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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



European Technical Assessment ETA-21/0120 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® MULTIMASTIC SP

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:

55 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® MULTIMASTIC SP is a sealant used to form a penetration seal around metallic pipes, plastic pipes, composite pipes and electrical cables to reinstate the fire resistance performance of wall and floor constructions, where they have been provided with apertures for the penetration of services.
- 2) The MULCOL® MULTIMASTIC SP is supplied in liquid form contained within 310 & 380 ml cartridges and 600 ml foil packs. The sealant is gunned into the aperture in the separating element/elements and around the service or services, to a specified depth utilising mineral fibre insulation backing material.
- 3) MULCOL® MULTIMASTIC SP contains no carcinogenic substances or mutagenic substances, flame retardants or antimicrobiological agents.
- 4) The applicant submitted a written declaration that MULCOL® MULTIMASTIC SP does not contain substances which have to be 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. An emission report has also been provided.

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.

- 5) The use category of MULCOL® MULTIMASTIC SP 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.

- 1) The intended use of system MULCOL® MULTIMASTIC SP is to reinstate the fire resistance performance of flexible wall constructions, rigid wall constructions and rigid floor constructions where they are penetrated by various metal pipe services with and without combustible insulation, plastic pipes, composite pipes and electrical cables.
- 2) The specific elements of construction that the system MULCOL® MULTIMASTIC SP may be used to provide a penetration seal in, are as follows:
 - a. Flexible walls: The wall must have a minimum thickness of 100 mm and comprise steel studs or timber studs* lined on both faces with minimum 2 layers of 12.5 mm thick boards.
 - b. Rigid walls: The wall must have a minimum thickness of 150 mm and comprise concrete, aerated concrete or masonry, with a minimum density of 650 kg/m³.
 - c. 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/m³.

* 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) The system MULCOL® MULTIMASTIC SP may be used to provide a penetration seal with specific single insulated metal pipes, uninsulated metal pipes, plastic pipes, composite pipes and with specific electrical cables, single or in a bundle (for details see Annex A).
- 4) Apertures in the separating element shall be maximum 300 x 300 mm or 100 x 1000 mm. The annular space/gap around the services shall be infilled with mineral fibre insulation backing material and MULCOL® MULTIMASTIC SP sealant. Blank seals up to 300 x 300 mm are permitted. For full details, see Annex A.
- 5) Pipes shall be supported at maximum 350 mm away from both faces of the wall constructions and from the upper face of floor constructions.
- 6) The provisions made in this European Technical Assessment are based on an assumed working life of the MULCOL® MULTIMASTIC SP of 30 years, provided that the conditions laid down in the product data sheet regarding 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.
- 7) Type Z₂: Intended for uses in internal conditions with humidity lower than 85 % RH excluding temperatures below 0°C, without exposure to rain or UV.

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

Product-type: Sealant	Intended use: Penetration Seal
Basic Requirement	Performance
BWR 1 Mechanical resistance and stability	
None	Not relevant
BWR 2 Safety in case of fire	
Reaction to fire	Class D-s1, d1
Resistance to fire	Annex A
BWR 3 Hygiene, health and environment	
Air permeability (material property)	No performance assessed
Water permeability (material property)	No performance assessed
Release of dangerous substances	Use categories: IA1, S/W3 Declaration of manufacturer
BWR 4 Safety in use	
Mechanical resistance and stability	No performance assessed
Resistance to impact/movement	No performance assessed
Adhesion	No performance assessed
BWR 5 Protection against noise	
Airborne sound insulation	No performance assessed
BWR 6 Energy economy and heat retention	
Thermal properties	No performance assessed
Water vapour permeability	No performance assessed
General aspects relating to fitness for use	
Durability and serviceability	Z ₂

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/JOIndex.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


