.8 - 12 mm wall th.			50 x 5.4 mm (3 layers)			
up to Ø 160 mm / 14.6 mm wall th.			50 x 7.2 mm (4 layers)			

* In germany the pipes have addditionally to comply with DIN 19535-10

** In germany the pipes have addditionally to comply with DIN 19531-10

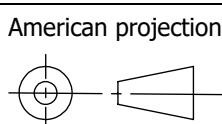
Annex A - Resistance to fire classification - Mulcol® Multiwrap

Fire test pipe penetration seal
Mulcol® Multiwrap

Rigid/Flexible wall construction according tot I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:15

Unit of measure : mm

Date : 9-5-2016

Company : Mulcol International B.V.

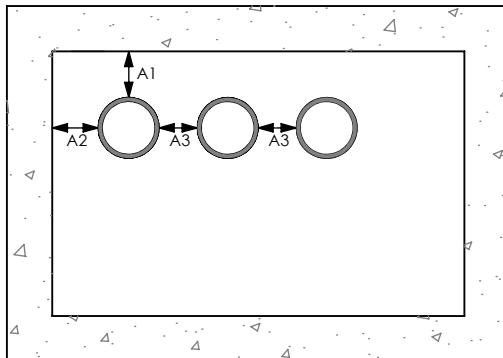
FW-PP-MW2.2.4

Department : Research & Development

A4

Draftsman : R.M.

Option 1



A1 : Pipe / top edge of seal separation min. 30 mm

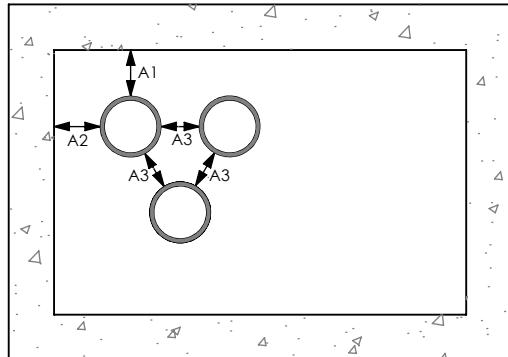
A2 : Pipe / side edge of seal separation min. 30 mm

A3 : Pipe / pipe separation min. 30 mm

Rigid wall

≥ 100 mm

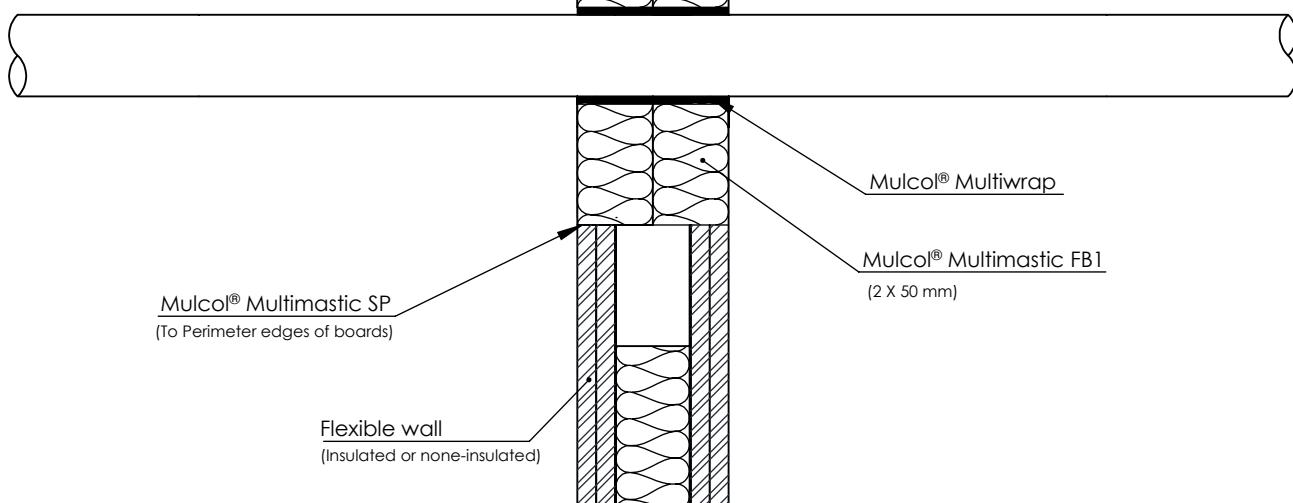
Option 2



A1 : Pipe / top edge of seal separation min. 30 mm

A2 : Pipe / side edge of seal separation min. 30 mm

A3 : Pipe / pipe separation min. 30 mm



A 1.5.1 Double side penetration seal with combustible pipes

Services	Classification	Position Mulcol® Multimastic FB1	Mulcol® Multiwrap (both sides)	Configuration	Maximum seal
PP pipe according to EN 1852-1:2009					
up to \varnothing 40 mm / 1.8 - 5.5 mm wall th.	EI 120 U/U	Both sides of the wall	50 x 1.8 mm (1 layer)	1 & 2 between PVC-U/PVC-C, PE/ABS/SAN+PVC and PP pipes in any combination 2400 x 1200 mm	
up to \varnothing 110 mm / 15.1 mm wall th.	EI 90 U/U		50 x 3.6 mm (2 layers)		
up to \varnothing 125 mm / 3.1 - 17.1 mm wall th.	E 120 U/C, EI 90 U/C		50 x 5.4 mm (3 layers)		
up to \varnothing 160 mm / 21.9 mm wall th.	E 120 U/C, EI 90 U/C		50 x 7.2 mm (4 layers)		

Annex A - Resistance to fire classification - Mulcol® Multiwrap

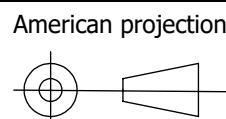
Fire test cable penetration seal

Mulcol® Multiwrap

Rigid/Flexible wall construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:15

Unit of measure : mm

Date : 17-9-2018

Company : Mulcol International B.V.

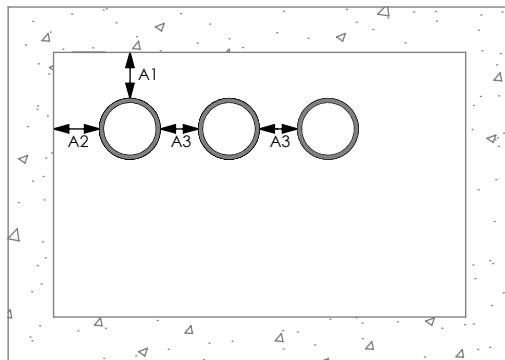
FW-PP-MW2.2.2

Department : Research & Development

A4

Draftsman : R.M.

Option 1

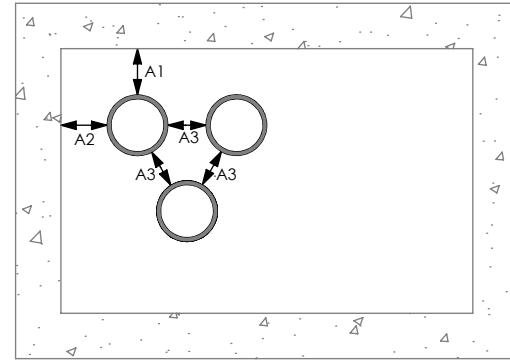


A1 : Pipe / top edge of seal separation min. 30 mm
A2 : Pipe / side edge of seal separation min. 30 mm
A3 : Pipe / pipe separation min. 30 mm

$\geq 100 \text{ mm}$

Rigid wall

Option 2



A1 : Pipe / top edge of seal separation min. 30 mm
A2 : Pipe / side edge of seal separation min. 30 mm
A3 : Pipe / pipe separation min. 30 mm

Conduit filled with electric cables

Mulcol® Multiwrap

Mulcol® Multimastic SP
(To perimeter edges of boards)

Flexible wall
(Insulated or non-insulated)

Mulcol® Multimastic FB
(2 x 50 mm)

A 1.5.2 Double side penetration seal with combustible pipes

Services	Classification	Position Mulcol® Multimastic FB1	Mulcol® Multiwrap (both sides)	Configuration	Maximum seal
PVC-U pipe according to EN 1329-1, EN 1452-2 and EN 1453-1 and PVC-C according to EN 1566-1					
Up to \varnothing 110 mm, wall thickness 2.7-6.6 mm, fully or partially filled conduits with cables up to \varnothing 14 mm	E 120 U/C, EI 90 U/C	Both sides of the wall	50 x 3.6 mm (2 layers)	1 & 2	2400 x 1200 mm
PE pipe according to EN 1519-1, EN 12201-2 and EN 12006-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1					
Up to \varnothing 110 mm, wall thickness 2.7-6.6 mm, fully or partially filled conduits with cables up to \varnothing 14 mm	E 120 U/C, EI 90 U/C	Both sides of the wall	50 x 3.6 mm (2 layers)	1 & 2	2400 x 1200 mm
PP pipe according to EN 1852-1: 2009					
Up to \varnothing 110 mm, wall thickness 2.7-6.6 mm, fully or partially filled conduits with cables up to \varnothing 14 mm	E 120 U/C, EI 90 U/C	Both sides of the wall	50 x 3.6 mm (2 layers)	1 & 2	2400 x 1200 mm

Annex A - Resistance to fire classification - Mulcol® Multiwrap

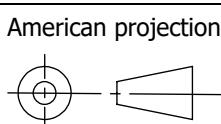
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid/Flexible wall construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:15

Unit of measure : mm

Date : 17-9-2018

Company : Mulcol International B.V.

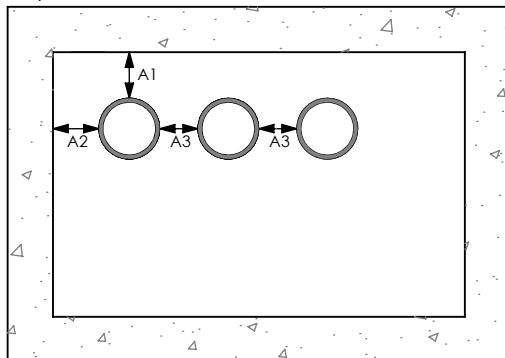
FW-PP-MW2.2.2

Department : Research & Development

A4

Draftsman : R.M.

Option 1

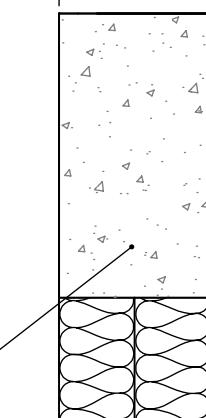


A1 : Pipe / top edge of seal separation min. 30 mm

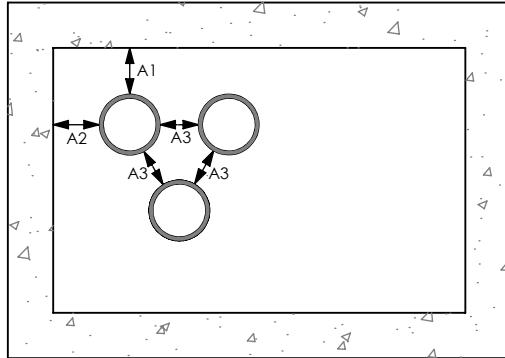
A2 : Pipe / side edge of seal separation min. 30 mm

A3 : Pipe / pipe separation min. 30 mm

≥ 100 mm



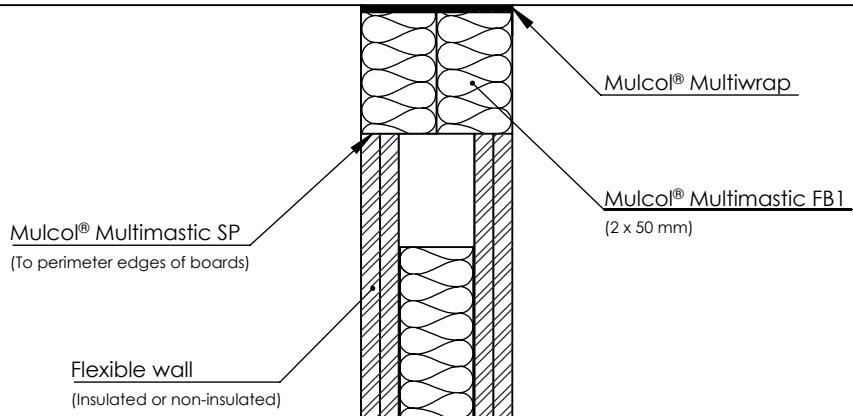
Option 2



A1 : Pipe / top edge of seal separation min. 30 mm

A2 : Pipe / side edge of seal separation min. 30 mm

A3 : Pipe / pipe separation min. 30 mm



A 1.5.3 Double side penetration seal with combustible pipes

Services	Classification	Position Mulcol® Multimastic FB1	Mulcol® Multiwrap (Both sides)	Configuration	Maximum seal
Rehau Raupiano Plus PP-DD according to DIN 4102					
Ø 40-50 mm / 1.8-2.7 mm wall th.	EI 120 U/U EI 120 U/C	Both sides of the wall	50 x 3.6 mm (2 layer)	1 & 2	2400 x 1200 mm
Ø 75-110 mm / 2.7 mm wall th.			50 x 7.2 mm (4 layers)		
Ø 125 mm / 3.9 mm wall th.			50 x 10.8 mm (6 layers)		
Ø 160 mm / 3.9 mm wall th.					
Polo-Kal NG Poloplast PP-MV according to DIN 4102					
Ø 32-50 mm / 2.0-3.4 mm wall th.	EI 120 U/U EI 120 U/C	Both sides of the wall	50 x 3.6 mm (2 layers)	1 & 2	2400 x 1200 mm
Ø 75-110 mm / 3.4 mm wall th.			50 x 7.2 mm (4 layers)		
Ø 125 mm / 3.9 mm wall th.			50 x 10.8 mm (6 layers)		
Ø 160 mm / 4.9 mm wall th.					

Annex A - Resistance to fire classification - Mulcol® Multiwrap

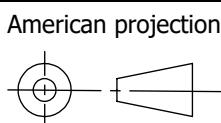
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid/Flexible wall construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:15

Unit of measure : mm

Date : 17-9-2018

Company : Mulcol International B.V.

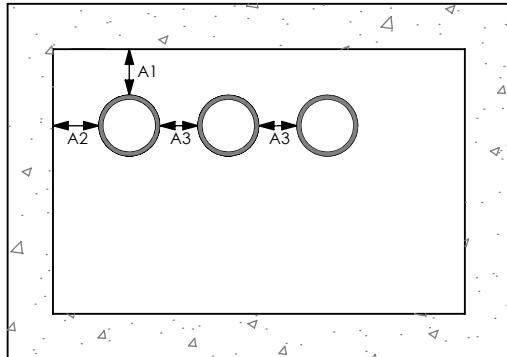
FW-PP-MW2.2.2

Department : Research & Development

Draftsman : R.M.

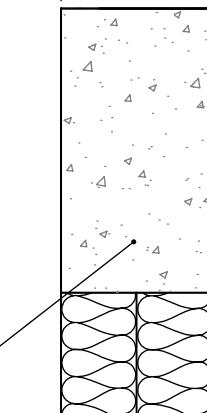
A4

Option 1

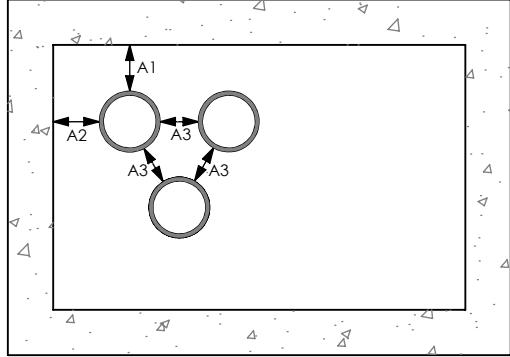


A1 : Pipe / top edge of seal separation min. 30 mm
A2 : Pipe / side edge of seal separation min. 30 mm
A3 : Pipe / pipe separation min. 30 mm

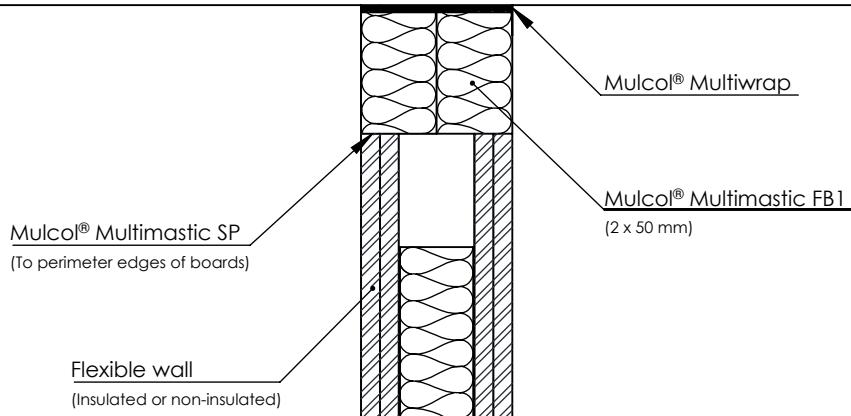
≥ 100 mm



Option 2



A1 : Pipe / top edge of seal separation min. 30 mm
A2 : Pipe / side edge of seal separation min. 30 mm
A3 : Pipe / pipe separation min. 30 mm



A 1.5.4 Double side penetration seal with combustible pipes

Services	Classification	Position Mulcol® Multimastic FB1	Mulcol® Multiwrap (Both sides)	Configuration	Maximum seal
BluePower Multilayer pipe according to EN 1451-1					
Ø 32-50 mm / 1.8 mm wall th.	EI 90 U/U	Both sides of the wall	50 x 3.6 mm (2 layer)	1 & 2	2400 x 1200 mm
Ø 75-110 mm / 3.4 mm wall th.	EI 90 C/U				
Wavin SiTech + PP-M B according to EN 13501-1					
Ø 32-50 mm / 1.8-3.4 mm wall th.	E 120 U/U, EI 90 U/U	Both sides of the wall	50 x 3.6 mm (2 layer)	1 & 2	2400 x 1200 mm
Ø 75-110 mm / 3.4 mm wall th.	E 120 U/C EI 60 U/C				
Gilbert Silent PP according to DIN 4102					
Ø 32-50 mm / 1.8-3.4 mm wall th.	EI 120 U/U	Both sides of the wall	50 x 3.6 mm (2 layers)	1 & 2	2400 x 1200 mm
Ø 75-110 mm / 3.4 mm wall th.	EI 120 U/C				
See graph on page 23-26 for intermediate sizes					

Annex A - Resistance to fire classification - Mulcol® Multiwrap

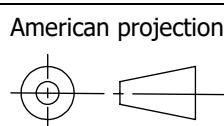
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid/Flexible wall construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:5

Unit of measure : mm

Date : 17-9-2018

Company : Mulcol International B.V.

FW-PP-MW2.2.2

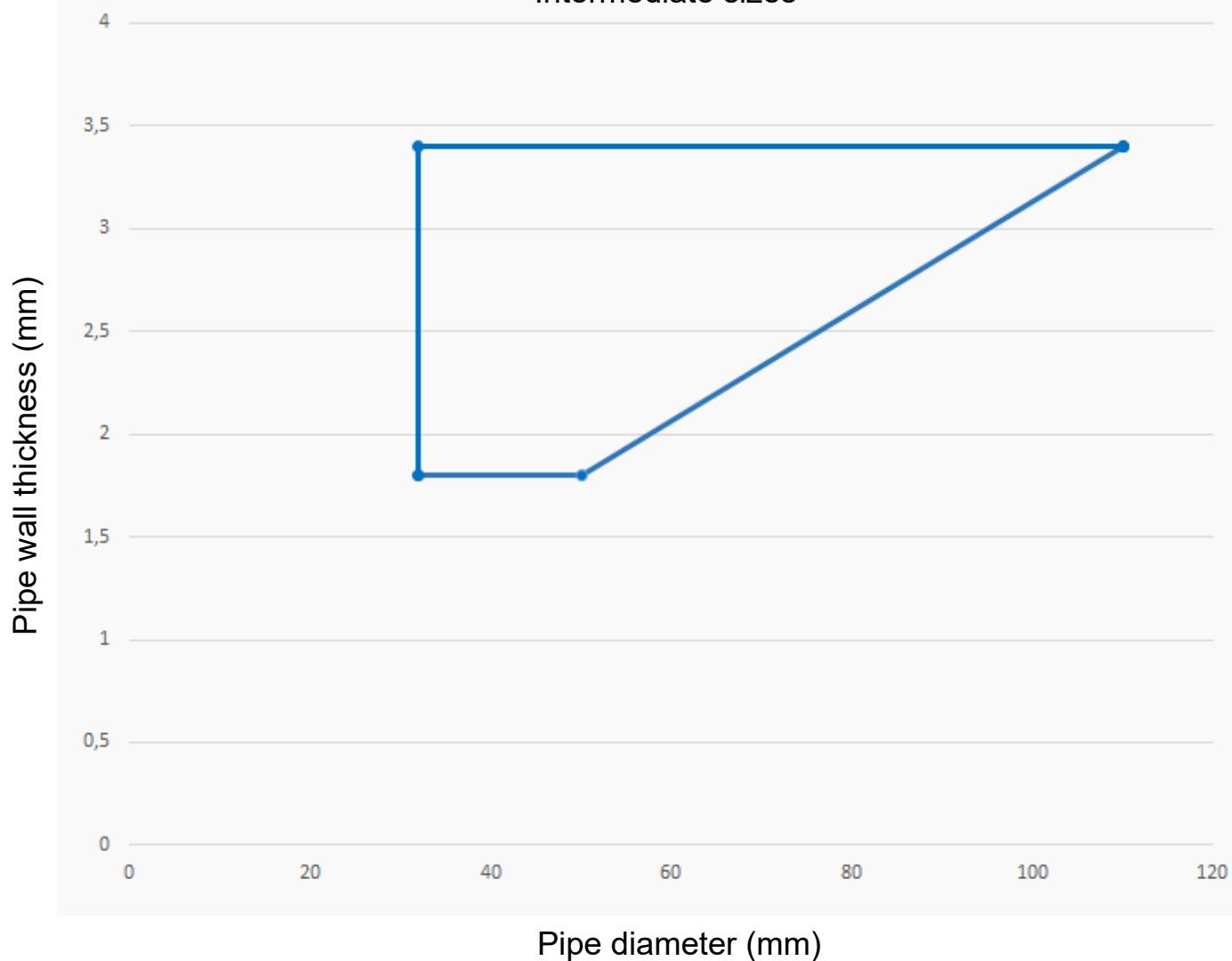
Department : Research & Development

A4

Draftsman : R.M.

BluePower - EI 90 C/U

Intermediate sizes



Annex A - Resistance to fire classification - Mulcol® Multiwrap

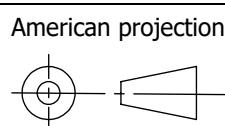
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid/Flexible wall construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:5

Unit of measure : mm

Date : 17-9-2018

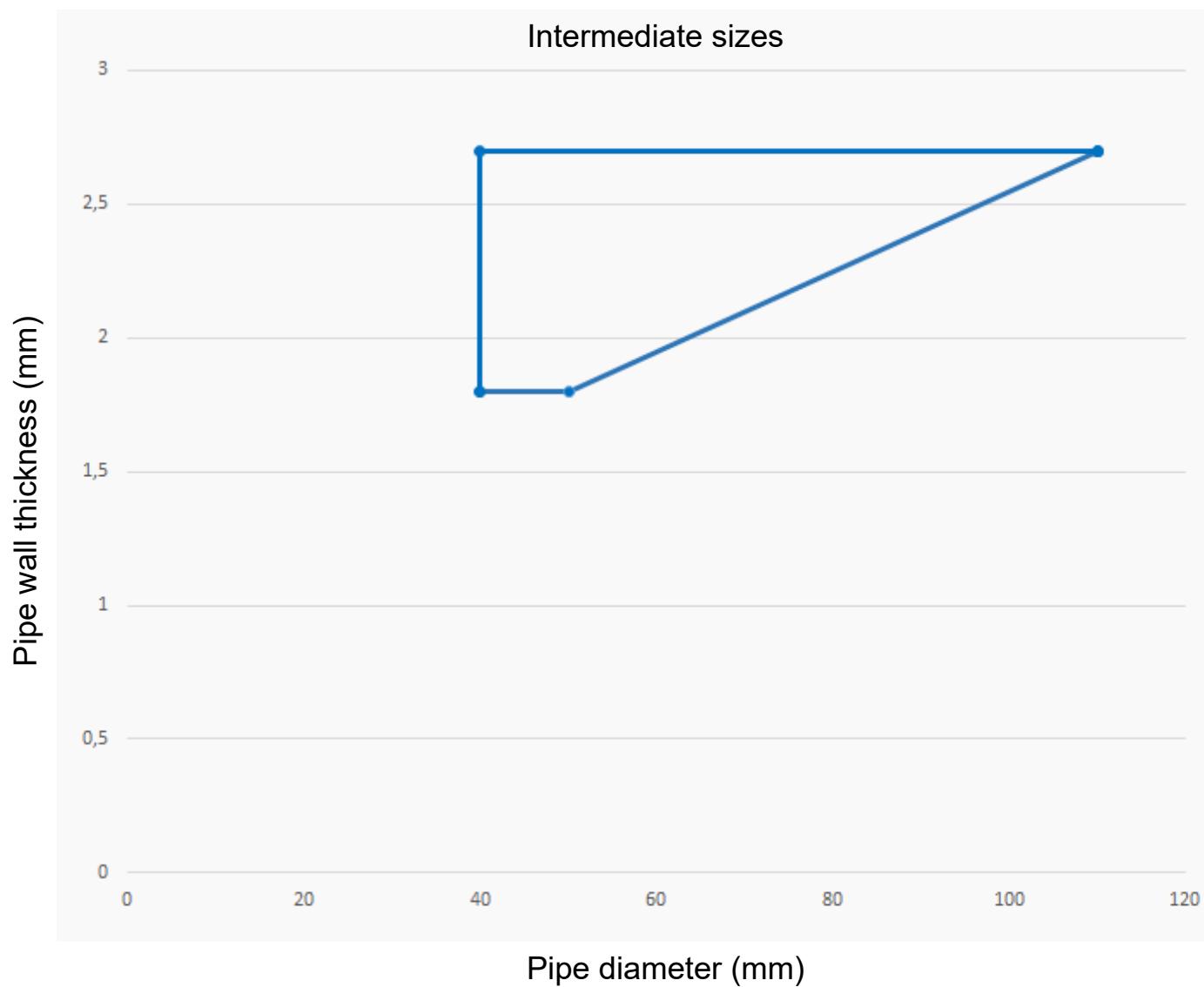
Company : Mulcol International B.V.