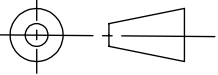


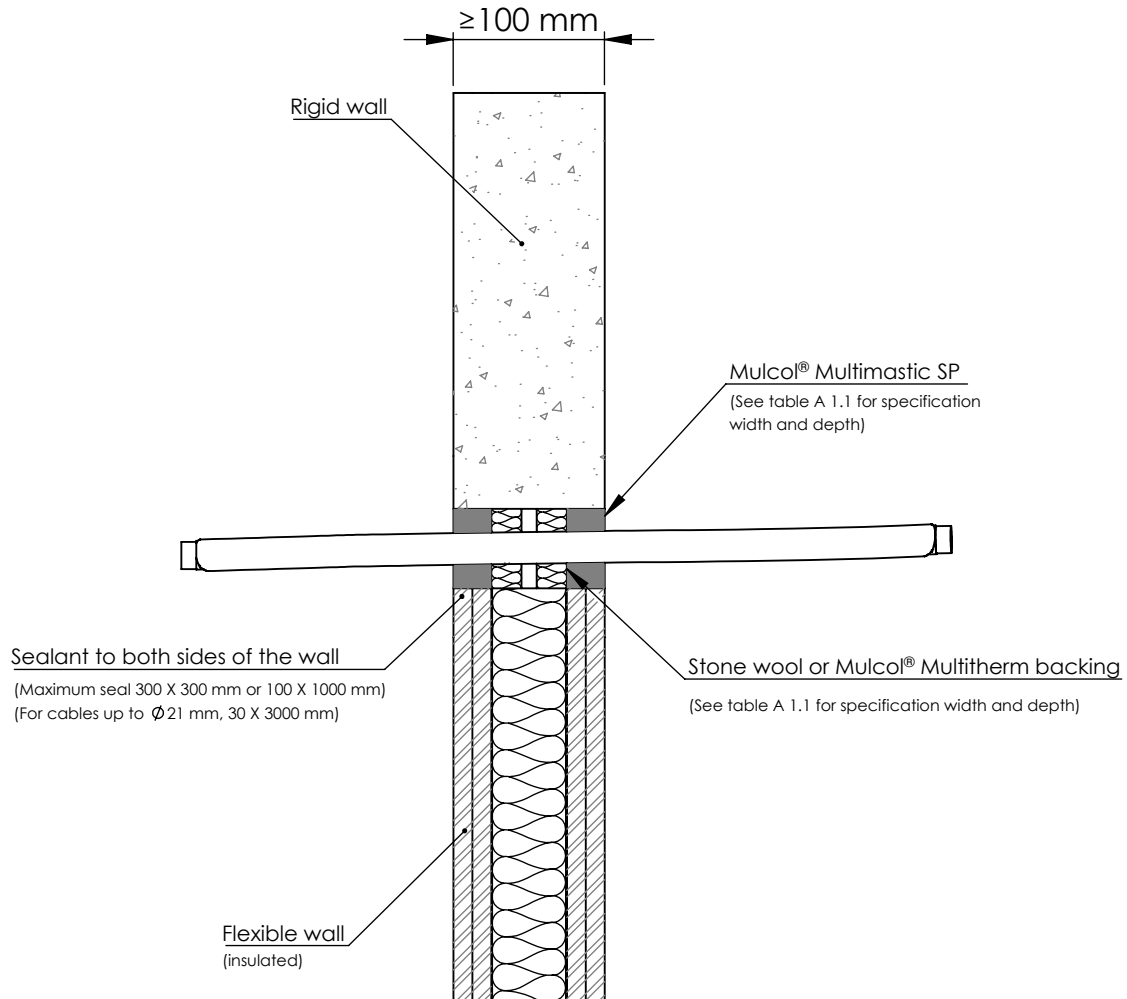
Thomas Bruun

Managing Director, ETA-Danmark

¹ Official Journal of the European Communities L178/52 of 14/7/1999

Annex A - Resistance to fire classification - Mulcol® Multimastic SP


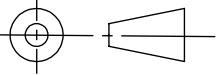
Fire test cable penetration seal Mulcol® Multimastic SP Rigid/Flexible wall construction according to I.2.2			
American projection 	Scale : 1:5	Company : Mulcol International B.V.	FW-EC-MSP2.2.10
	Unit of measure : mm	Department : Research & Development	
	Date : 25-4-2016	Draftsman : R.M.	A4