FW-PP-MW2.2.2

Department : Research & Development

A4

Rehau Raupiano Plus - EI 90 C/U



Annex A - Resistance to fire classification - Mulcol® Multiwrap

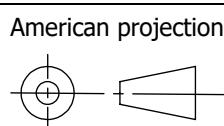
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid/Flexible wall construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:5

Unit of measure : mm

Date : 17-9-2018

Company : Mulcol International B.V.

FW-PP-MW2.2.2

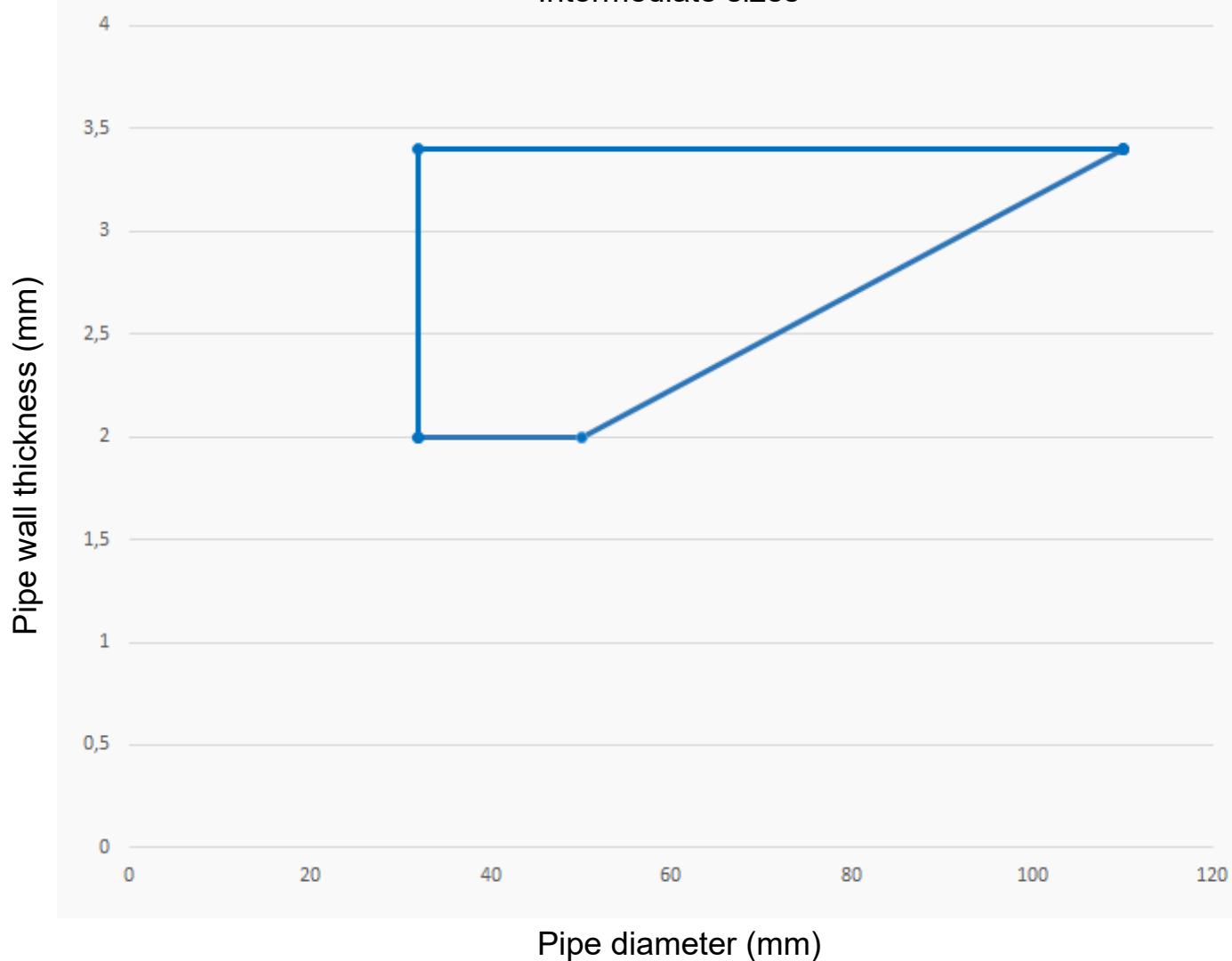
Department : Research & Development

A4

Draftsman : R.M.

Polo-Kal NG - EI 120 U/C

Intermediate sizes



Annex A - Resistance to fire classification - Mulcol® Multiwrap

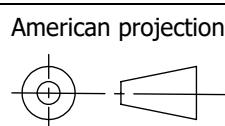
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid/Flexible wall construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:5

Unit of measure : mm

Date : 17-9-2018

Company : Mulcol International B.V.

FW-PP-MW2.2.2

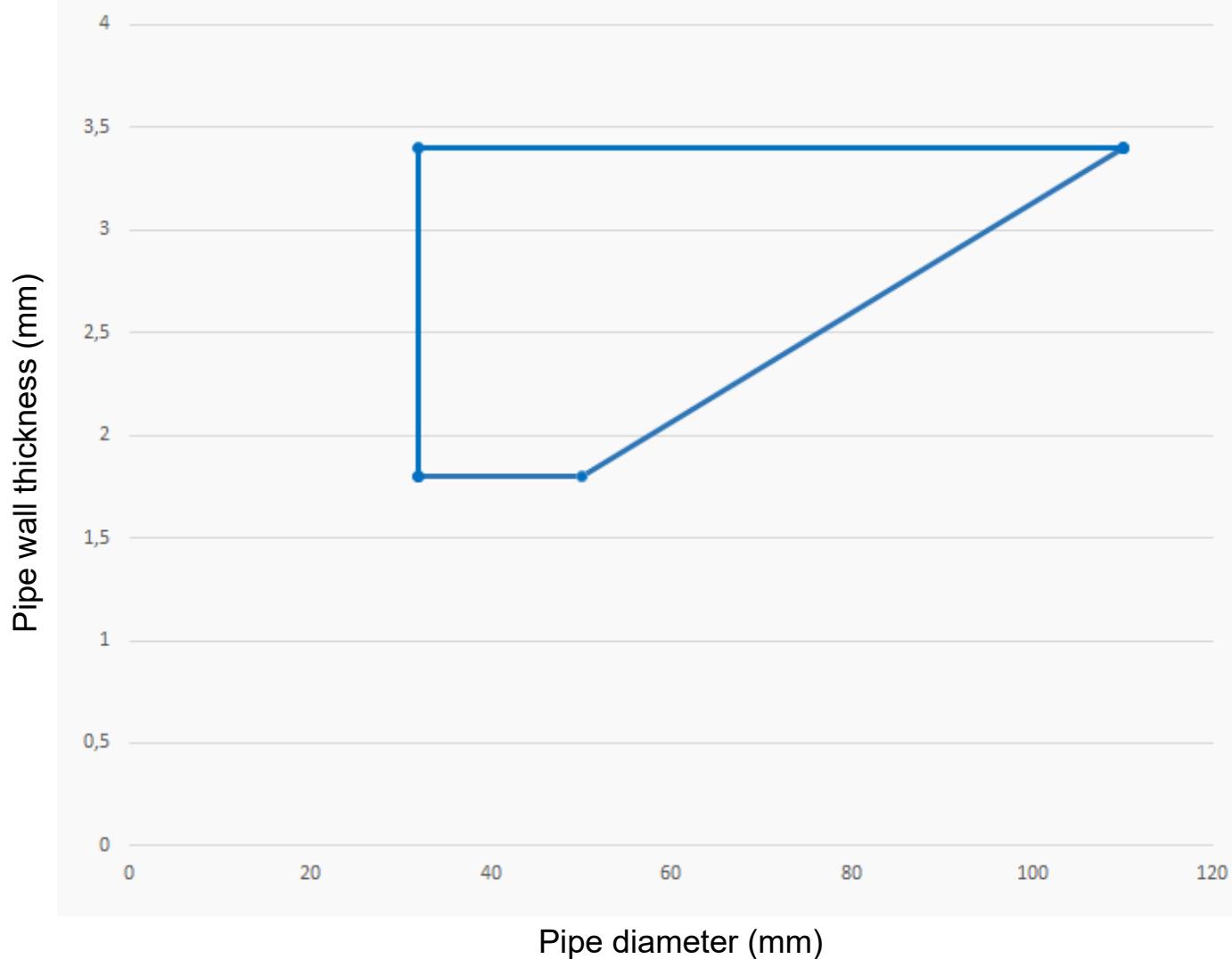
Department : Research & Development

A4

Draftsman : R.M.

Gilbert Silent PP - EI 120 U/C

Intermediate sizes



Annex A - Resistance to fire classification - Mulcol® Multiwrap

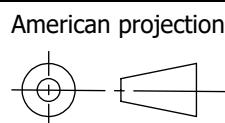
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid wall construction according to I.2.2

MULCOL

FIRE PROTECTION



Scale : 1:5

Unit of measure : mm

Date : 9-5-2016

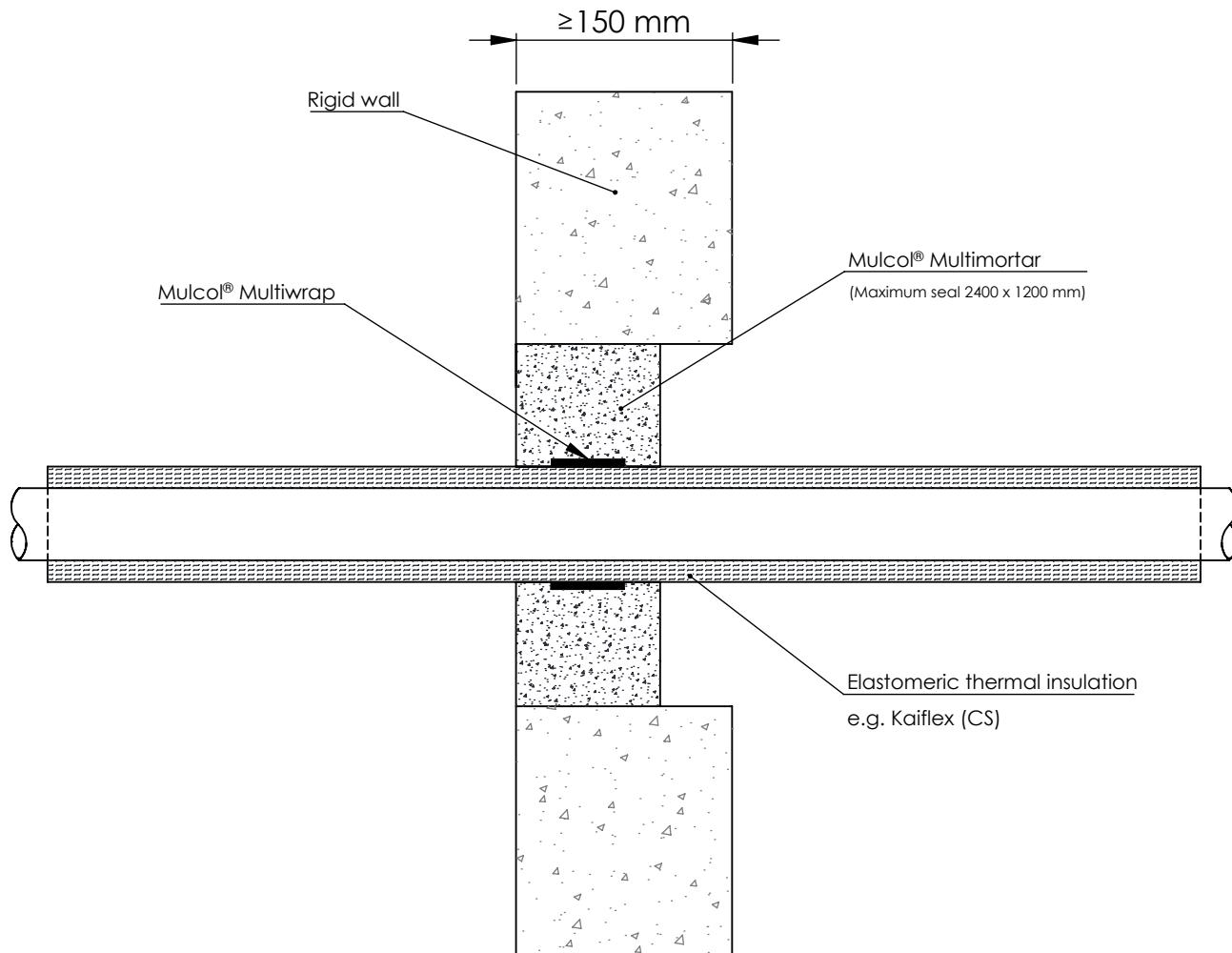
Company : Mulcol International B.V.

RW-ST-MW4.1.9

Department : Research & Development

A4

Draftsman : R.M.



A 2.1 Penetration seal with (stainless) steel pipes

Services	Classification	Position Mulcol® Multimortar	Insulation	Mulcol® Multiwrap	Position services
Steel pipe Ø 40 mm / 1.5-14.2 mm wall th.	EI 240 C/U		13 mm elastomeric insulation min. class B-s3, d0 or PE foam insulation	50 x 3.6 mm (2 layers) centrally fitted	Service fitted at any position within the aperture (min. separation 10 mm from seal edges and 0 mm from other services)
Steel pipe Ø 165 mm / 4.5-14.2 mm wall th.	E 240 C/U, EI 30 C/U		9 mm elastomeric insulation min. class B-s3, d0 or PE foam insulation		
Steel pipe Ø 40 mm / 1.5-14.2 mm wall th.		To either side of the wall 100 mm thick			
Steel pipe Ø 50 mm / 1.6-14.2 mm wall th.					
Steel pipe Ø 60 mm / 1.7-14.2 mm wall th.					
Steel pipe Ø 75 mm / 1.9-14.2 mm wall th.					
Steel pipe Ø 90 mm / 2.0-14.2 mm wall th.					
Steel pipe Ø 100 mm / 2.1-14.2 mm wall th.					
Steel pipe Ø 115 mm / 2.3-14.2 mm wall th.					
Steel pipe Ø 140 mm / 2.6-14.2 mm wall th.					
Steel pipe Ø 165 mm / 2.8-14.2 mm wall th.					

See graph on page 29 for intermediate sizes

Annex A - Resistance to fire classification - Mulcol® Multiwrap

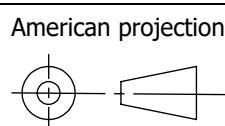
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid wall construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:5

Unit of measure : mm

Date : 9-5-2016

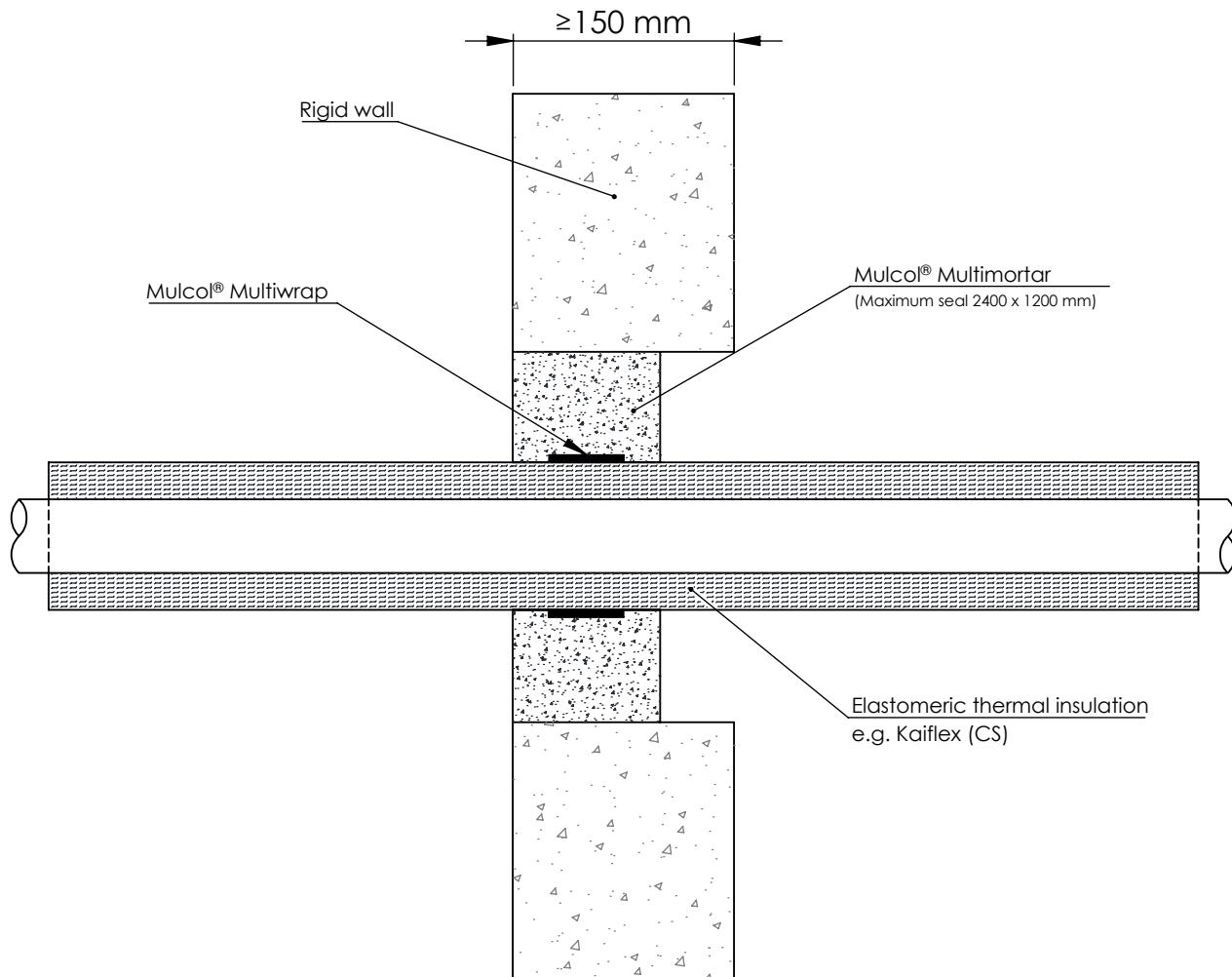
Company : Mulcol International B.V.

RW-ST-MW4.1.2

Department : Research & Development

A4

Draftsman : R.M.



A 2.1.1 Penetration seal with (stainless) steel pipes

Services	Classification	Position Mulcol® Multimortar	Insulation	Mulcol® Multiwrap	Position services
Steel pipe Ø 40 mm / 1.5-14.2 mm wall th.	E 180 C/U, EI 60 C/U	To either side of the wall 100 mm thick	13-25 mm elastomeric insulation min. class B-s3, d0 or PE foam insulation	50 x 3.6 mm (2 layers) centrally fitted	Service fitted at any position within the aperture (min. separation 10 mm from seal edges)
Steel pipe Ø 50 mm / 1.8-14.2 mm wall th.					
Steel pipe Ø 60 mm / 2.0-14.2 mm wall th.					
Steel pipe Ø 75 mm / 2.3-14.2 mm wall th.					
Steel pipe Ø 90 mm / 2.7-14.2 mm wall th.					
Steel pipe Ø 100 mm / 2.9-14.2 mm wall th.					
Steel pipe Ø 115 mm / 3.3-14.2 mm wall th.					
Steel pipe Ø 140 mm / 3.9-14.2 mm wall th.					
Steel pipe Ø 165 mm / 4.5-14.2 mm wall th.					
See graph on page 29 for intermediate sizes					

Annex A - Resistance to fire classification - Mulcol® Multiwrap

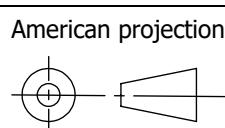
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid wall construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:5

Unit of measure : mm

Date : 9-5-2016

Company : Mulcol International B.V.

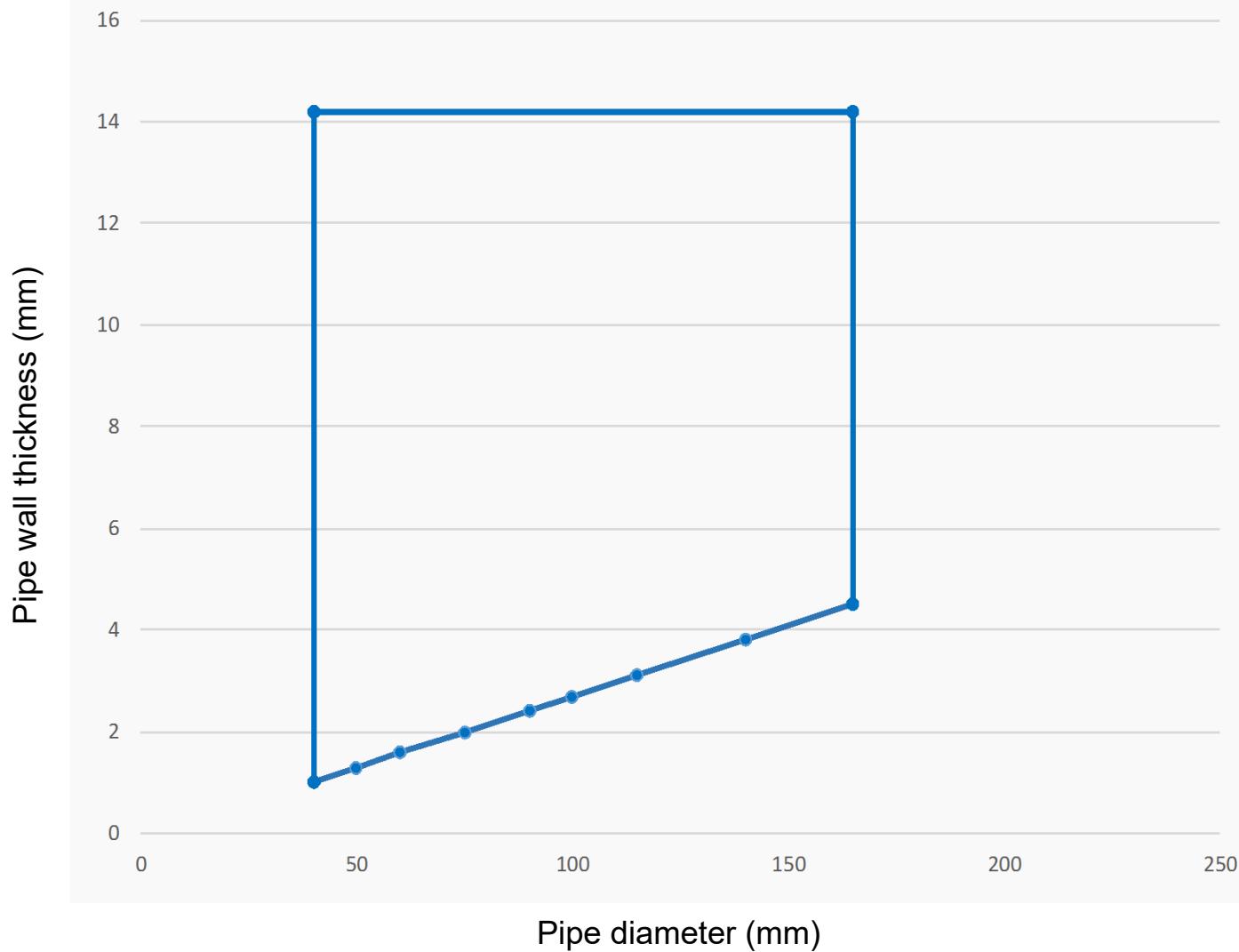
RW-ST-MW4.1.1

Department : Research & Development

Draftsman : R.M.