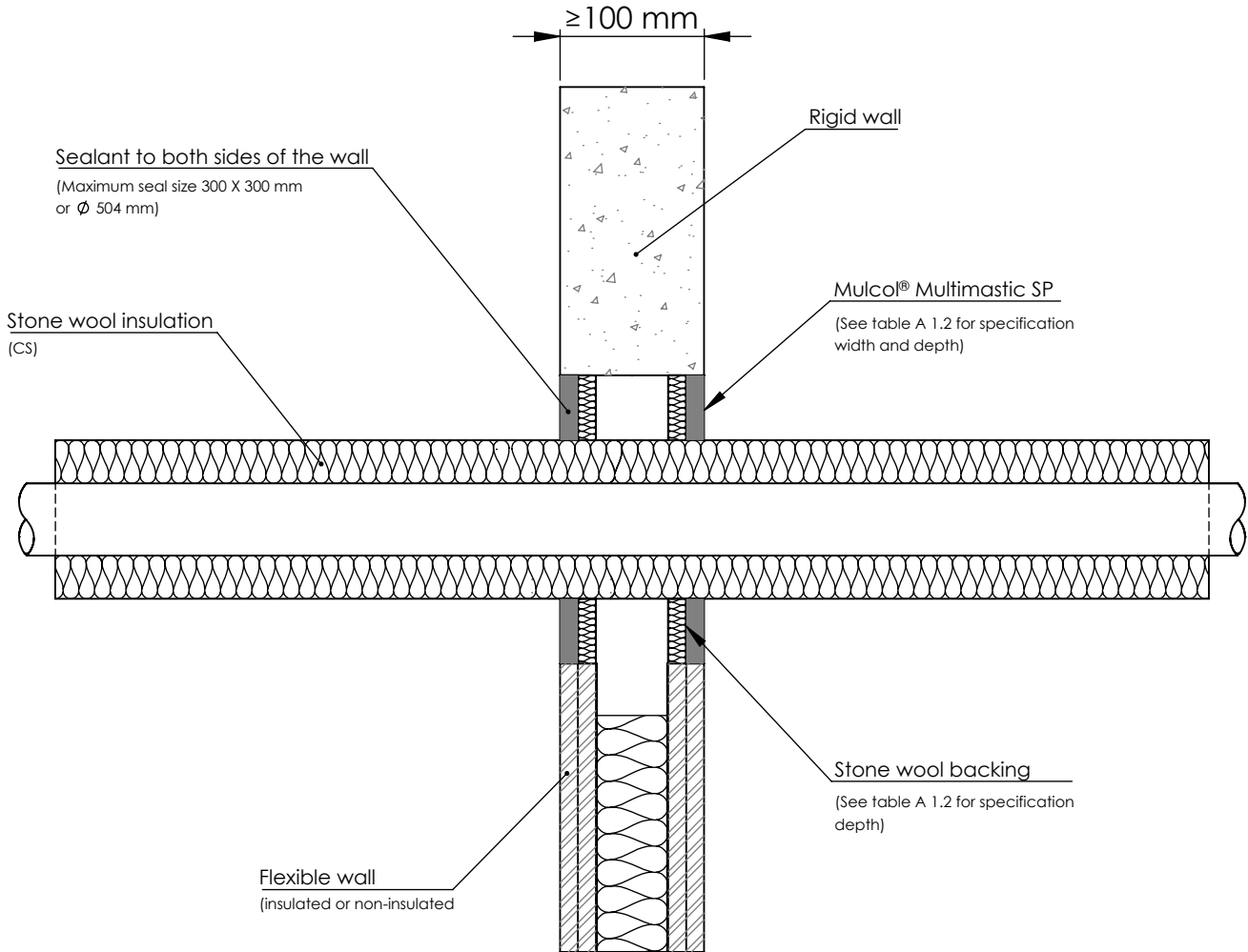


A 1.1 Double side penetration seal with cables

Services	Classification	Sealant depth	Backing	Maximum seal	Minimum seal
Blank seals	EI 120	12.5 mm	20 mm Stone wool insulation, 35 kg/m ³	300 X 300 mm	10 mm
Electrical cables up to Ø 21 mm, single or in bundles up to Ø 100 mm		25 mm	20 mm Stone wool insulation, 40 kg/m ³		
Electrical cables up to Ø 80 mm, single or in bundles up to Ø 100 mm	E 120, EI 60	25 mm	25 mm Mulcol® Multitherm		
Telecommunication cables up to Ø 21 mm, single or in bundles up to Ø 100 mm	EI 120	25 mm	20 mm Stone wool insulation, 40 kg/m ³		
Single 'E cable' - 1 X 185 mm ² core HD603.3 electrical cable with PVC insulation, PVC sheath between Ø 23-27 mm	E 120, EI 60	12.5 mm	20 mm Stone wool insulation, 140 kg/m ³		

Annex A - Resistance to fire classification - Mulcol® Multimastic SP

Fire test pipe penetration seal Mulcol® Multimastic SP Rigid wall construction according to I.2.2			
American projection 	Scale : 1:5	Company : Mulcol International B.V.	RW-ST-MSP2.2.20
	Unit of measure : mm	Department : Research & Development	
	Date : 25-4-2016	Draftsman : R.M.	A4