A4

Intermediate sizes



Annex A - Resistance to fire classification - Mulcol® Multiwrap

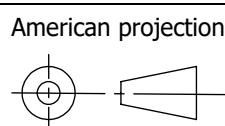
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid wall construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:5

Unit of measure : mm

Date : 9-5-2016

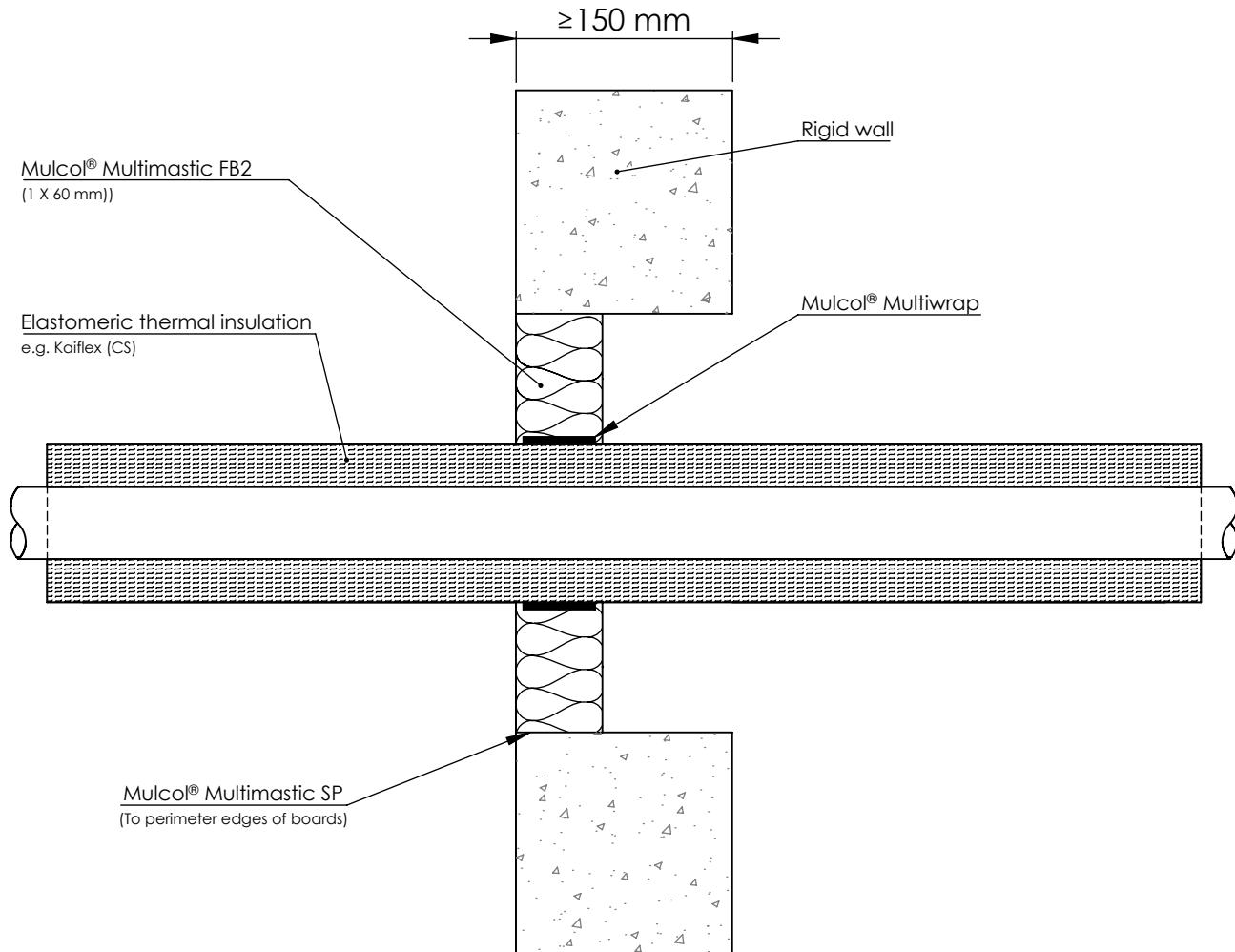
Company : Mulcol International B.V.

RW-ST-MW4.1.1

Department : Research & Development

A4

Draftsman : R.M.



A 2.2 Single side penetration seal with (stainless) steel pipes

Services	Classification	Position Mulcol® Multimastic FB2	Insulation	Mulcol® Multiwrap	Minimum from seal edge
Steel pipe Ø 165 mm / 4.5-14.2 mm wall th.	E 120 U/C, EI 45 U/C	Either side of the wall (or anywhere in between) with a maximum seal size of 2400 x 1200 mm	9-25 mm elastomeric insulation min. class B-s3, d0 or PE foam insulation	50 x 1.8 mm (1 layer) Centrally fitted	25 mm

Annex A - Resistance to fire classification - Mulcol® Multiwrap

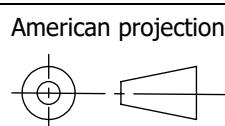
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid wall construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:5

Unit of measure : mm

Date : 17-9-2018

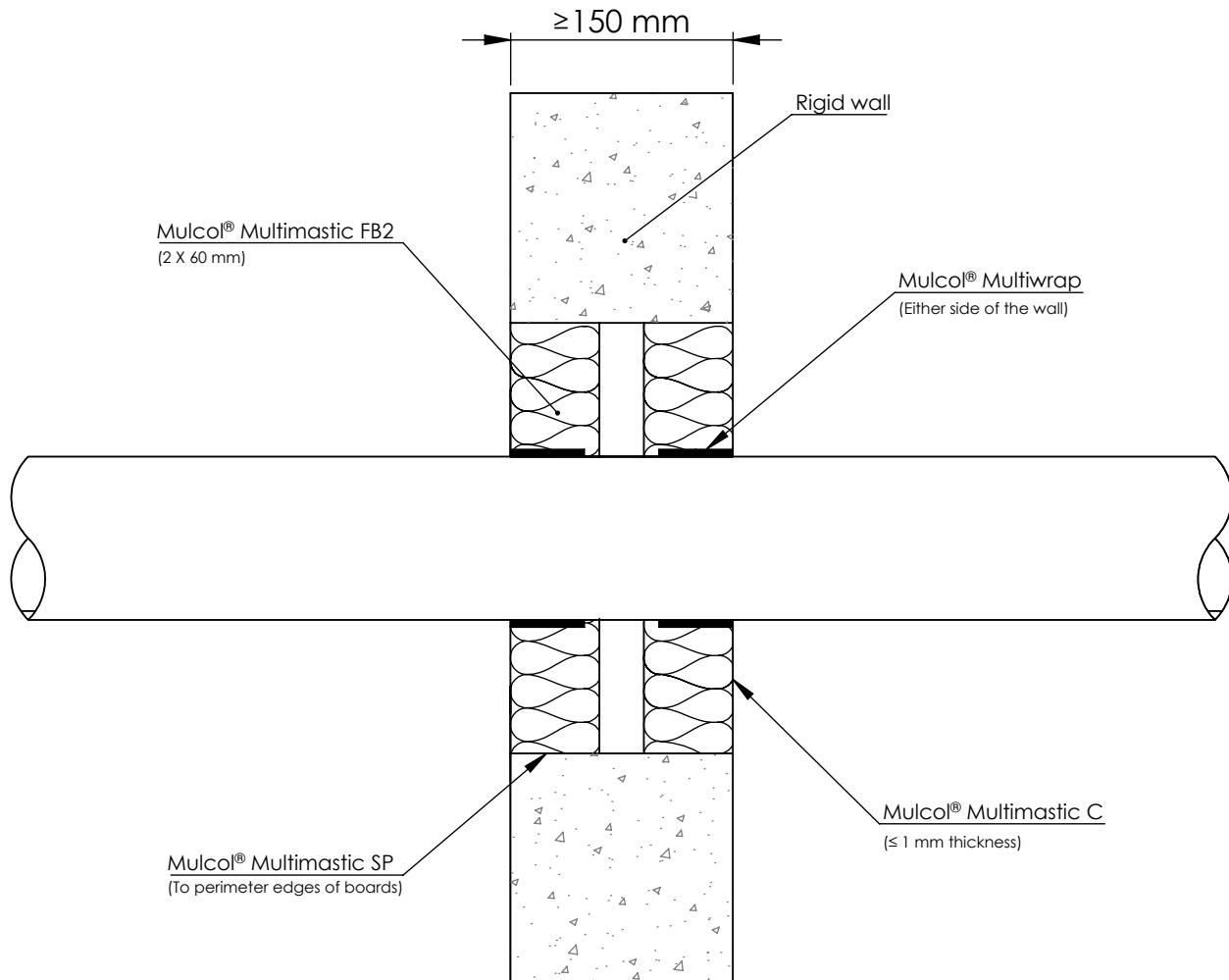
Company : Mulcol International B.V.

RW-PP-MW2.2.6

Department : Research & Development

A4

Draftsman : R.M.



A 2.3 Double side penetration seal with combustible pipes

Services	Classification	Position Mulcol® Multimastic FB2	Mulcol® Multiwrap	Min. between pipes
PVC-U pipe up to \varnothing 40 mm / 1.9-3.0 mm wall thickness	EI 240 U/C	Either side of the wall	50 X 1.8 mm (1 layer) Either side of the wall	30 mm
PE pipe up to \varnothing 40 mm / 2.4-4.6 mm wall thickness			50 X 3.6 mm (2 layers) Either side of the wall	
PP pipe up to \varnothing 40 mm / 1.8-5.5 mm wall thickness			50 X 7.2 mm (4 layers) Either side of the wall	
PVC-U pipe up to \varnothing 110 mm / 2.7-6.6 mm wall thickness			50 X 10.8 mm (6 layers) Either side of the wall	
PE pipe up to \varnothing 110 mm / 3.4-10.0 mm wall thickness				
PVC-U pipe up to \varnothing 125 mm / 4.7-7.4 mm wall thickness				
PE pipe up to \varnothing 125 mm / 3.9-7.4 mm wall thickness				
PVC-U pipe up to \varnothing 160 mm / 4.0-9.5 mm wall thickness				
PE pipe up to \varnothing 160 mm / 4.9-9.5 mm wall thickness				

Annex A - Resistance to fire classification - Mulcol® Multiwrap

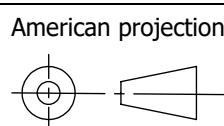
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid floor construction according to I.2.2

MULCOL

FIRE PROTECTION



Scale : 1:5

Unit of measure : mm

Date : 9-5-2016

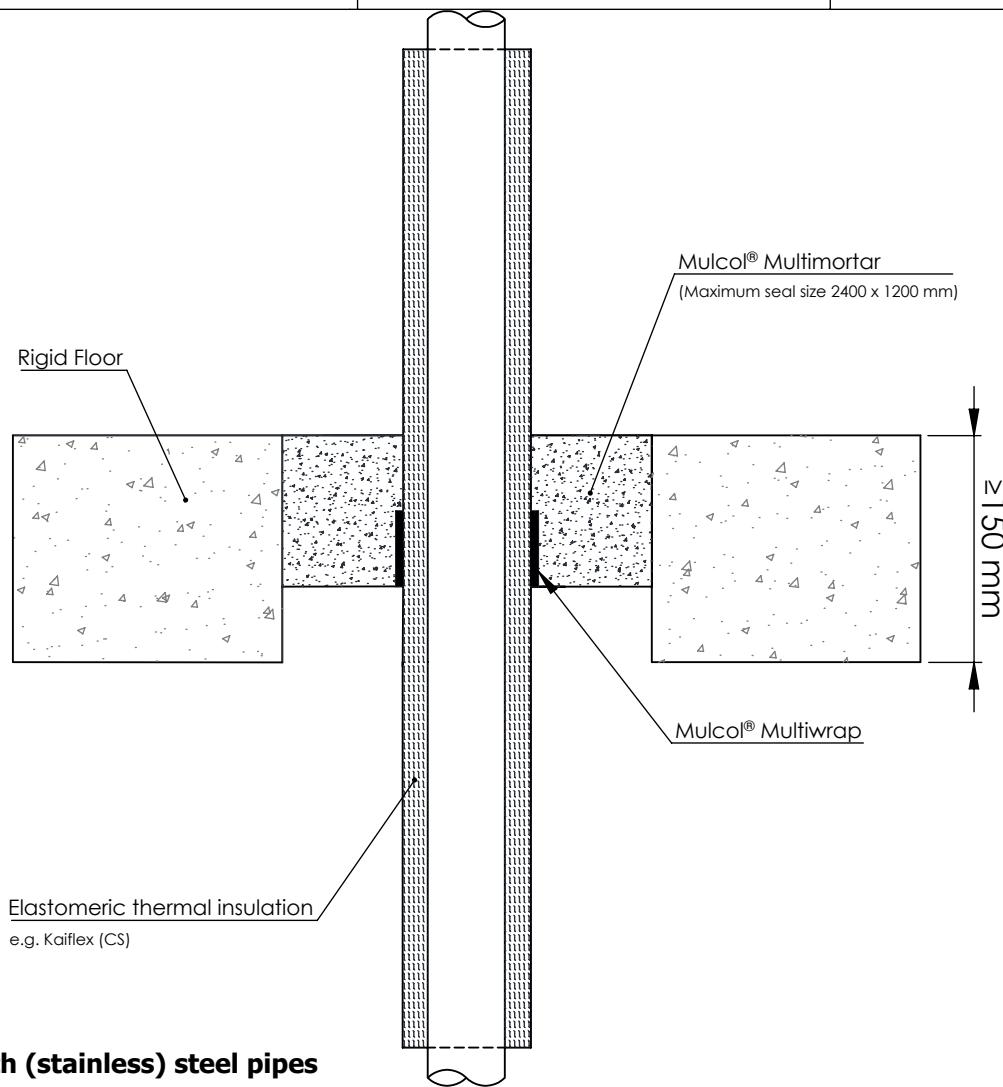
Company : Mulcol International B.V.

RF-ST-MW1.1.1

Department : Research & Development

A4

Draftsman : R.M.



A 3.1 Penetration seal with (stainless) steel pipes

Services	Classification	Position Mulcol® Multimortar	Insulation	Mulcol® Multiwrap	Position Services
Copper pipe Ø 12 mm / 1 mm wall th.	EI 240 C/U	At any position within the floor	9 mm elastomeric insulation min. class B-s3, d0 or foil faced Phenolic Foam insulation	50 x 3.6 mm (2 layers) fitted to the soffit	Service fitted at any position within the aperture (min. separation 25 mm from seal edges and 30mm from other services)
Copper pipe Ø 12-54 mm / 1-1.2 mm wall th.	E 240 C/U, EI 60 C/U		13-25 mm elastomeric insulation min. class B-s3, d0 or foil faced Phenolic Foam insulation		
Steel pipe Ø 40 mm / 0-14.2 mm wall th.	EI 180 C/U	Top side of the floor 100 mm thick	13 mm elastomeric insulation min. class B-s3, d0 or foil faced Phenolic Foam insulation	50 x 1.8 mm (1 layer) fitted at bottom of seal	Service fitted at any position within the aperture (min. separation 30 mm from seal edges and 30 mm from other services)
Steel pipe Ø 40 mm / 1.5-14.2 mm wall th. Steel pipe Ø 50 mm / 1.6-14.2 mm wall th. Steel pipe Ø 60 mm / 1.7-14.2 mm wall th. Steel pipe Ø 75 mm / 1.9-14.2 mm wall th. Steel pipe Ø 90 mm / 2-14.2 mm wall th. Steel pipe Ø 100 mm / 2.1-14.2 mm wall th. Steel pipe Ø 115 mm / 2.3-14.2 mm wall th. Steel pipe Ø 140 mm / 2.6-14.2 mm wall th. Steel pipe Ø 165 mm / 2.8-14.2 mm wall th.	E 180 C/U, EI 120 C/U		13-19 mm elastomeric insulation min. class B-s3, d0 or foil faced Phenolic Foam insulation		

See graph on page 33 for intermediate sizes

Annex A - Resistance to fire classification - Mulcol® Multiwrap

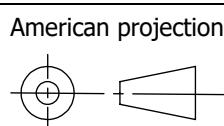
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid floor construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:5

Unit of measure : mm

Date : 9-5-2016

Company : Mulcol International B.V.

RW-ST-MW4.1.1

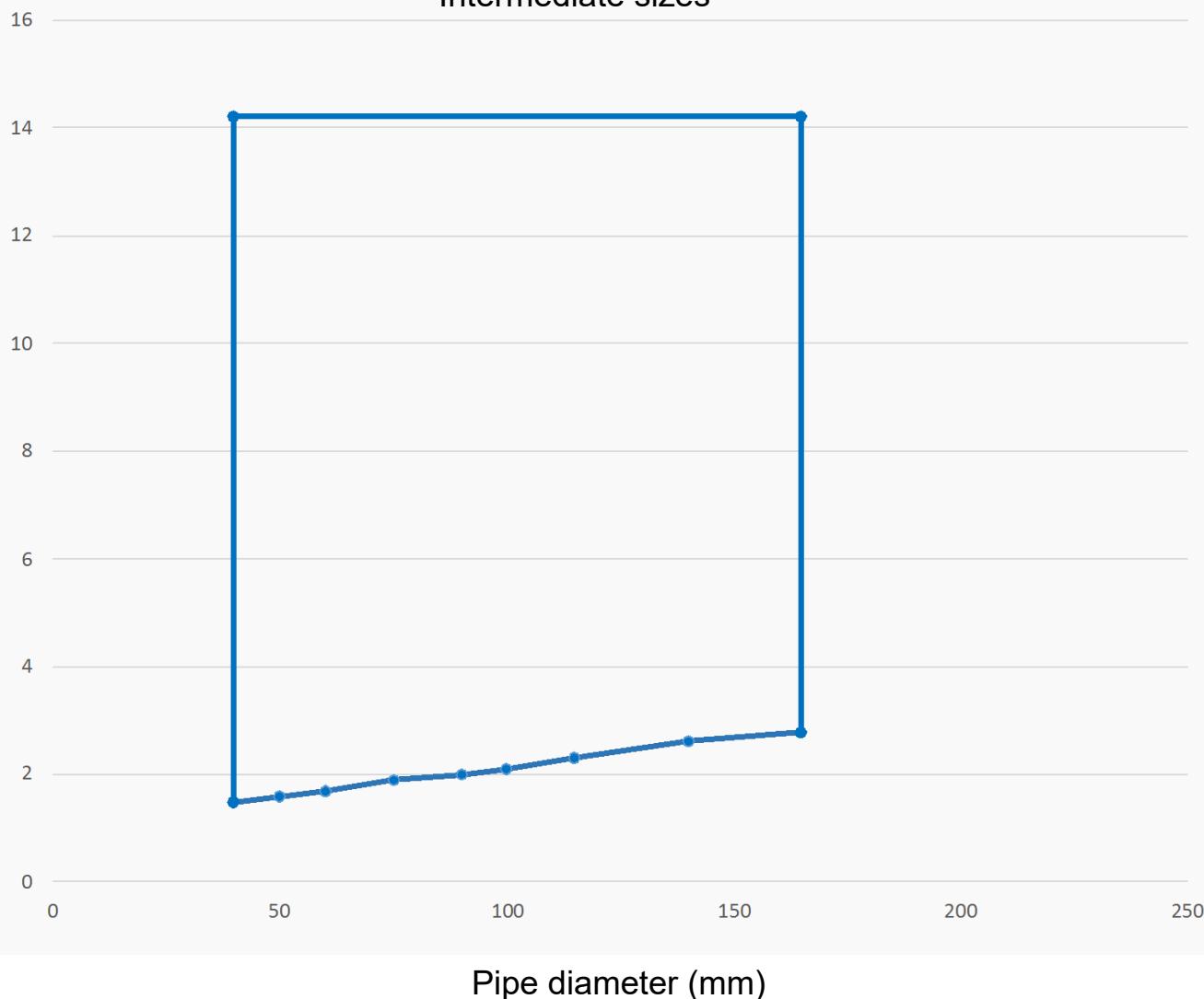
Department : Research & Development

A4

Draftsman : R.M.

Pipe wall thickness (mm)

Intermediate sizes



Annex A - Resistance to fire classification - Mulcol® Multiwrap

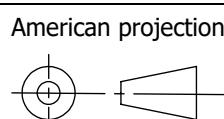
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid floor construction according to I.2.2

MULCOL

FIRE PROTECTION



Scale : 1:15

Unit of measure : mm

Date : 17-9-2018

Company : Mulcol International B.V.

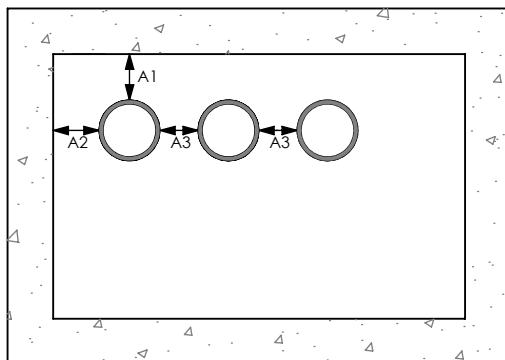
RF-ST-MW1.1.2

Department : Research & Development

A4

Draftsman : K.J.

Option 1

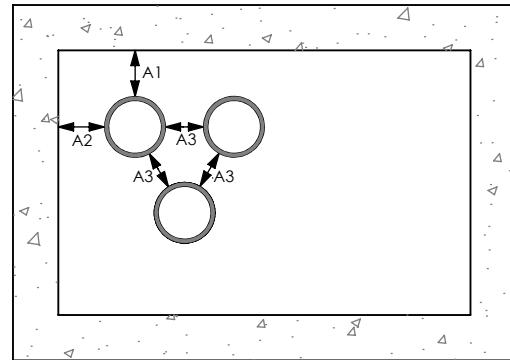


A1 : Pipe / top edge of seal separation min. 30 mm

A2 : Pipe / side edge of seal separation min. 30 mm

A3 : Pipe / pipe separation min. 30 mm

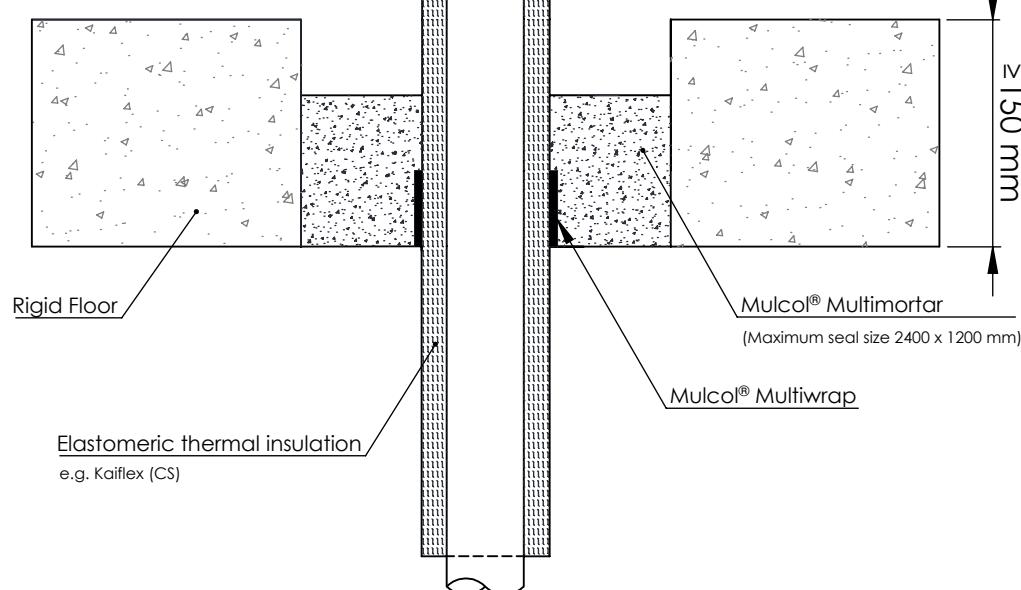
Option 2



A1 : Pipe / top edge of seal separation min. 30 mm

A2 : Pipe / side edge of seal separation min. 30 mm

A3 : Pipe / pipe separation min. 30 mm



A 3.1.1 Penetration seal with (stainless) steel pipes

Services	Classification	Position Mulcol® Multimortar	Insulation	Mulcol® Multiwrap	Position Services
Steel pipe Ø 40 mm / 1-14.2 mm wall th.	EI 240 C/U E 240 C/U, EI 120 C/U	At any position within the aperture	25 mm elastomeric insulation min. class B-s3, d0 or foil faced Phenolic Foam insulation	50 x 3.6 mm (2 layers) fitted at bottom of seal	Service fitted at any position within the aperture (min. separation 30 mm from seal edges and 30 mm from other services)
Steel pipe Ø 40 mm / 1-14.2 mm wall th.					
Steel pipe Ø 50 mm / 1.2-14.2 mm wall th.					
Steel pipe Ø 60 mm / 1.4-14.2 mm wall th.					
Steel pipe Ø 75 mm / 1.6-14.2 mm wall th.					
Steel pipe Ø 90 mm / 1.9-14.2 mm wall th.					
Steel pipe Ø 100 mm / 2.1-14.2 mm wall th.					
Steel pipe Ø 115 mm / 2.4-14.2 mm wall th.					
Steel pipe Ø 140 mm / 2.9-14.2 mm wall th.					
Steel pipe Ø 165 mm / 3.4-14.2 mm wall th.					
Steel pipe Ø 180 mm / 3.6-14.2 mm wall th.					
Steel pipe Ø 200 mm / 4.0-14.2 mm wall th.					
Steel pipe Ø 219 mm / 4.3-14.2 mm wall th.					
Steel pipe Ø 250 mm / 5.0-14.2 mm wall th.					
Steel pipe Ø 300 mm / 5.9-14.2 mm wall th.					
Steel pipe Ø 324 mm / 6.35-14.2 mm wall th.					

See graph on page 36 for intermediate sizes

Annex A - Resistance to fire classification - Mulcol® Multiwrap

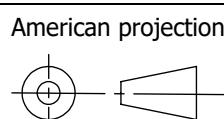
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid floor construction according to I.2.2

MULCOL

FIRE PROTECTION



Scale : 1:15

Unit of measure : mm

Date : 17-9-2018

Company : Mulcol International B.V.

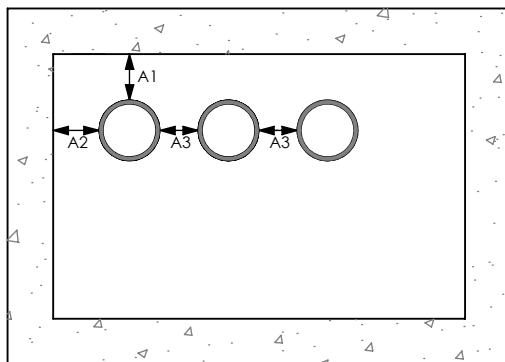
RF-ST-MW1.1.2

Department : Research & Development

A4

Draftsman : K.J.

Option 1

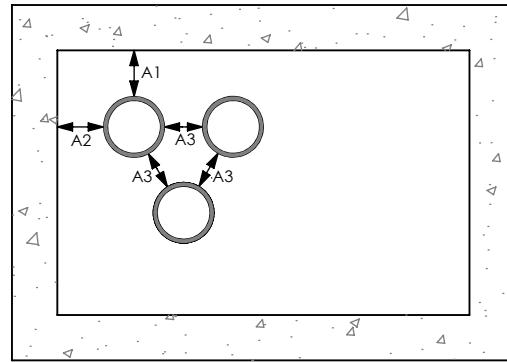


A1 : Pipe / top edge of seal separation min. 30 mm

A2 : Pipe / side edge of seal separation min. 30 mm

A3 : Pipe / pipe separation min. 30 mm

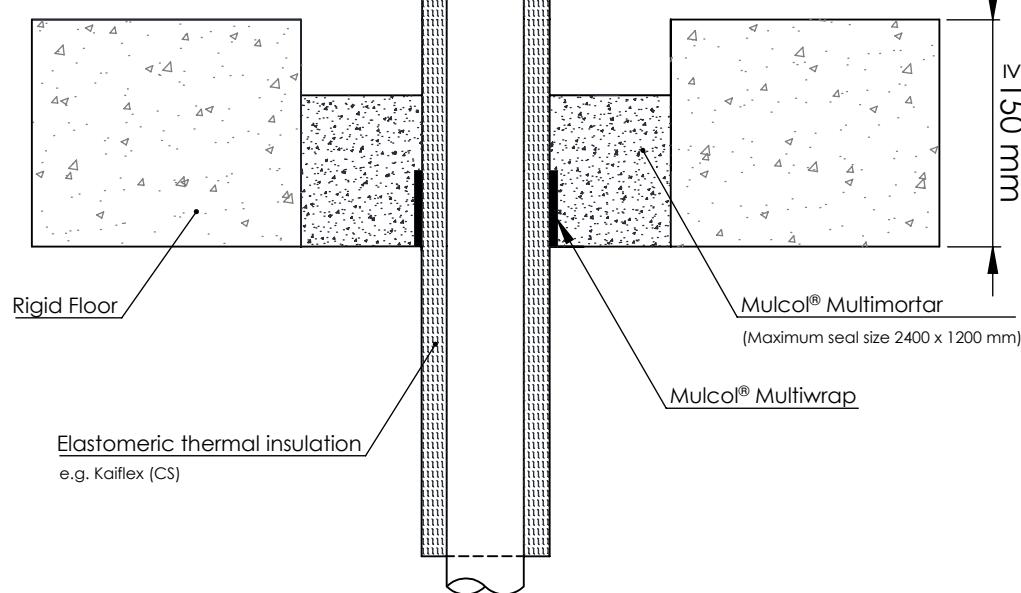
Option 2



A1 : Pipe / top edge of seal separation min. 30 mm

A2 : Pipe / side edge of seal separation min. 30 mm

A3 : Pipe / pipe separation min. 30 mm



A 3.1.2 Penetration seal with (stainless) steel pipes

Services	Classification	Position Mulcol® Multimortar	Insulation	Mulcol® Multiwrap	Position Services
Steel pipe Ø 40 mm / 1-14.2 mm wall th.	EI 120 C/U	At any position within the aperture	25-50 mm elastomeric insulation min. class B-s3, d0 or foil faced Phenolic Foam insulation	50 x 5.4 mm (3 layers) fitted at bottom of seal	Service fitted at any position within the aperture (min. separation 30 mm from seal edges and 30 mm from other services)
Steel pipe Ø 50 mm / 1.2-14.2 mm wall th.					
Steel pipe Ø 60 mm / 1.4-14.2 mm wall th.					
Steel pipe Ø 75 mm / 1.6-14.2 mm wall th.					
Steel pipe Ø 90 mm / 1.9-14.2 mm wall th.					
Steel pipe Ø 100 mm / 2.1-14.2 mm wall th.					
Steel pipe Ø 115 mm / 2.4-14.2 mm wall th.					
Steel pipe Ø 140 mm / 2.9-14.2 mm wall th.					
Steel pipe Ø 165 mm / 3.4-14.2 mm wall th.					
Steel pipe Ø 180 mm / 3.6-14.2 mm wall th.					
Steel pipe Ø 200 mm / 4.0-14.2 mm wall th.					
Steel pipe Ø 219 mm / 4.3-14.2 mm wall th.					
Steel pipe Ø 250 mm / 5.0-14.2 mm wall th.					
Steel pipe Ø 300 mm / 5.9-14.2 mm wall th.					
Steel pipe Ø 324 mm / 6.35-14.2 mm wall th.					

See graph on page 36 for intermediate sizes

Annex A - Resistance to fire classification - Mulcol® Multiwrap

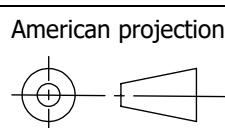
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid floor construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:5

Unit of measure : mm

Date : 17-9-2018

Company : Mulcol International B.V.

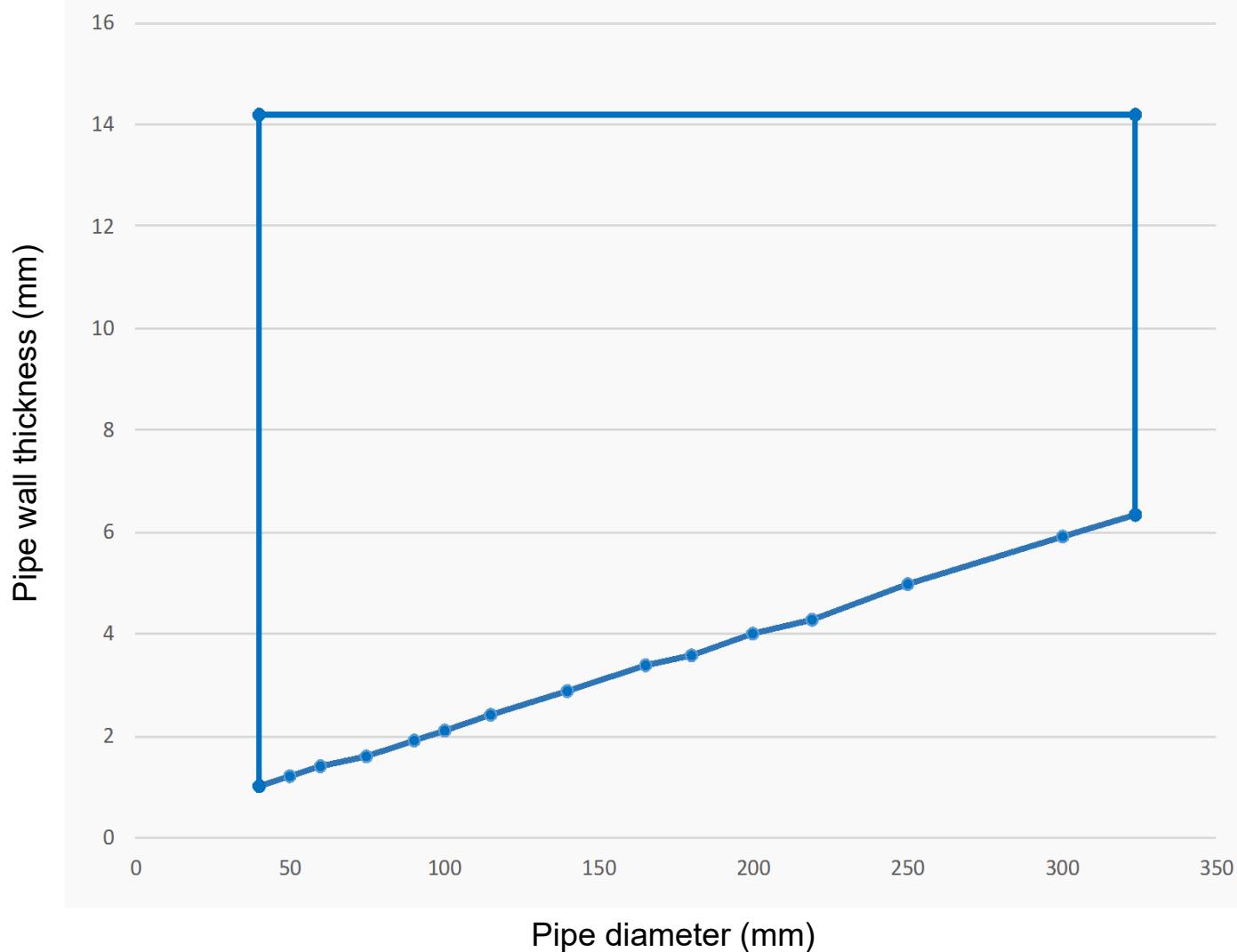
RF-ST-MW1.1.2/3

Department : Research & Development

Draftsman : R.M.

A4

Intermediate sizes



Annex A - Resistance to fire classification - Mulcol® Multiwrap

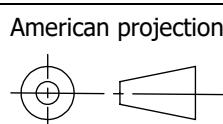
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid floor construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:5

Unit of measure : mm

Date : 17-9-2018

Company : Mulcol International B.V.

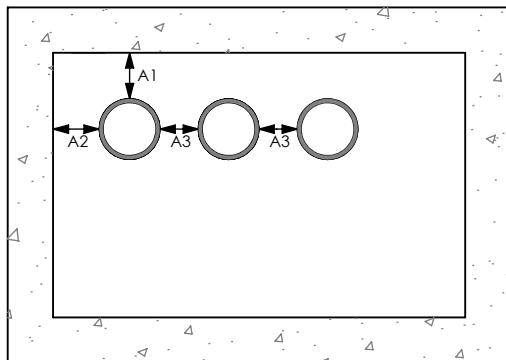
RF-PP-MW1.1.6

Department : Research & Development

A4

Draftsman : R.M.

Option 1

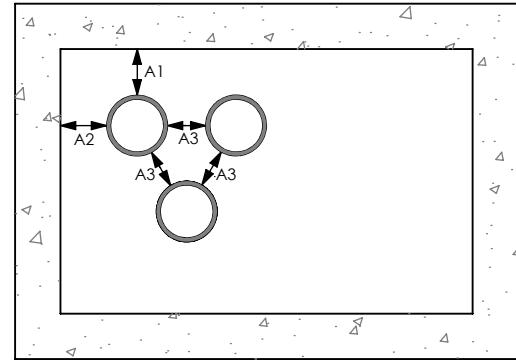


A1 : Pipe / top edge of seal separation min. 30 mm

A2 : Pipe / side edge of seal separation min. 30 mm

A3 : Pipe / pipe separation min. 30 mm

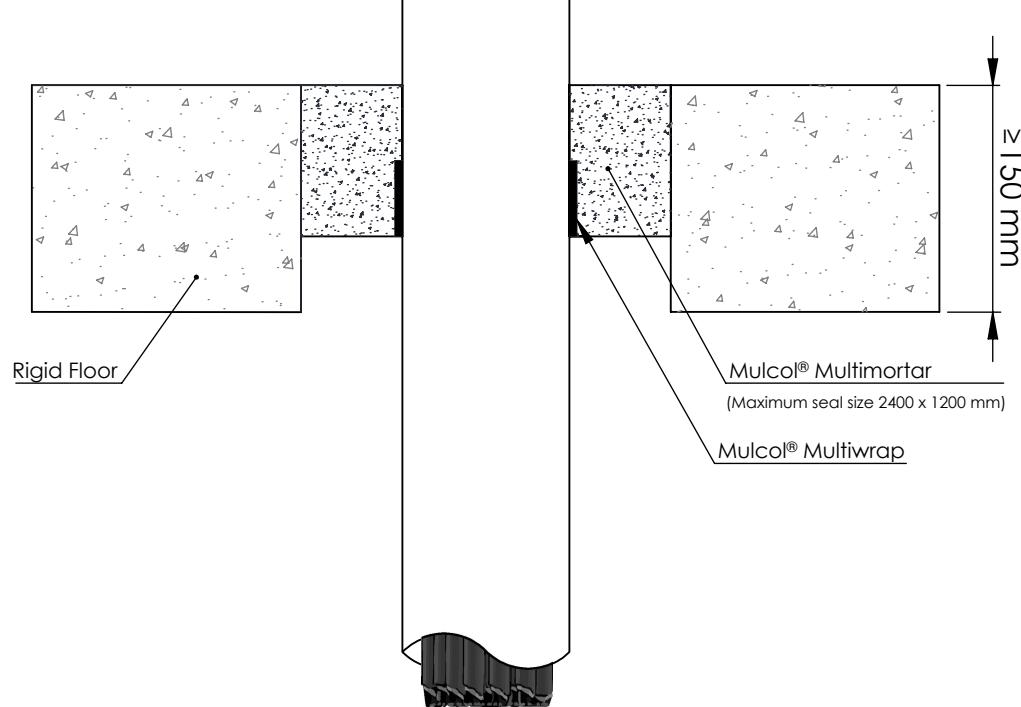
Option 2



A1 : Pipe / top edge of seal separation min. 30 mm

A2 : Pipe / side edge of seal separation min. 30 mm

A3 : Pipe / pipe separation min. 30 mm



A 3.2 Penetration seal with combustible pipes

Services	Classification	Position Mulcol® Multimortar	Maximum seal	Mulcol® Multiwrap (fitted at bottom of seal)	Position Services		
PP pipe according to EN 1451-1							
Up to $\varnothing 40$ mm / 1.8-4.4 mm wall th.	EI 120 U/C	Either surface of the floor or anywhere in between	2400 x 1200 mm	None	Service fitted at any position within the aperture (min. separation 30 mm from seal edges and 30 mm from other services)		
Up to $\varnothing 40$ mm / 1.8-5.5 mm wall th.	EI 120 U/U			50 x 1.8 mm (1 layer)			
Up to $\varnothing 110$ mm / 2.7-6.3 mm wall th.	EI 240 U/C			50 x 3.6 mm (2 layers)			
Up to $\varnothing 125$ mm / 3.4-11.4 mm wall th.				50 x 7.2 mm (4 layers)			
Up to $\varnothing 160$ mm / 4.9-14.6 mm wall th.				50 x 10.8 mm (6 layers)			
Up to $\varnothing 110$ mm / 3.4-6.3 mm wall th., containing telecom cables up to $\varnothing 14$ mm (bundled up to $\varnothing 90$ mm)	EI 60 U/C			50 x 3.6 mm (2 layers)			

See graph on page 38 for intermediate sizes

Annex A - Resistance to fire classification - Mulcol® Multiwrap

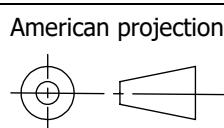
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid floor construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:5

Unit of measure : mm

Date : 17-9-2018

Company : Mulcol International B.V.

RF-PP-MW1.1.6

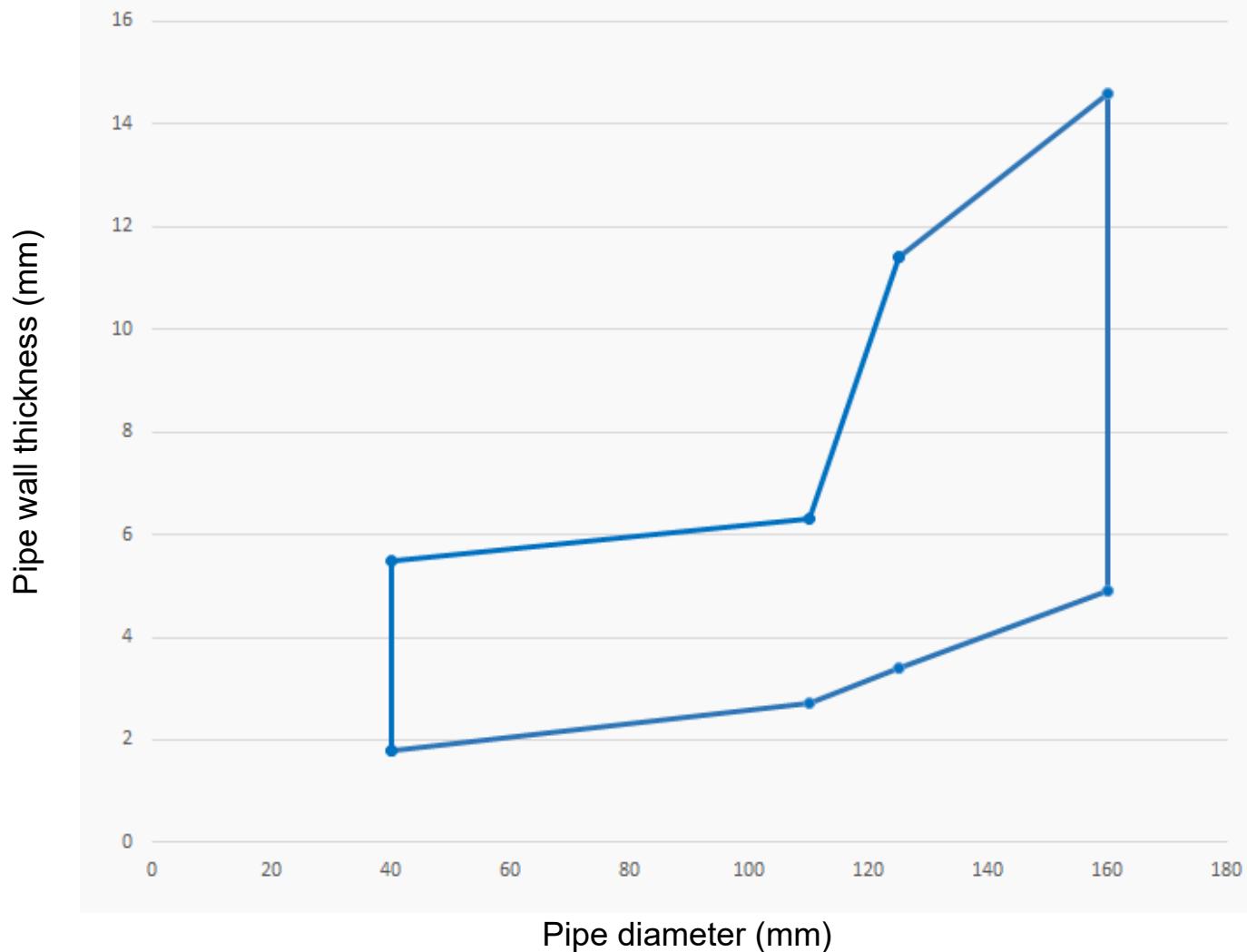
Department : Research & Development

Draftsman : R.M.

A4

PP pipes with Mulcol® Multiwraps - EI 120 U/C

Intermediate sizes



Annex A - Resistance to fire classification - Mulcol® Multiwrap

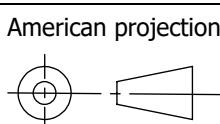
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid floor construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:5

Unit of measure : mm

Date : 17-9-2018

Company : Mulcol International B.V.

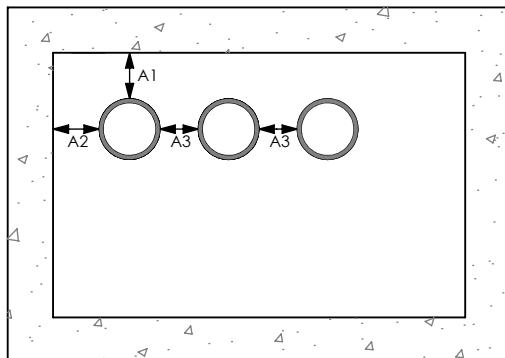
RF-PP-MW1.1.6

Department : Research & Development

A4

Draftsman : R.M.

Option 1

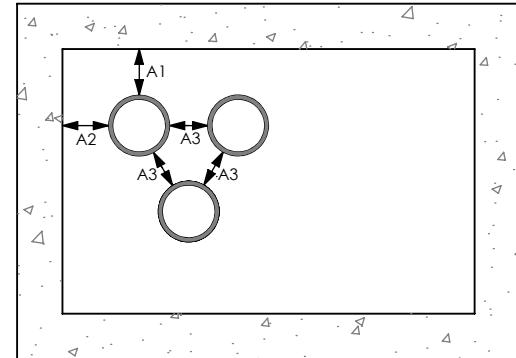


A1 : Pipe / top edge of seal separation min. 30 mm

A2 : Pipe / side edge of seal separation min. 30 mm

A3 : Pipe / pipe separation min. 30 mm

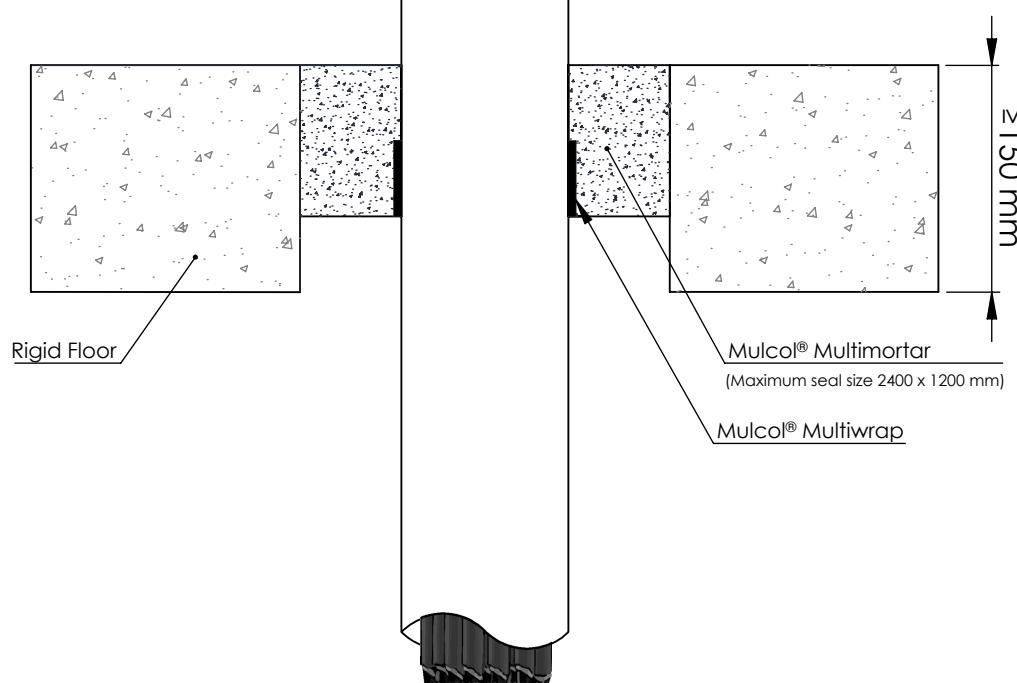
Option 2



A1 : Pipe / top edge of seal separation min. 30 mm

A2 : Pipe / side edge of seal separation min. 30 mm

A3 : Pipe / pipe separation min. 30 mm



A 3.2.1 Penetration seal with combustible pipes

Services	Classification	Position Mulcol® Multimortar	Maximum seal	Mulcol® Multiwrap (fitted at bottom of seal)	Position Services
PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1					
Up to $\varnothing 40$ mm / 2.0-4.4 mm wall th.	EI 120 U/C	Either surface of the floor or anywhere in between	2400 x 1200 mm	None	Service fitted at any position within the aperture (min. separation 30 mm from seal edges and 30 mm from other services)
Up to $\varnothing 40$ mm / 2.4-3.7 mm wall th.	EI 240 U/U			50 x 1.8 mm (1 layer)	
Up to $\varnothing 110$ mm / 3.4-10.0 mm wall th.	EI 120 U/C			50 x 3.6 mm (2 layers)	
Up to $\varnothing 125$ mm / 3.9-11.4 mm wall th.	EI 240 U/C			50 x 7.2 mm (4 layers)	
Up to $\varnothing 160$ mm / 4.9-14.6 mm wall th.	EI 120 U/C			50 x 10.8 mm (6 layers)	
Up to $\varnothing 110$ mm / 2.7-10.0 mm wall th., containing telecom cables up to $\varnothing 14$ mm (bundled up to $\varnothing 90$ mm)	E 120 U/C, EI 60 U/C			50 x 3.6 mm (2 layers)	
See graph on page 40 for intermediate sizes					

Annex A - Resistance to fire classification - Mulcol® Multiwrap

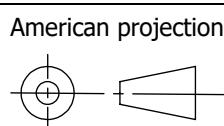
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid floor construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:5

Unit of measure : mm

Date : 17-9-2018

Company : Mulcol International B.V.

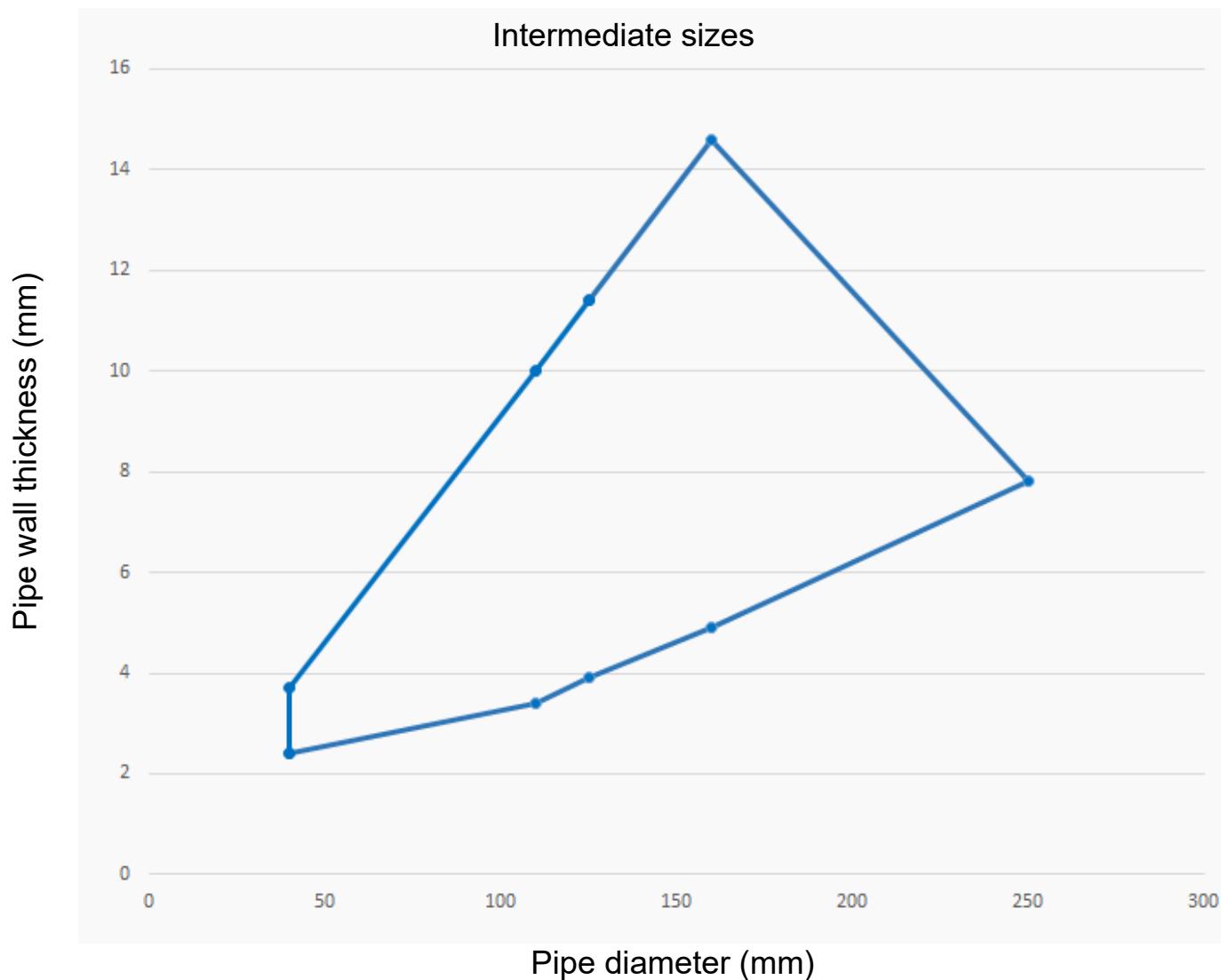
RF-PP-MW1.1.6

Department : Research & Development

Draftsman : R.M.

A4

PE pipes with Mulcol® Multiwraps - EI 120 U/C



Annex A - Resistance to fire classification - Mulcol® Multiwrap

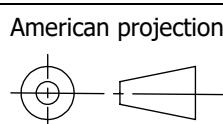
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid floor construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:15

Unit of measure : mm

Date : 17-9-2018

Company : Mulcol International B.V.

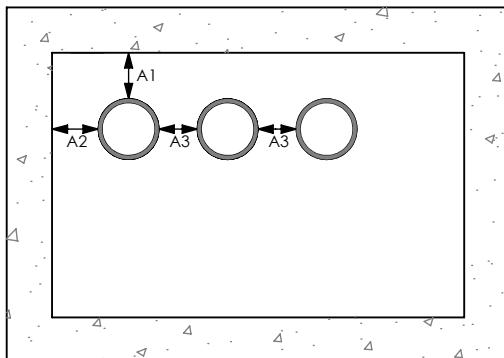
RF-PP-MW1.1.4

Department : Research & Development

A4

Draftsman : R.M.

Option 1

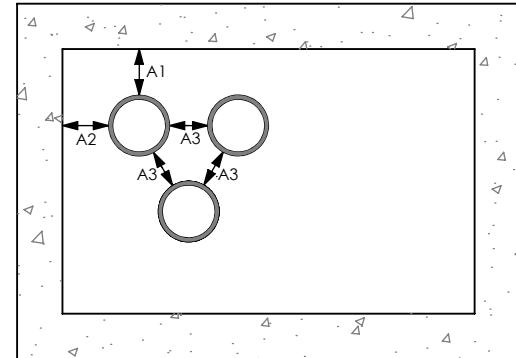


A1 : Pipe / top edge of seal separation min. 30 mm

A2 : Pipe / side edge of seal separation min. 30 mm

A3 : Pipe / pipe separation min. 30 mm

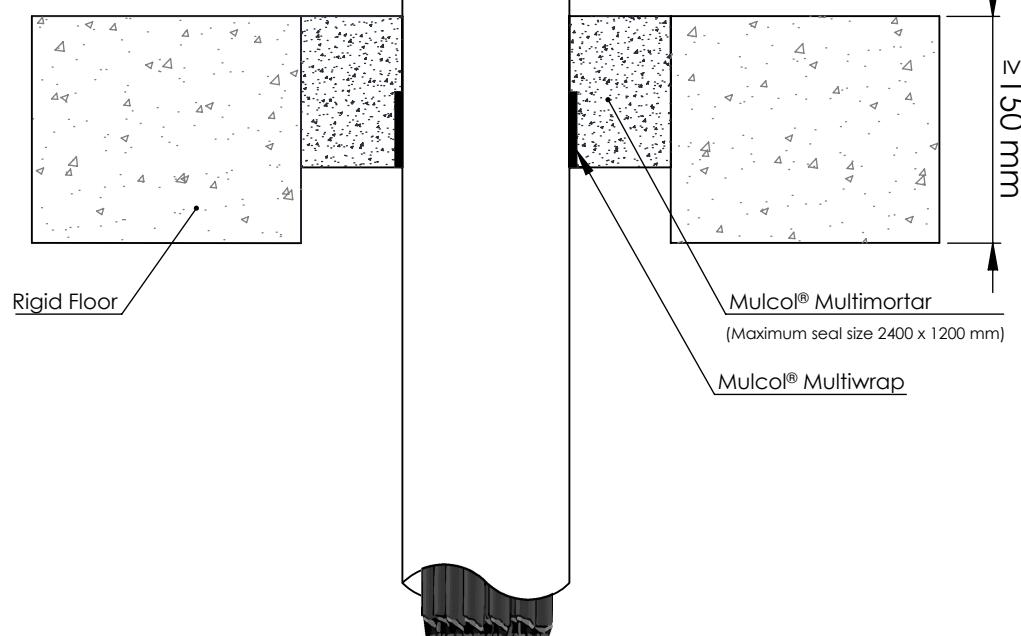
Option 2



A1 : Pipe / top edge of seal separation min. 30 mm

A2 : Pipe / side edge of seal separation min. 30 mm

A3 : Pipe / pipe separation min. 30 mm



A 3.2.2 Penetration seal with combustible pipes

Services	Classification	Position Mulcol® Multimortar	Maximum seal	Mulcol® Multiwrap (fitted at bottom of seal)	Position Services		
PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1, PVC-C according to EN 1566-1							
Up to Ø 40 mm / 1.8-3.7 mm wall th.	E 180 U/U, EI 120 U/U	Either surface of the floor or anywhere in between	2400 x 1200 mm	50 x 1.8 mm (1 layer)	Service fitted at any position within the aperture (min. separation 30 mm from seal edges and 30 mm from other services)		
Up to Ø 110 mm / 3.0-6.6 mm wall th.	EI 240 U/C			50 x 3.6 mm (2 layers)			
Up to Ø 125 mm / 3.5-7.4 mm wall th.	EI 120 U/C			50 x 7.2 mm (4 layers)			
Up to Ø 110 mm / 2.7-6.6 mm wall th., containing telecom cables up to Ø 14 mm (bundled up to Ø 90 mm)				50 x 3.6 mm (2 layers)			

See graph on page 42 for intermediate sizes

Annex A - Resistance to fire classification - Mulcol® Multiwrap

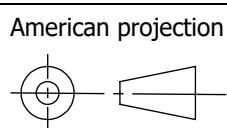
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid floor construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:5

Unit of measure : mm

Date : 17-9-2018

Company : Mulcol International B.V.

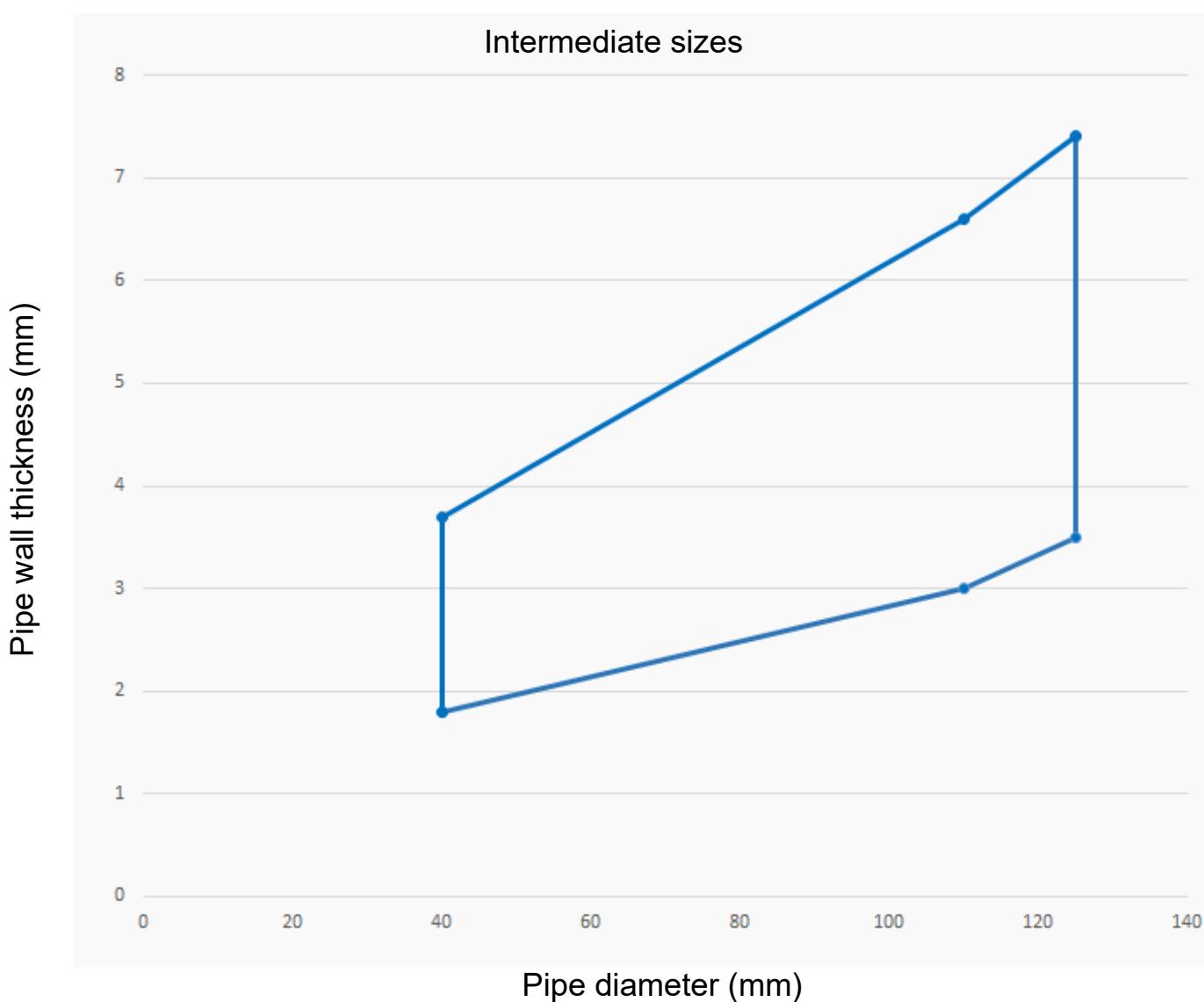
RF-PP-MW1.1.4

Department : Research & Development

Draftsman : R.M.

A4

PVC-U pipes with Mulcol® Multiwraps - EI 120 U/C



Annex A - Resistance to fire classification - Mulcol® Multiwrap

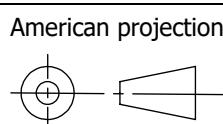
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid floor construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:5

Unit of measure : mm

Date : 17-9-2016

Company : Mulcol International B.V.

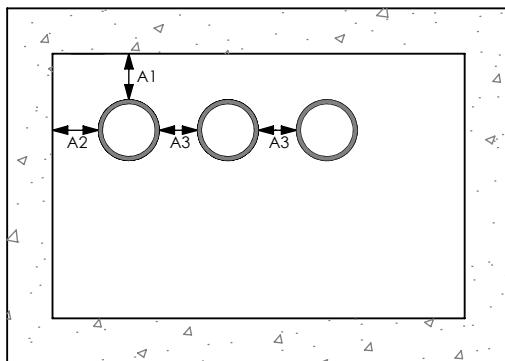
RF-PP-MW1.1.6

Department : Research & Development

A4

Draftsman : R.M.

Option 1

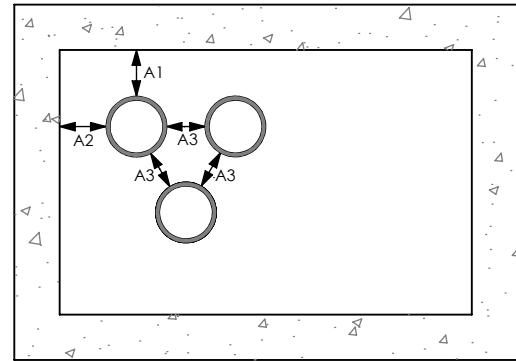


A1 : Pipe / top edge of seal separation min. 30 mm

A2 : Pipe / side edge of seal separation min. 30 mm

A3 : Pipe / pipe separation min. 30 mm

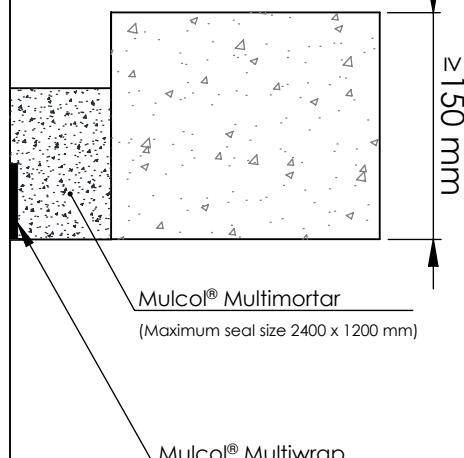
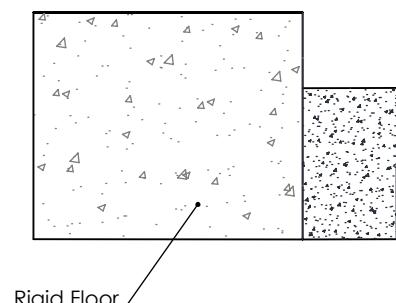
Option 2



A1 : Pipe / top edge of seal separation min. 30 mm

A2 : Pipe / side edge of seal separation min. 30 mm

A3 : Pipe / pipe separation min. 30 mm



A 3.3 Penetration seal with combustible pipes

Services	Classification	Position Mulcol® Multimortar	Maximum seal	Mulcol® Multiwrap (fitted at bottom of seal)	Permitted configuration for seal separation	Position Services
PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1, PVC-C according to EN 1566-1						
Ø 160 mm / 9.5 mm wall th.	EI 90 U/C	Bottom surface of the floor	2400 x 1200 mm	50 x 10.8 mm (6 layers)	1 & 2	Service fitted at any position within the aperture (min. separation 30 mm from seal edges and 30 mm from other services)
Rehau Raupiano Plus PP-DD according to DIN 4102						
Ø 40-50 mm / 1.8-2.7 mm wall th.	EI 120 U/U	Bottom surface of the floor	2400 x 1200 mm	50 x 3.6 mm (2 layers)	1 & 2	Service fitted at any position within the aperture (min. separation 30 mm from seal edges and 30 mm from other services)
Ø 75-110 mm / 2.7 mm wall th.	EI 120 U/C			50 x 7.2 mm (4 layers)		
Ø 125 mm / 3.1 mm wall th.	E 240 U/C, EI 120 U/C			50 x 10.8 mm (6 layers)		
Ø 160 mm / 3.9 mm wall th.	EI 120 U/C					

See graph on page 44 for intermediate sizes

Annex A - Resistance to fire classification - Mulcol® Multiwrap

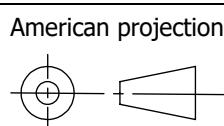
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid floor construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:5

Unit of measure : mm

Date : 17-9-2018

Company : Mulcol International B.V.

RF-PP-MW1.1.6

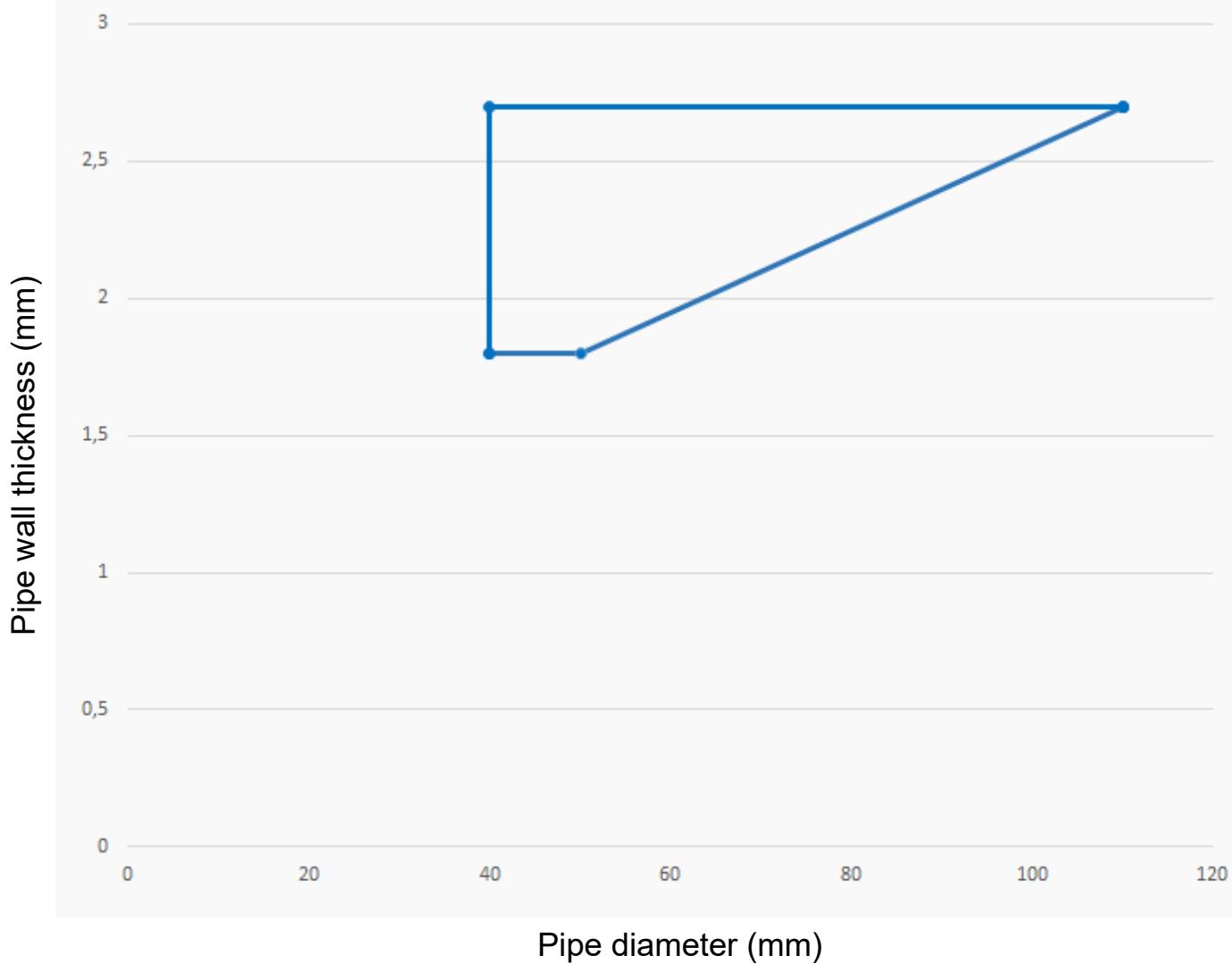
Department : Research & Development

A4

Draftsman : R.M.

Rehau Raupiano Plus - EI 120 U/U

Intermediate sizes



Annex A - Resistance to fire classification - Mulcol® Multiwrap

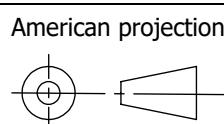
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid floor construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:15

Unit of measure : mm

Date : 17-9-2016

Company : Mulcol International B.V.

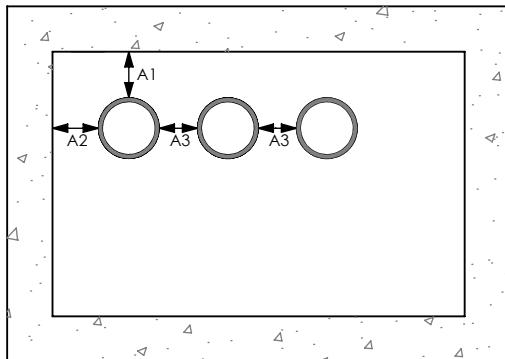
RF-PP-MW1.1.6

Department : Research & Development

A4

Draftsman : R.M.

Option 1

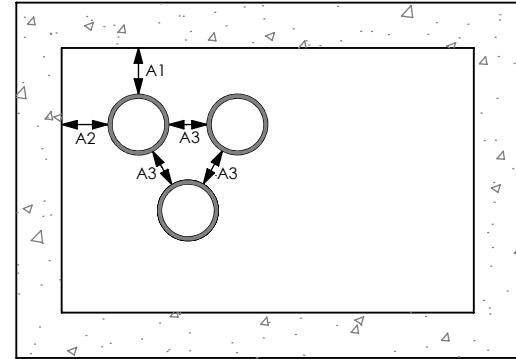


A1 : Pipe / top edge of seal separation min. 30 mm

A2 : Pipe / side edge of seal separation min. 30 mm

A3 : Pipe / pipe separation min. 30 mm

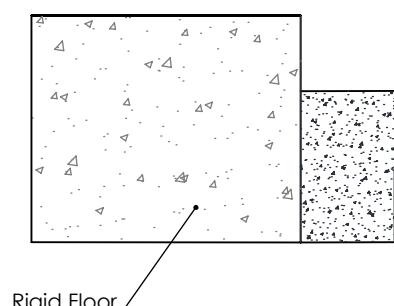
Option 2



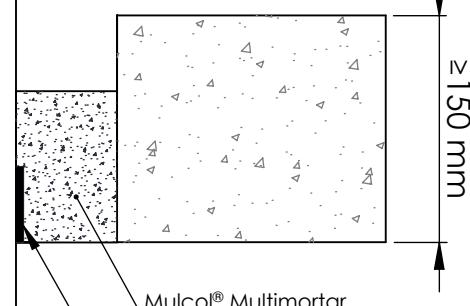
A1 : Pipe / top edge of seal separation min. 30 mm

A2 : Pipe / side edge of seal separation min. 30 mm

A3 : Pipe / pipe separation min. 30 mm



Rigid Floor



Mulcol® Multimortar
(Maximum seal size 2400 x 1200 mm)

Mulcol® Multiwrap

A 3.3.1 Penetration seal with combustible pipes

Services	Classification	Position Mulcol® Multimortar	Maximum seal	Mulcol® Multiwrap (fitted at bottom of seal)	Permitted configuration for seal separation	Position Services
Polo-Kal NG Poloplast PP-MV according to DIN 4102						
Ø 32-110 mm / 3.4 mm wall th.	EI 180 U/C	Bottom surface of the floor	2400 x 1200 mm	50 x 3.6 mm (2 layers)	1 & 2	Service fitted at any position within the aperture (min. separation 30 mm from seal edges and 30 mm from other services)
Ø 125 mm / 3.1 mm wall th.				50 x 7.2 mm (4 layers)		
Ø 160 mm / 4.3 mm wall th.				50 x 10.8 mm (6 layers)		
Wavin SiTech + PP-M B according to EN 13501-1						
Ø 32-50 mm / 1.8-3.4 mm wall th.	EI 120 U/U	Bottom surface of the floor	2400 x 1200 mm	50 x 3.6 mm (2 layers)	1 & 2	Service fitted at any position within the aperture (min. separation 30 mm from seal edges and 30 mm from other services)
Ø 75-110 mm / 3.4 mm wall th.						

See graph on page 46 for intermediate sizes

Annex A - Resistance to fire classification - Mulcol® Multiwrap

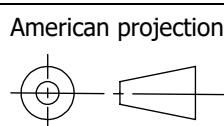
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid floor construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:5

Unit of measure : mm

Date : 17-9-2018

Company : Mulcol International B.V.

RF-PP-MW1.1.6

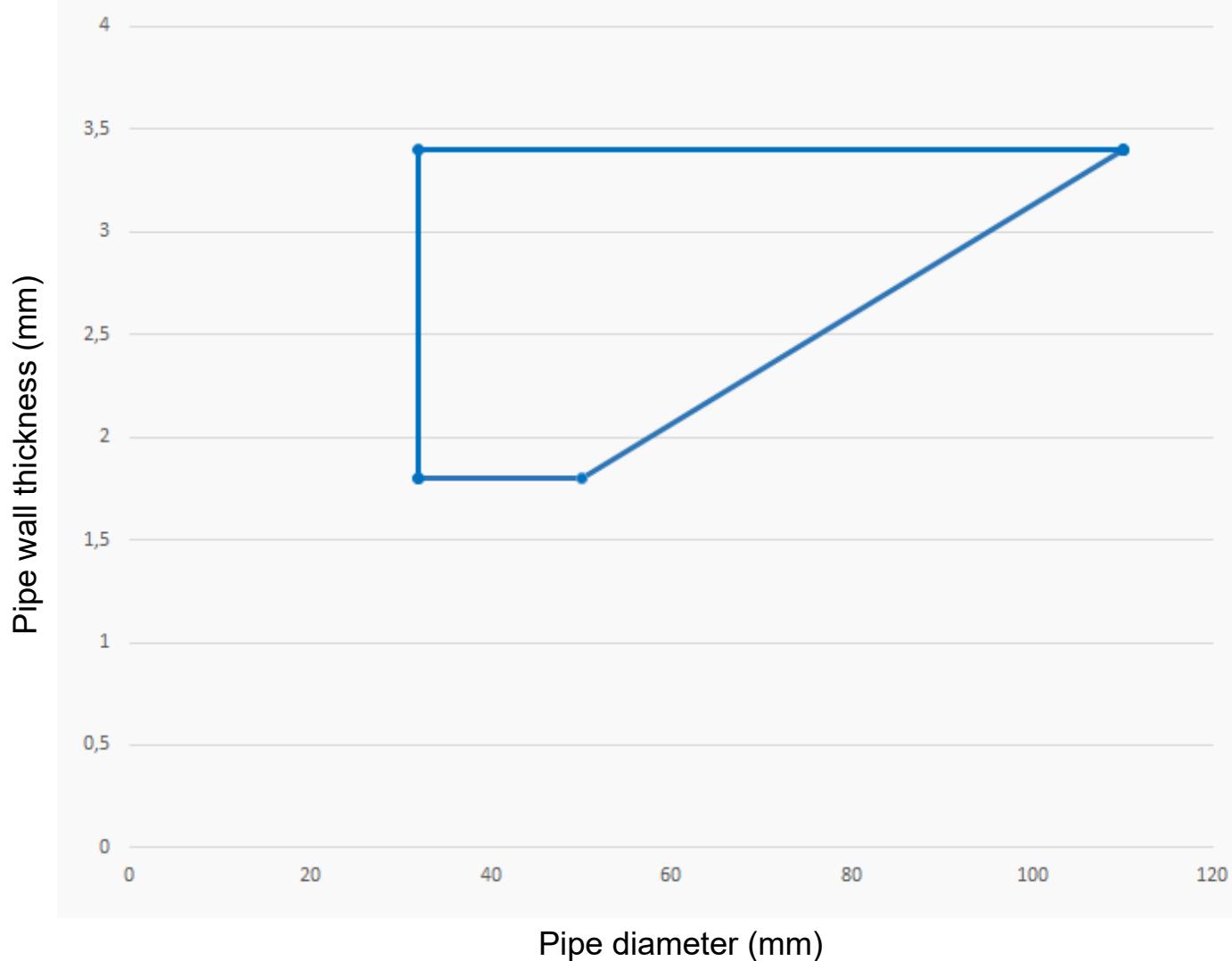
Department : Research & Development

Draftsman : R.M.

A4

Wavin SiTech pipes - EI 120 U/C

Intermediate sizes



Annex A - Resistance to fire classification - Mulcol® Multiwrap

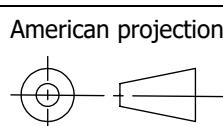
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid floor construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:15

Unit of measure : mm

Date : 17-9-2016

Company : Mulcol International B.V.

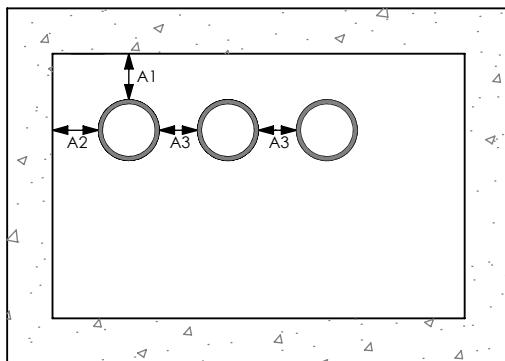
RF-PP-MW1.1.2

Department : Research & Development

A4

Draftsman : R.M.

Option 1

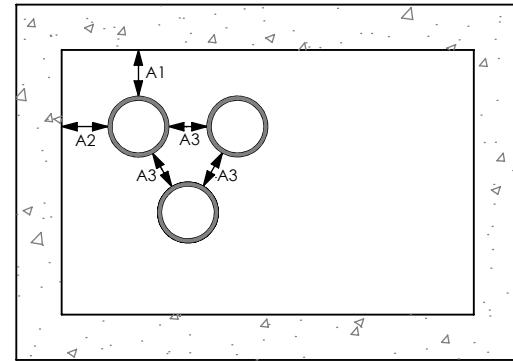


A1 : Pipe / top edge of seal separation min. 30 mm

A2 : Pipe / side edge of seal separation min. 30 mm

A3 : Pipe / pipe separation min. 30 mm

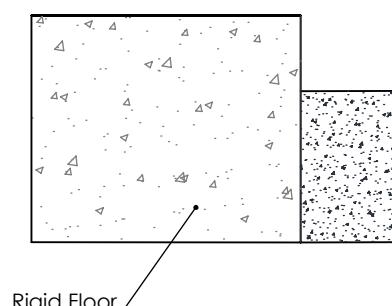
Option 2



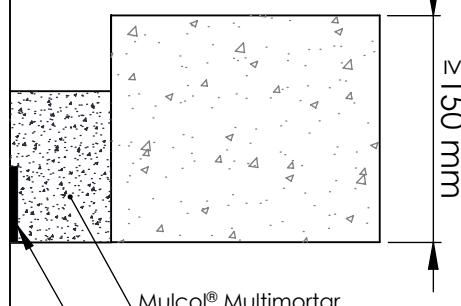
A1 : Pipe / top edge of seal separation min. 30 mm

A2 : Pipe / side edge of seal separation min. 30 mm

A3 : Pipe / pipe separation min. 30 mm



Rigid Floor



Mulcol® Multimortar
(Maximum seal size 2400 x 1200 mm)

Mulcol® Multiwrap

A 3.3.2 Penetration seal with combustible pipes

Services	Classification	Position Mulcol® Multimortar	Maximum seal	Mulcol® Multiwrap (fitted at bottom of seal)	Permitted configuration for seal separation	Position Services
Gilbert Silent PP according to DIN 4102						
Ø 32-50 mm / 1.8-3.4 mm wall th.	EI 120 U/U	Bottom surface of the floor	2400 x 1200 mm	50 x 3.6 mm (2 layers)	1 & 2	Service fitted at any position within the aperture (min. separation 30 mm from seal edges and 30 mm from other services)
Ø 75-110 mm / 3.4 mm wall th.	EI 120 U/C					

See graph on page 48 for intermediate sizes

Annex A - Resistance to fire classification - Mulcol® Multiwrap

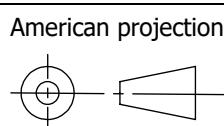
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid floor construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:5

Unit of measure : mm

Date : 17-9-2018

Company : Mulcol International B.V.

RF-PP-MW1.1.2

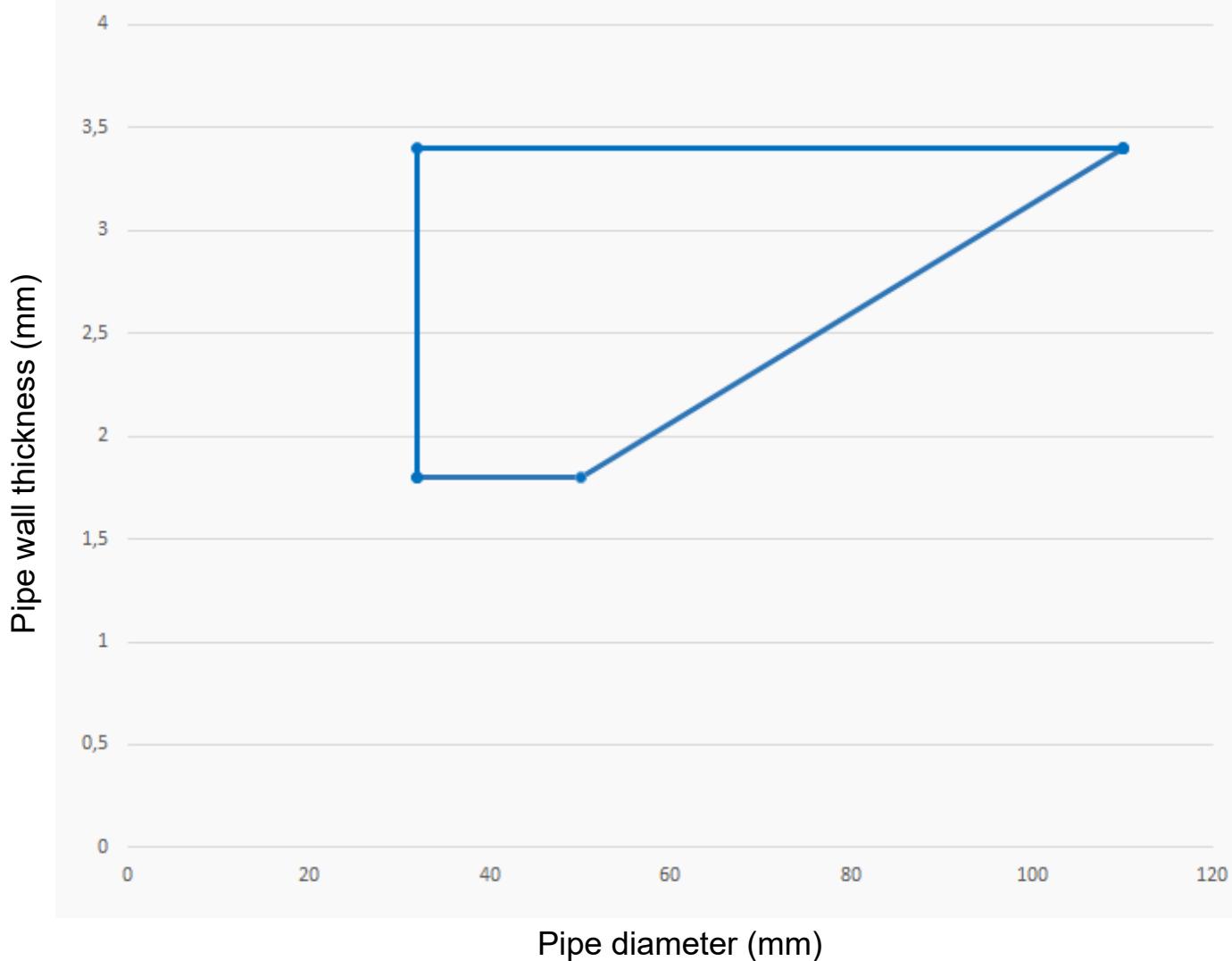
Department : Research & Development

A4

Draftsman : R.M.

Gilbert Silent PP pipes - EI 120 U/C

Intermediate sizes



Annex A - Resistance to fire classification - Mulcol® Multiwrap

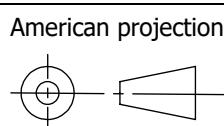
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid floor construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:5

Unit of measure : mm

Date : 17-9-2016

Company : Mulcol International B.V.

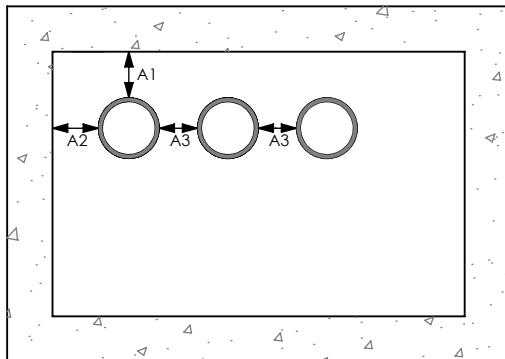
RF-PP-MW1.1.6

Department : Research & Development

A4

Draftsman : R.M.

Option 1

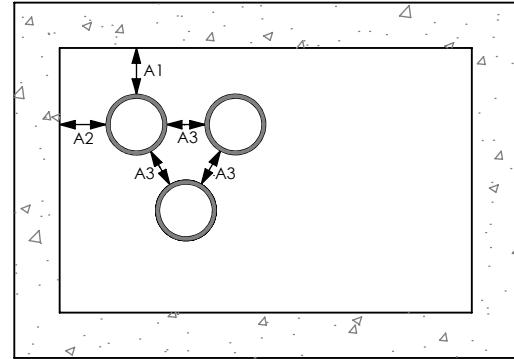


A1 : Pipe / top edge of seal separation min. 30 mm

A2 : Pipe / side edge of seal separation min. 30 mm

A3 : Pipe / pipe separation min. 30 mm

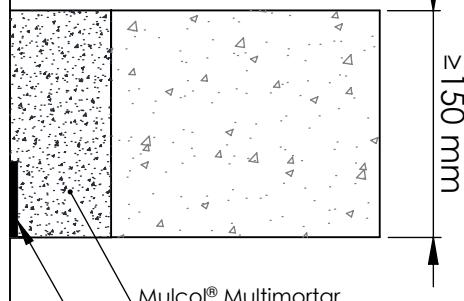
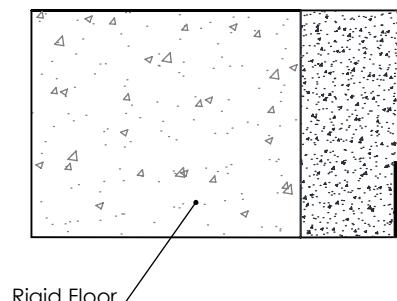
Option 2



A1 : Pipe / top edge of seal separation min. 30 mm

A2 : Pipe / side edge of seal separation min. 30 mm

A3 : Pipe / pipe separation min. 30 mm



Mulcol® Multiwrap

A 3.4 Penetration seal with combustible pipes

Services	Classification	Maximum seal	Mulcol® Multiwrap (fitted at bottom of seal)	Permitted configuration for seal separation	Mulcol® Multimortar depth	Position Services
PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1, PVC-C according to EN 1566-1						
Ø 41 mm / 1.8-3.7 mm wall th. up to Ø 125 mm / 4.8-7.4 mm wall th.	EI 60 U/U	2400 x 1200 mm	50 x 7.2 mm (4 layers)	1 & 2	150 mm	Service fitted at any position within the aperture (min. separation 30 mm from seal edges and 30 mm from other services)
Ø 125 mm / 7.4 mm wall th.	EI 120 U/U		75 x 10.8 mm (6 layers)*	1		
Ø 126 mm / 4.8-7.4 mm wall th. up to Ø 160 mm / 9.5 mm wall th.	E 120 U/U, EI 30 U/U		75 x 7.2 mm (4 layers)*	1		
Ø 160 mm / 9.5 mm wall th.			50 x 10.8 mm (6 layers)	1 & 2		
Ø 160 mm / 4.5-9.5 mm wall th. up	EI 120 U/C				120 mm	

See graph on page 50-51 for intermediate sizes

* Services which required 75 mm of Mulcol® Multiwrap, can also be applied with 2 x 50 mm of Mulcol® Multiwrap

Annex A - Resistance to fire classification - Mulcol® Multiwrap

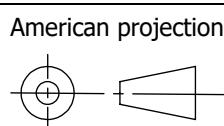
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid floor construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:5

Unit of measure : mm

Date : 17-9-2018

Company : Mulcol International B.V.

RF-PP-MW1.1.6

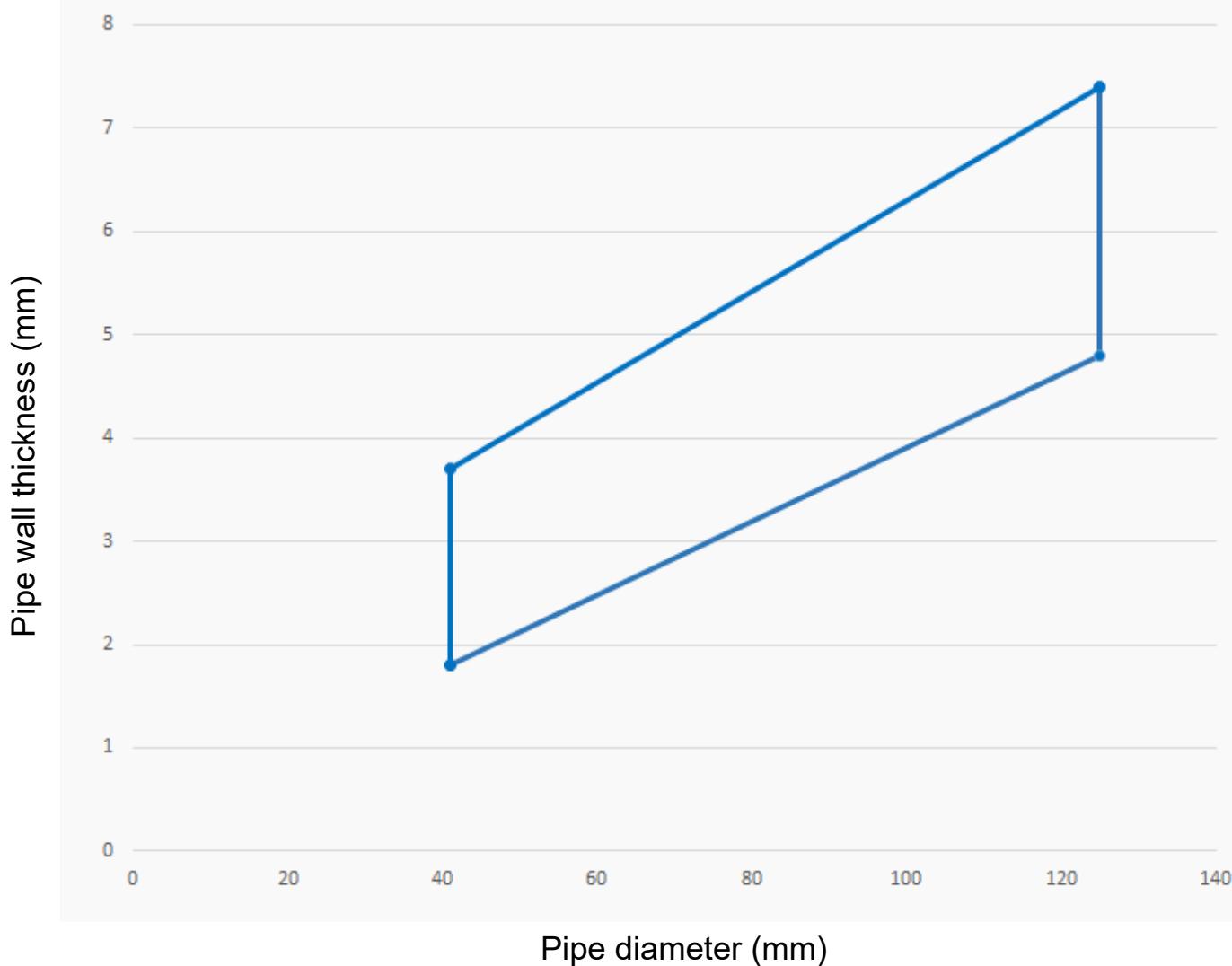
Department : Research & Development

Draftsman : R.M.

A4

PVC-U pipes Ø 41-125 mm - EI 60 U/U

Intermediate sizes



Annex A - Resistance to fire classification - Mulcol® Multiwrap

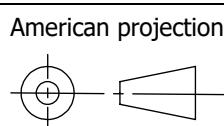
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid floor construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:5

Unit of measure : mm

Date : 17-9-2018

Company : Mulcol International B.V.

RF-PP-MW1.1.6

Department : Research & Development

A4

Draftsman : R.M.

PVC-U pipes Ø 126-160 mm - E 120 U/U, EI 30 U/U

Intermediate sizes

Pipe wall thickness (mm)

10

9

8

7

6

5

4

3

2

1

0

20

40

60

80

100

120

140

160

180

Pipe diameter (mm)

Annex A - Resistance to fire classification - Mulcol® Multiwrap

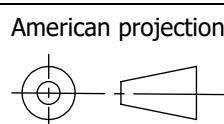
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid floor construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:5

Unit of measure : mm

Date : 17-9-2016

Company : Mulcol International B.V.

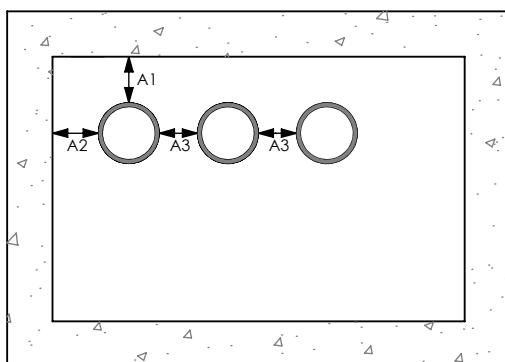
RF-PP-MW1.1.6

Department : Research & Development

A4

Draftsman : R.M.

Option 1

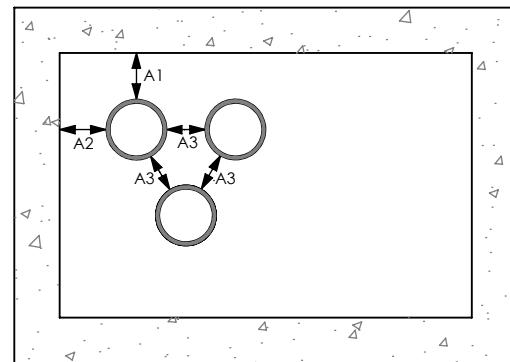


A1 : Pipe / top edge of seal separation min. 30 mm

A2 : Pipe / side edge of seal separation min. 30 mm

A3 : Pipe / pipe separation min. 30 mm

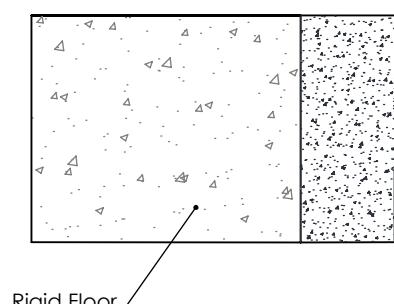
Option 2



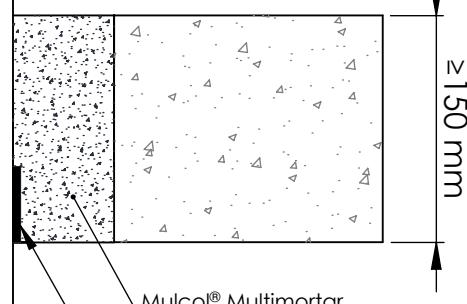
A1 : Pipe / top edge of seal separation min. 30 mm

A2 : Pipe / side edge of seal separation min. 30 mm

A3 : Pipe / pipe separation min. 30 mm



Rigid Floor



Mulcol® Multimortar
(Maximum seal size 2400 x 1200 mm)

Mulcol® Multiwrap

A 3.4.1 Penetration seal with combustible pipes

Services	Classification	Maximum seal	Mulcol® Multiwrap (fitted at bottom of seal)	Permitted configuration for seal separation	Mulcol® Multimortar depth	Position Services
PP pipe according to EN 1451-1						
Ø 41 mm / 1.8-5.5 mm wall th. up to Ø 160 mm / 4.9-14.6 mm wall th.	EI 120 U/C	2400 x 1200 mm	75 x 10.8 mm (6 layers)*	1 & 2	150 mm	Service fitted at any position within the aperture (min. separation 30 mm from seal edges and 30 mm from other services)
Ø 160 mm / 14.6 mm wall th.	EI 240 U/U		75 x 7.2 mm (4 layers)*			

See graph on page 53 for intermediate sizes

* Services which required 75 mm of Mulcol® Multiwrap, can also be applied with 2 x 50 mm of Mulcol® Multiwrap

Annex A - Resistance to fire classification - Mulcol® Multiwrap

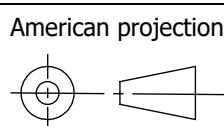
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid floor construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:5

Unit of measure : mm

Date : 17-9-2018

Company : Mulcol International B.V.

RF-PP-MW1.1.6

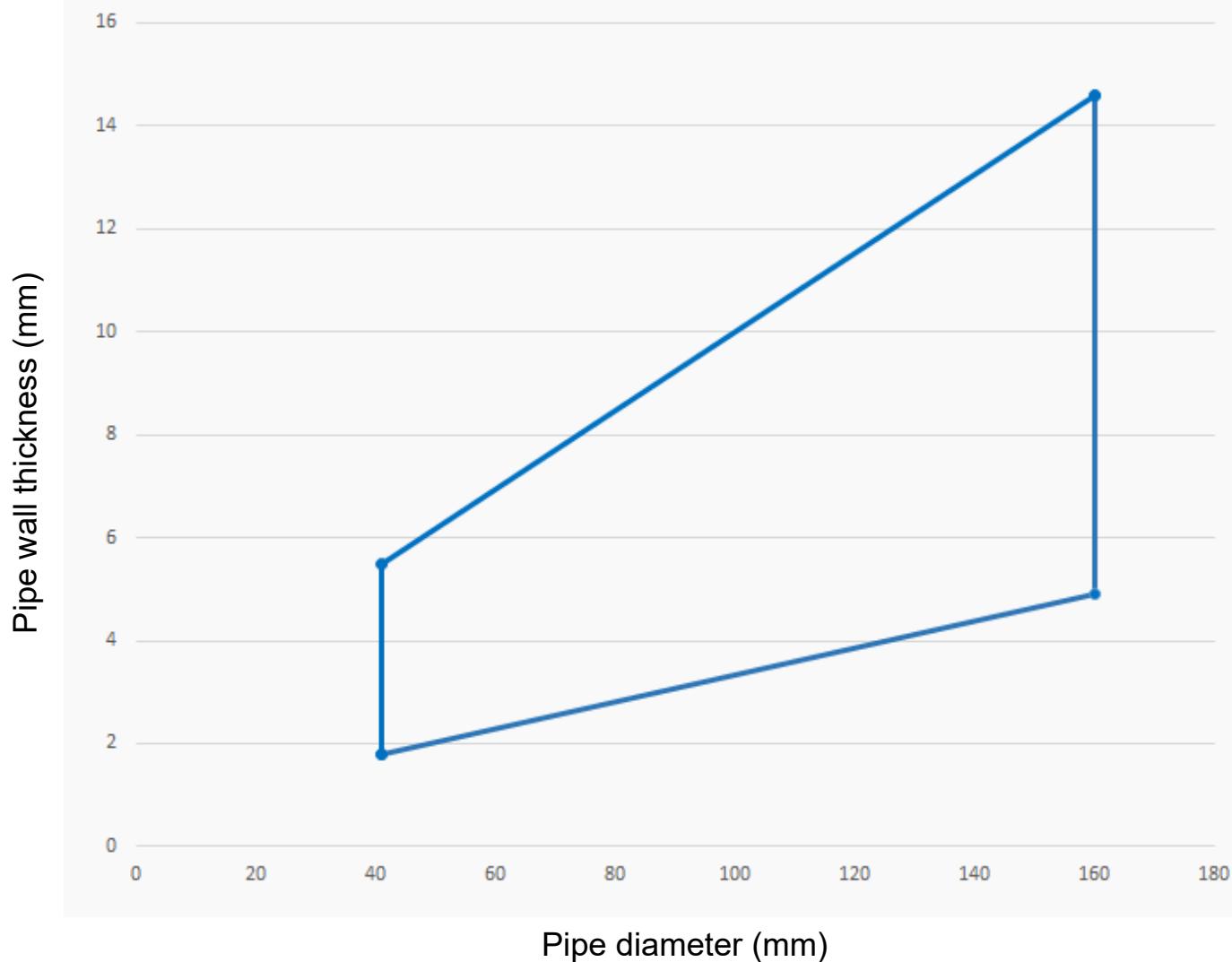
Department : Research & Development

Draftsman : R.M.

A4

PP pipes Ø 41-160 mm - EI 120 U/C

Intermediate sizes



Annex A - Resistance to fire classification - Mulcol® Multiwrap

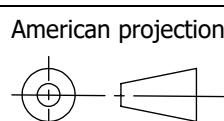
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid floor construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:5

Unit of measure : mm

Date : 17-9-2016

Company : Mulcol International B.V.

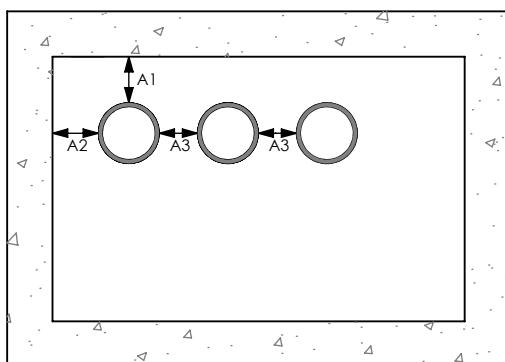
RF-PP-MW1.1.10

Department : Research & Development

A4

Draftsman : R.M.

Option 1

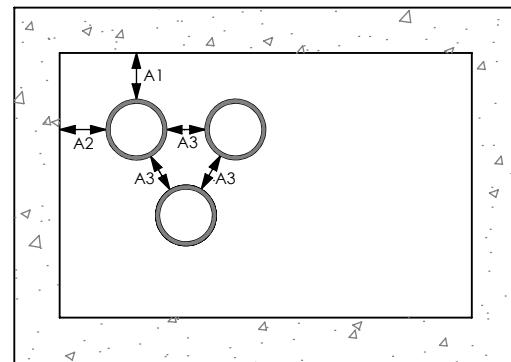


A1 : Pipe / top edge of seal separation min. 30 mm

A2 : Pipe / side edge of seal separation min. 30 mm

A3 : Pipe / pipe separation min. 30 mm

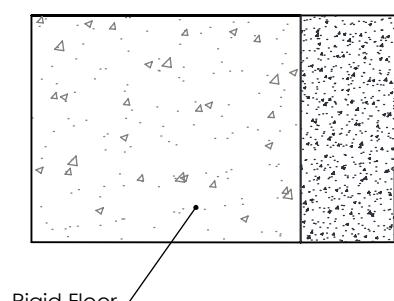
Option 2



A1 : Pipe / top edge of seal separation min. 30 mm

A2 : Pipe / side edge of seal separation min. 30 mm

A3 : Pipe / pipe separation min. 30 mm



Rigid Floor



Mulcol® Multimortar
(Maximum seal size 2400 x 1200 mm)

Mulcol® Multiwrap

A 3.4.2 Penetration seal with combustible pipes

Services	Classification	Maximum seal	Mulcol® Multiwrap (fitted at bottom of seal)	Permitted configuration for seal separation	Mulcol® Multimortar depth	Position Services
PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1						
Ø125 mm / 3.9-11.4 mm wall th. up to Ø160 mm / 14.6 mm wall th.	E 240 U/U, EI 120 U/U	2400 x 1200 mm	75 x 18 mm (10 layers)*	N/A	150 mm	Service fitted at any position within the aperture (min. separation 30 mm from seal edges and 30 mm from other services)
Ø 160 mm / 14.6 mm wall th.			75 x 7.2 mm (4 layers)*	1 & 2		

See graph on page 55 for intermediate sizes

* Services which required 75 mm of Mulcol® Multiwrap, can also be applied with 2 x 50 mm of Mulcol® Multiwrap

Annex A - Resistance to fire classification - Mulcol® Multiwrap

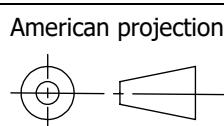
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid floor construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:5

Unit of measure : mm

Date : 17-9-2018

Company : Mulcol International B.V.

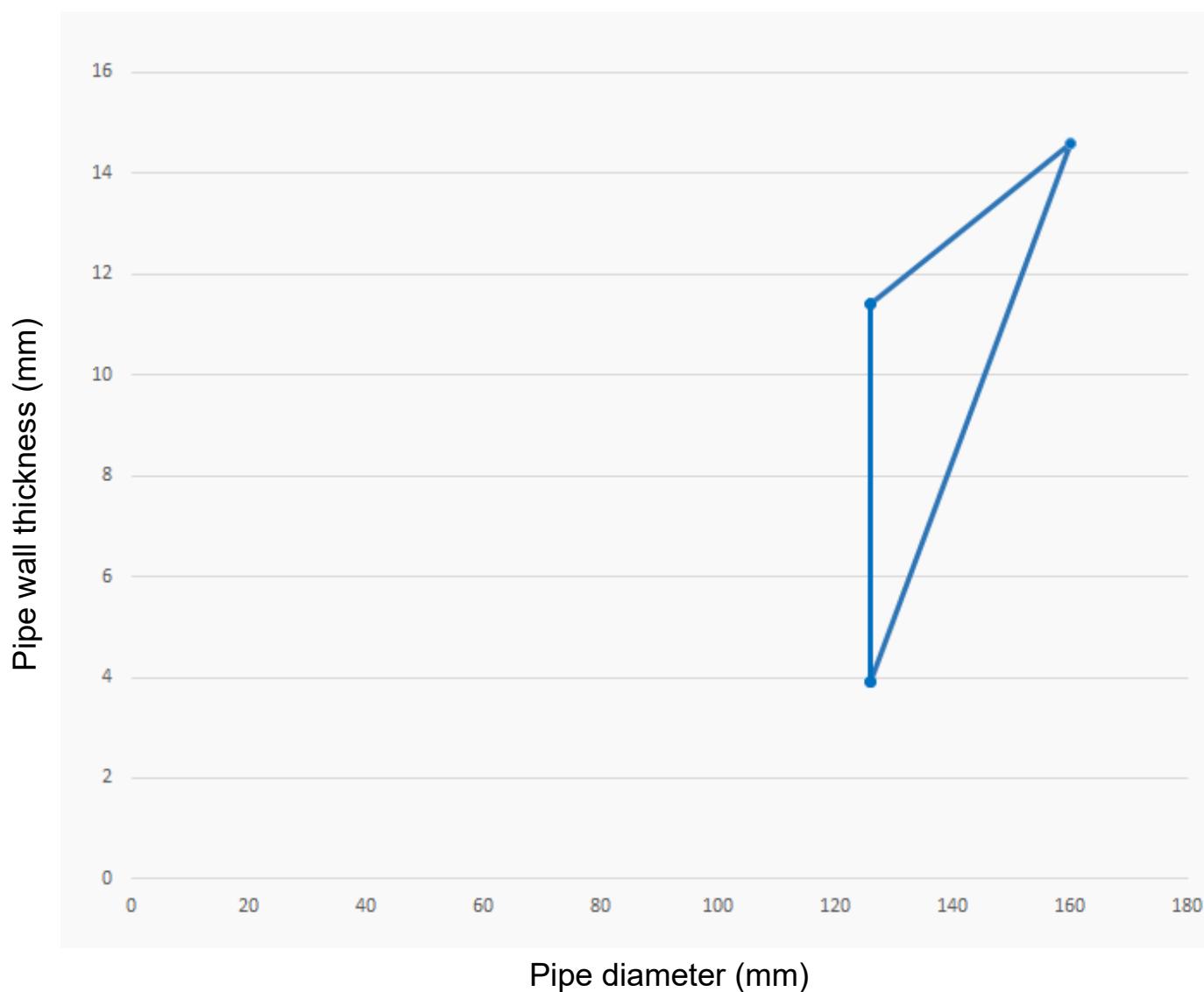
RF-PP-MW1.1.6

Department : Research & Development

A4

Draftsman : R.M.

PE pipes Ø 125-160 mm - E 240 U/U, EI 120 U/U



Annex A - Resistance to fire classification - Mulcol® Multiwrap

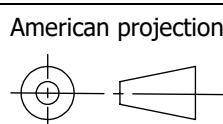
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid floor construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:15

Unit of measure : mm

Date : 17-9-2016

Company : Mulcol International B.V.

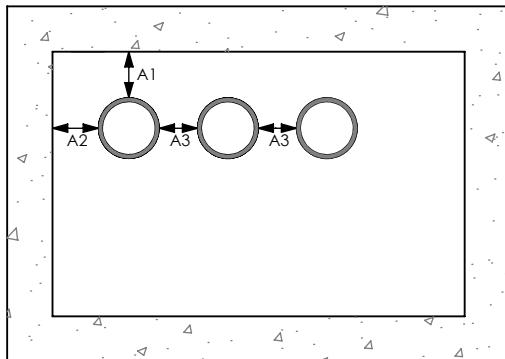
RF-PP-MW1.1.4

Department : Research & Development

A4

Draftsman : R.M.

Option 1

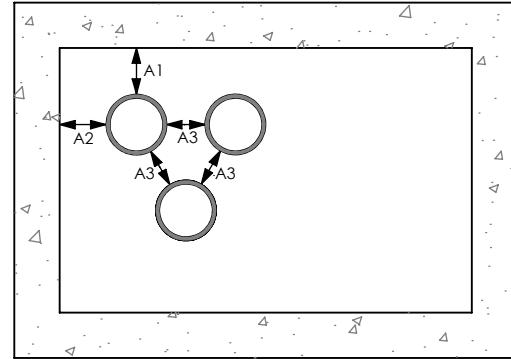


A1 : Pipe / top edge of seal separation min. 30 mm

A2 : Pipe / side edge of seal separation min. 30 mm

A3 : Pipe / pipe separation min. 30 mm

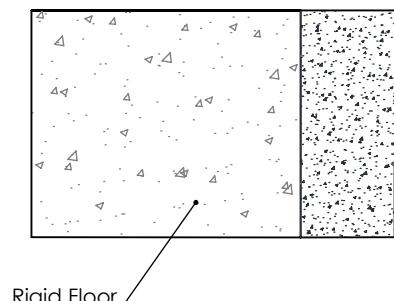
Option 2



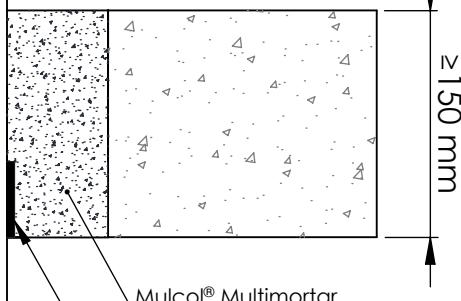
A1 : Pipe / top edge of seal separation min. 30 mm

A2 : Pipe / side edge of seal separation min. 30 mm

A3 : Pipe / pipe separation min. 30 mm



Rigid Floor



Mulcol® Multimortar
(Maximum seal size 2400 x 1200 mm)

Mulcol® Multiwrap

A 3.5 Penetration seal with combustible pipes

Services	Classification	Maximum seal	Mulcol® Multiwrap (fitted at bottom of seal)	Permitted configuration for seal separation	Mulcol® Multimortar depth	Position Services	
PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1, PVC-C according to EN 1566-1							
Up to Ø 40 mm / 1.8-3.7 mm wall th.	EI 120 U/U	2400 x 1200 mm	50 x 1.8 mm (1 layer)	1 & 2	150 mm	Service fitted at any position within the aperture (min. separation 30 mm from seal edges and 30 mm from other services)	
Up to Ø 125 mm / 4.8-7.4 mm wall th.	EI 60 U/U		50 x 7.2 mm (4 layers)				
Up to Ø 160 mm / 9.5 mm wall th.	E 120 U/U, EI 30 U/U		75 x 7.2 mm (4 layers)*				
PP pipe according to EN 1451-1							
Up to Ø 40 mm / 1.8-5.5 mm wall th.	EI 120 U/U	2400 x 1200 mm	50 x 1.8 mm (1 layer)	1 & 2	150 mm	Service fitted at any position within the aperture (min. separation 30 mm from seal edges and 30 mm from other services)	
Up to Ø 125 mm / 11.4 mm wall th.	EI 240 U/U		50 x 7.2 mm (4 layers)				
Up to Ø 160 mm / 14.6 mm wall th.			75 x 7.2 mm (4 layers)*				

See graph on page 57-58 for intermediate sizes

* Services which required 75 mm of Mulcol® Multiwrap, can also be applied with 2 x 50 mm of Mulcol® Multiwrap

Annex A - Resistance to fire classification - Mulcol® Multiwrap

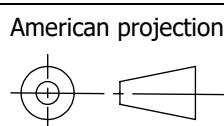
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid floor construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:5

Unit of measure : mm

Date : 17-9-2018

Company : Mulcol International B.V.

RF-PP-MW1.1.4

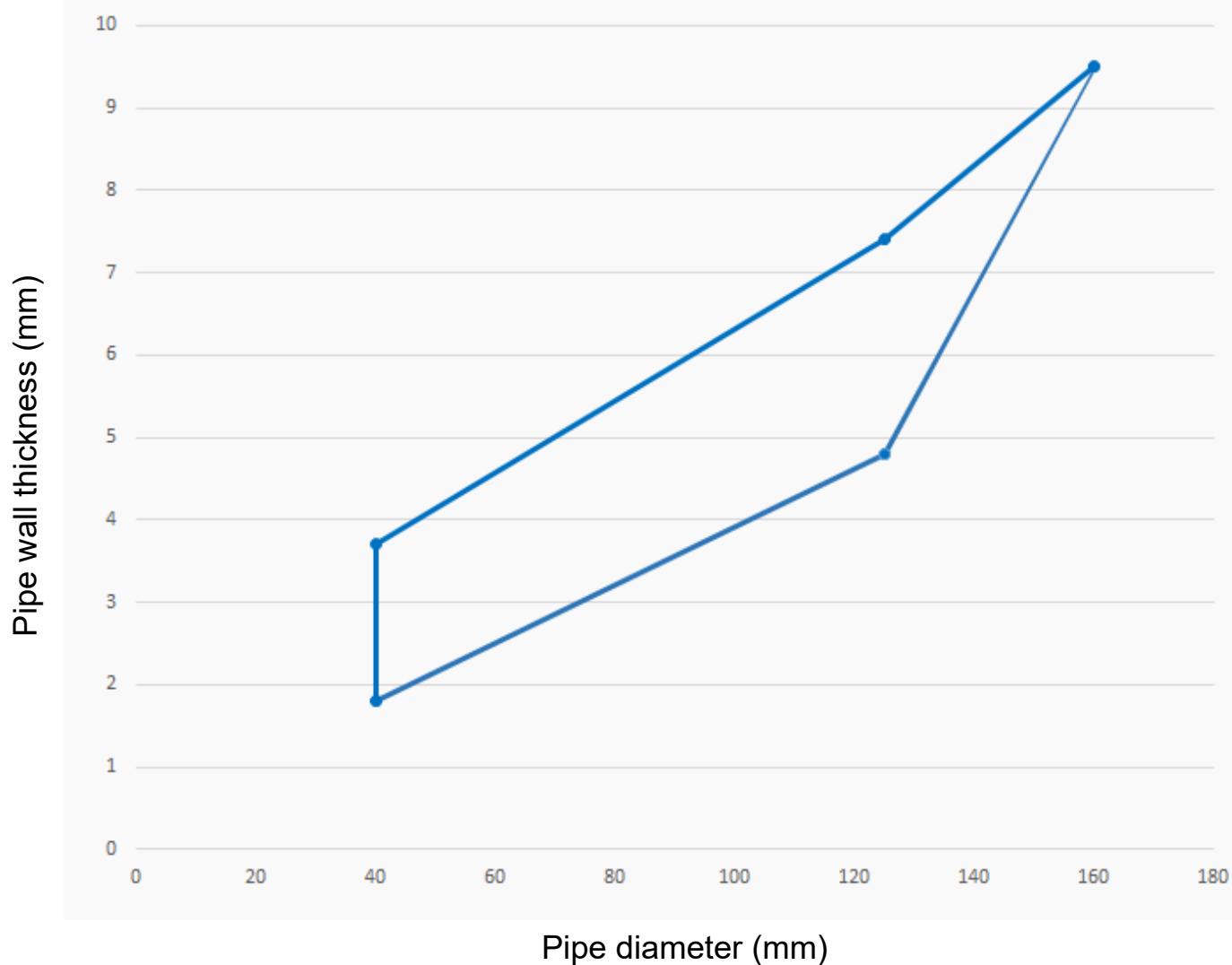
Department : Research & Development

Draftsman : R.M.

A4

PVC-U pipes - E 60 U/U, EI 30 U/U

Intermediate sizes



Annex A - Resistance to fire classification - Mulcol® Multiwrap

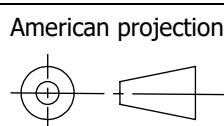
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid floor construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:5

Unit of measure : mm

Date : 17-9-2018

Company : Mulcol International B.V.

RF-PP-MW1.1.4

Department : Research & Development

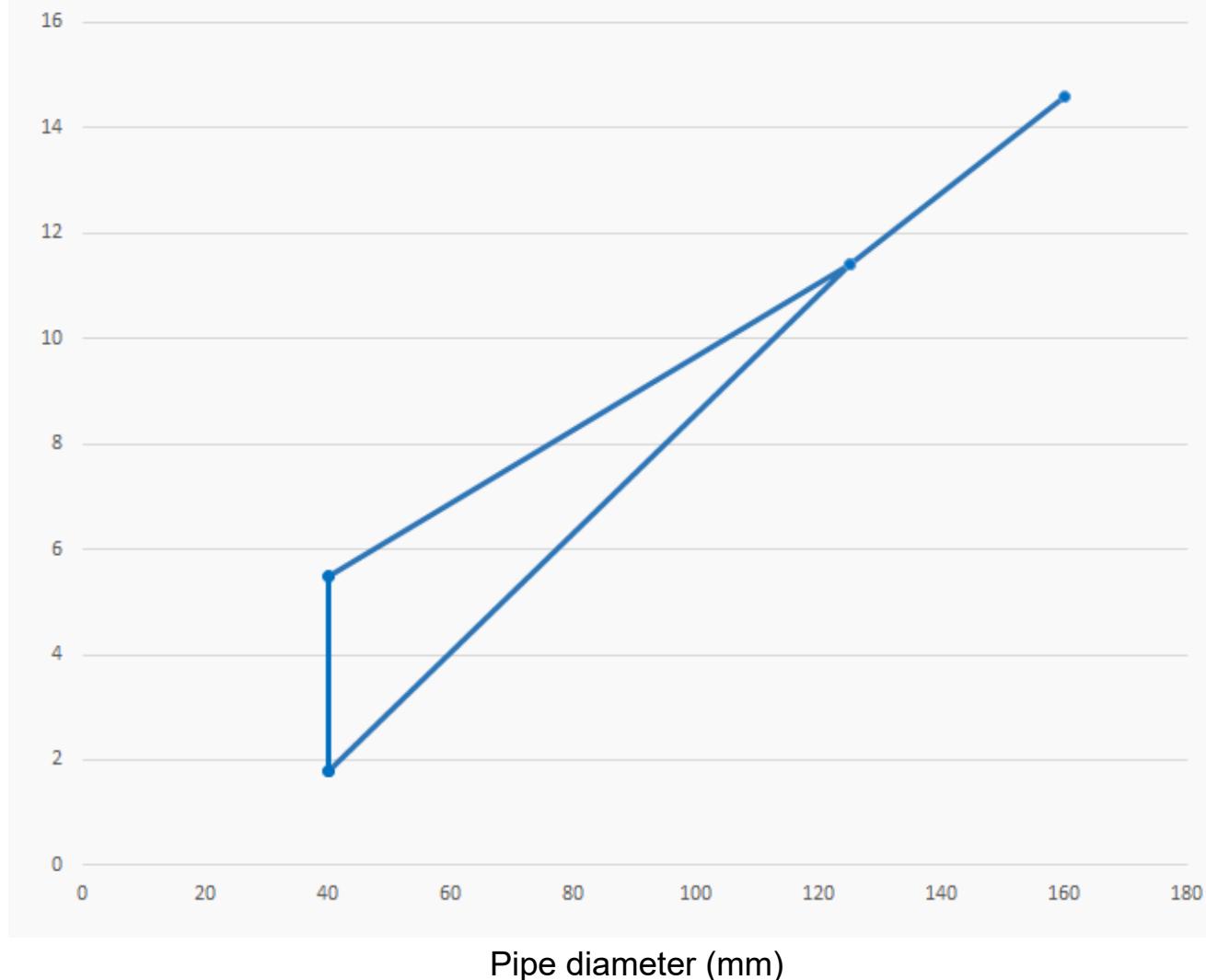
Draftsman : R.M.

A4

PP pipes - EI 120 U/U

Intermediate sizes

Pipe wall thickness (mm)



Annex A - Resistance to fire classification - Mulcol® Multiwrap

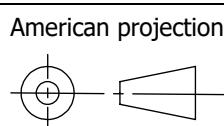
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid floor construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:15

Unit of measure : mm

Date : 17-9-2016

Company : Mulcol International B.V.

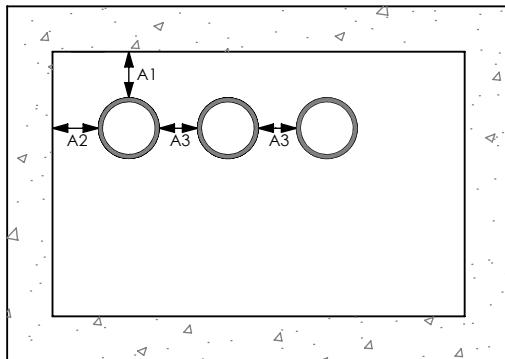
RF-PP-MW1.1.4

Department : Research & Development

A4

Draftsman : R.M.

Option 1

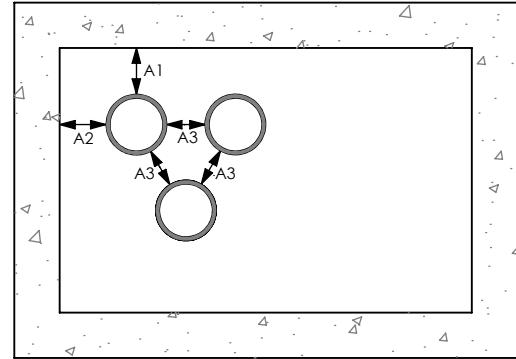


A1 : Pipe / top edge of seal separation min. 30 mm

A2 : Pipe / side edge of seal separation min. 30 mm

A3 : Pipe / pipe separation min. 30 mm

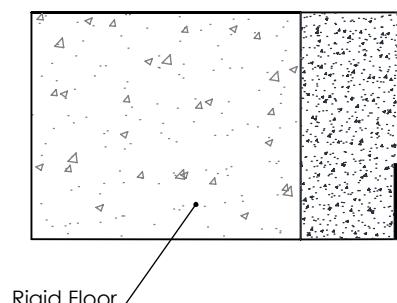
Option 2



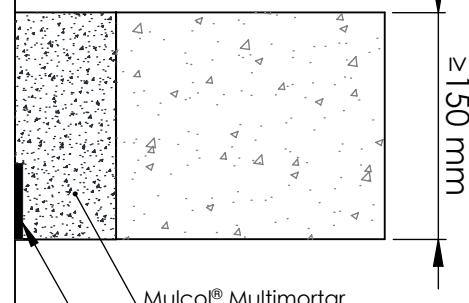
A1 : Pipe / top edge of seal separation min. 30 mm

A2 : Pipe / side edge of seal separation min. 30 mm

A3 : Pipe / pipe separation min. 30 mm



Rigid Floor



Mulcol® Multimortar
(Maximum seal size 2400 x 1200 mm)

Mulcol® Multiwrap

A 3.5.1 Penetration seal with combustible pipes

Services	Classification	Maximum seal	Mulcol® Multiwrap (fitted at bottom of seal)	Permitted configuration for seal separation	Mulcol® Multimortar	Position Services
PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1						
Up to Ø 40 mm / 2.4-3.7 mm wall th.	EI 240 U/U	2400 x 1200 mm	50 x 1.8 mm (1 layer)	1 & 2	150 mm	Service fitted at any position within the aperture (min. separation 30 mm from seal edges and 30 mm from other services)
Up to Ø 110 mm / 3.4-10 mm wall th.			75 x 5.4 mm (3 layers)*			
Up to Ø 125 mm / 11.4 mm wall th.			50 x 7.2 mm (4 layers)			
Up to Ø 160 mm / 9.5 mm wall th.			75 x 7.2 mm (4 layers)*			

See graph on page 60 for intermediate sizes

* Services which required 75 mm of Mulcol® Multiwrap, can also be applied with 2 x 50 mm of Mulcol® Multiwrap

Annex A - Resistance to fire classification - Mulcol® Multiwrap

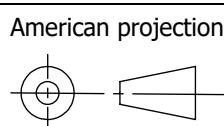
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid floor construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:5

Unit of measure : mm

Date : 17-9-2018

Company : Mulcol International B.V.

RF-PP-MW1.1.6

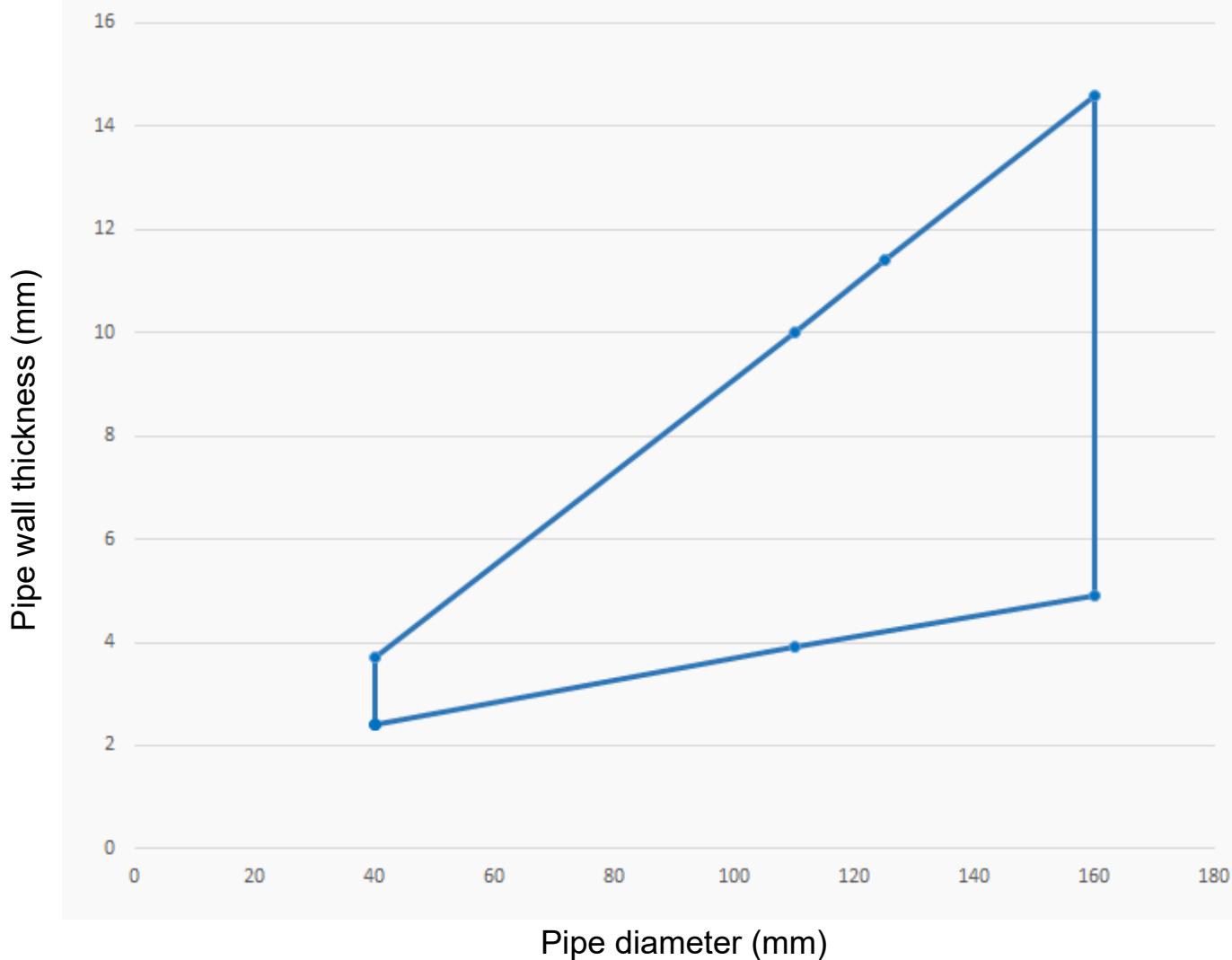
Department : Research & Development

Draftsman : R.M.

A4

PE pipes - EI 120 U/U

Intermediate sizes



Annex A - Resistance to fire classification - Mulcol® Multiwrap

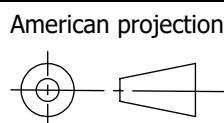
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid floor construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:5

Unit of measure : mm

Date : 9-5-2016

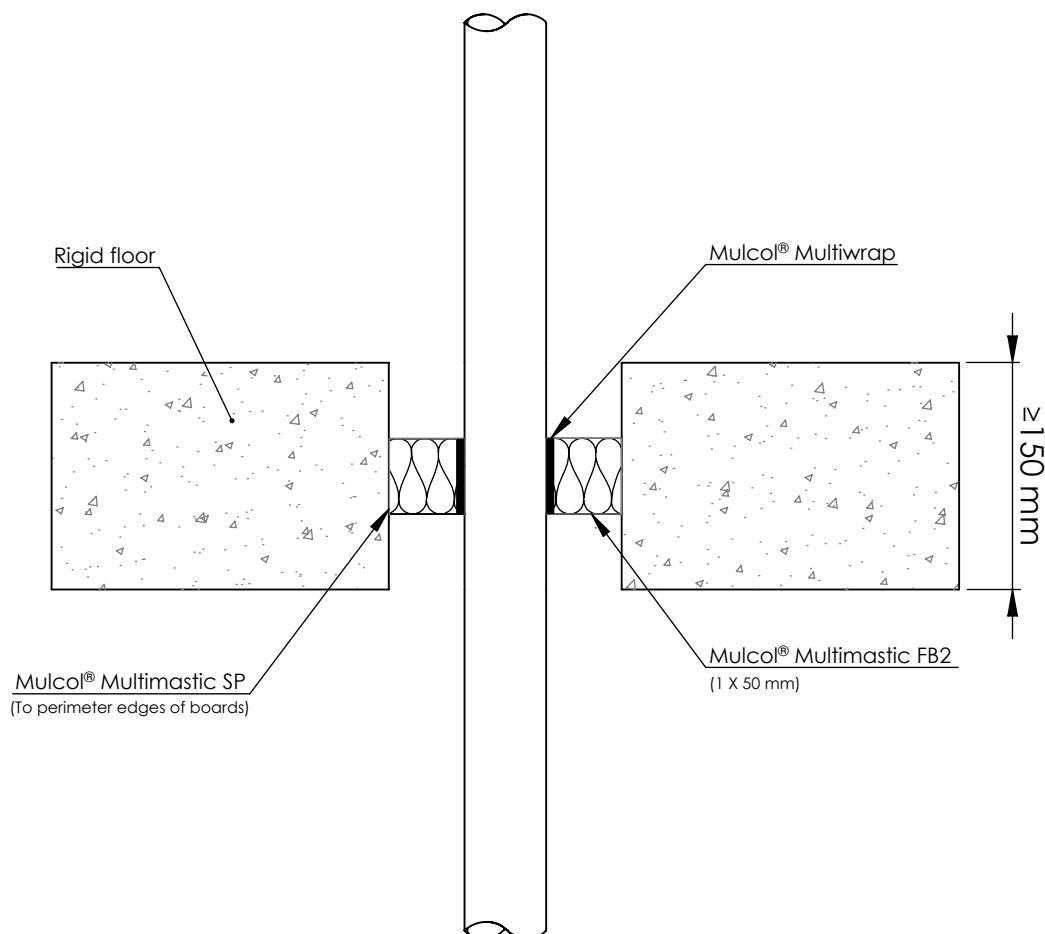
Company : Mulcol International B.V.

RF-PP-MW4.1.2

Department : Research & Development

A4

Draftsman : R.M.



A 3.6 Single side penetration seal with combustible pipes

Services	Classification	Position Mulcol® Multimastic FB2	Mulcol® Multiwrap	Maximum seal	Position services
PVC-U pipe according to EN 1329-1, EN 1452 and EN 1453-1 Ø 110 mm / 3.4 mm wall thickness	EI 90 U/C	Mid-depth of the floor	50 x 3.6 mm (2 layers) centrally fitted	400 x 400 mm	Service fitted at any position within the aperture (min. separation 40 mm from seal edges and 100 mm from other services)

Annex A - Resistance to fire classification - Mulcol® Multiwrap

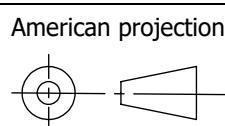
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid floor construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:5

Unit of measure : mm

Date : 9-5-2016

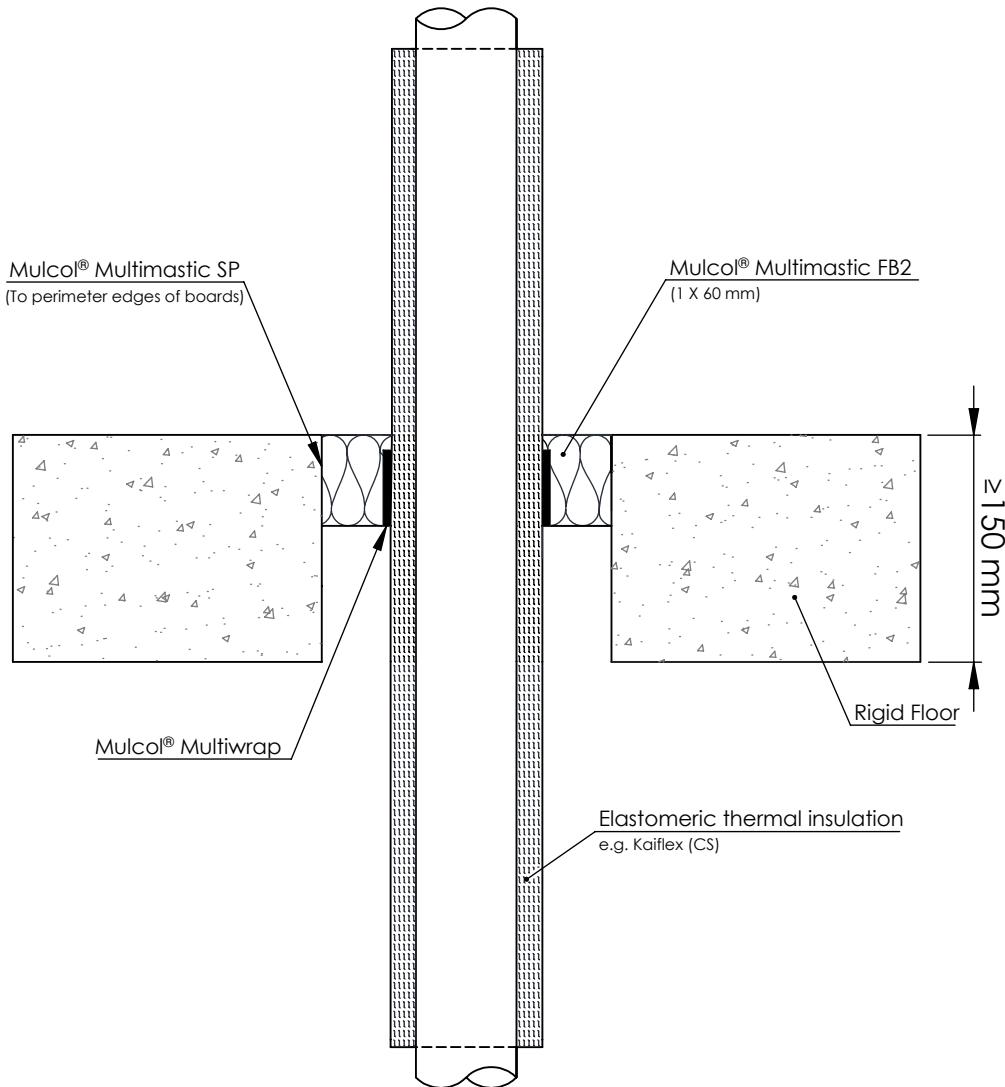
Company : Mulcol International B.V.

RF-ST-MW1.1.2

Department : Research & Development

A4

Draftsman : R.M.



A 3.7 Single side penetration seal with (stainless) steel pipes

Services	Classification	Position Mulcol® Multimastic FB2	Insulation	Mulcol® Multiwrap	Minimum from seal edge
Steel pipe Ø 165 mm / 4.5-14.2 mm wall th.	E 90 C/U, EI 45 C/U	Either side of the floor (or anywhere in between) with a maximum seal size of 2400 x 1200 mm	13 mm elastomeric insulation min. class B-S3, d0 or foil faced Phenolic Foam insulation	50 x 3.6 mm (2 layers) fitted at bottom of seal	25 mm
Steel pipe Ø 165 mm / 4.5-14.2 mm wall th.	EI 90 C/U		19 mm elastomeric insulation min. class B-S3, d0 or foil faced Phenolic Foam insulation		

Annex A - Resistance to fire classification - Mulcol® Multiwrap

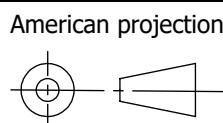
Fire test pipe penetration seal

Mulcol® Multiwrap

Rigid floor construction according to I.2.1

MULCOL

FIRE PROTECTION



Scale : 1:5

Unit of measure : mm

Date : 9-5-2016

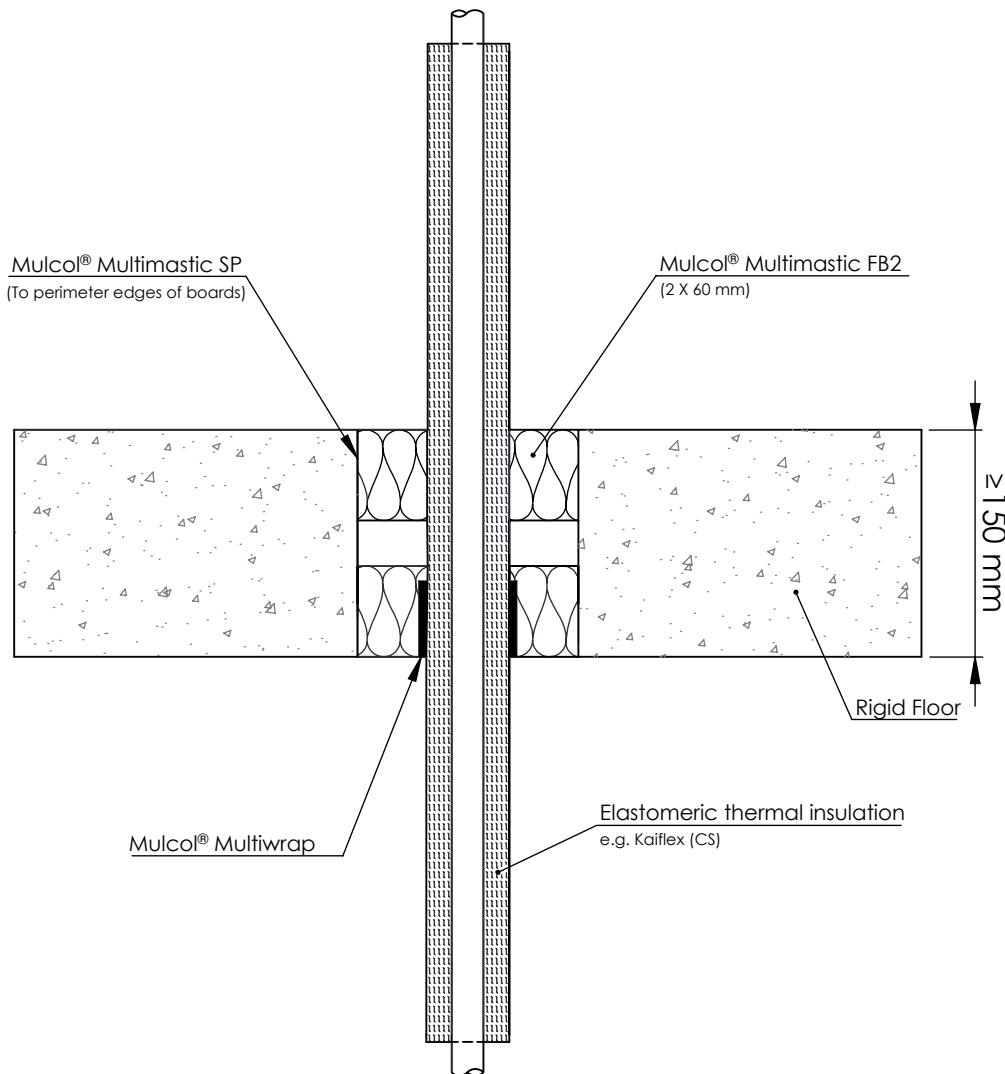
Company : Mulcol International B.V.

RF-ST-MW1.1.1

Department : Research & Development

A4

Draftsman : R.M.



A 3.8 Double side penetration seal with (stainless) steel pipes

Services	Classification	Position Mulcol® Multimastic FB2	Insulation	Mulcol® Multiwrap	Minimum from seal edge
Steel pipe Ø 40 mm / 1-14.2 mm wall th.	E 180 C/U, EI 120 C/U	Both sides of the floor with a maximum seal of 2400 x 1200 mm	13 mm elastomeric insulation min. class B-s3, d0 or foil faced Phenolic Foam insulation	50 x 1.8 mm (1 layer) fitted at bottom of seal	25 mm