A 1.2 Double side penetration seal with (stainless) steel pipes

Services	Classification	Sealant depth	Backing	Insulation	Minimum seal																																																														
Steel pipe Ø 30 mm / 2.0-14.2 mm wall th.	EI 120 C/C	12.5 mm	12.5 mm Stone wool insulation, 35 kg/m ³	None	10 mm																																																														
Steel pipe Ø 40 mm / 1.0-14.2 mm wall th.	E 120 C/U, EI 90 C/U			12.5 mm		12.5 mm Stone wool insulation, 35 kg/m ³	20 mm Stone wool insulation, 80 kg/m ³	10 mm																																																											
Steel pipe Ø 40 mm / 1.0-14.2 mm wall th.							E 120 C/U, EI 90 C/U		12.5 mm	12.5 mm Stone wool insulation, 35 kg/m ³	30 mm Stone wool insulation, 80 kg/m ³	10 mm																																																							
Steel pipe Ø 50 mm / 1.2-14.2 mm wall th.													E 120 C/U, EI 90 C/U	12.5 mm	12.5 mm Stone wool insulation, 35 kg/m ³	30 mm Stone wool insulation, 80 kg/m ³	10 mm																																																		
Steel pipe Ø 60 mm / 1.4-14.2 mm wall th.																		E 120 C/U, EI 90 C/U	12.5 mm	12.5 mm Stone wool insulation, 35 kg/m ³	30 mm Stone wool insulation, 80 kg/m ³	10 mm																																													
Steel pipe Ø 75 mm / 1.6-14.2 mm wall th.																							E 120 C/U, EI 90 C/U	12.5 mm	12.5 mm Stone wool insulation, 35 kg/m ³	30 mm Stone wool insulation, 80 kg/m ³	10 mm																																								
Steel pipe Ø 90 mm / 1.9-14.2 mm wall th.																												E 120 C/U, EI 90 C/U	12.5 mm	12.5 mm Stone wool insulation, 35 kg/m ³	30 mm Stone wool insulation, 80 kg/m ³	10 mm																																			
Steel pipe Ø 100 mm / 2.1-14.2 mm wall th.																																	E 120 C/U, EI 90 C/U	12.5 mm	12.5 mm Stone wool insulation, 35 kg/m ³	30 mm Stone wool insulation, 80 kg/m ³	10 mm																														
Steel pipe Ø 115 mm / 2.4-14.2 mm wall th.																																						E 120 C/U, EI 90 C/U	12.5 mm	12.5 mm Stone wool insulation, 35 kg/m ³	30 mm Stone wool insulation, 80 kg/m ³	10 mm																									
Steel pipe Ø 140 mm / 2.9-14.2 mm wall th.																																											E 120 C/U, EI 90 C/U	12.5 mm	12.5 mm Stone wool insulation, 35 kg/m ³	30 mm Stone wool insulation, 80 kg/m ³	10 mm																				
Steel pipe Ø 165 mm / 3.4-14.2 mm wall th.																																																E 120 C/U, EI 90 C/U	12.5 mm	12.5 mm Stone wool insulation, 35 kg/m ³	30 mm Stone wool insulation, 80 kg/m ³	10 mm															
Steel pipe Ø 180 mm / 3.6-14.2 mm wall th.																																																					E 120 C/U, EI 90 C/U	12.5 mm	12.5 mm Stone wool insulation, 35 kg/m ³	30 mm Stone wool insulation, 80 kg/m ³	10 mm										
Steel pipe Ø 200 mm / 4.0-14.2 mm wall th.																																																										E 120 C/U, EI 90 C/U	12.5 mm	12.5 mm Stone wool insulation, 35 kg/m ³	30 mm Stone wool insulation, 80 kg/m ³	10 mm					
Steel pipe Ø 219 mm / 4.3-14.2 mm wall th.																																																															E 120 C/U, EI 90 C/U	12.5 mm	12.5 mm Stone wool insulation, 35 kg/m ³	30 mm Stone wool insulation, 80 kg/m ³	10 mm
Steel pipe Ø 250 mm / 5.0-14.2 mm wall th.																																																																			
Steel pipe Ø 300 mm / 5.9-14.2 mm wall th.	E 120 C/U, EI 90 C/U	12.5 mm	12.5 mm Stone wool insulation, 35 kg/m ³	30 mm Stone wool insulation, 80 kg/m ³	10 mm																																																														
Steel pipe Ø 324 mm / 6.35-14.2 mm wall th.						E 120 C/U, EI 90 C/U	12.5 mm	12.5 mm Stone wool insulation, 35 kg/m ³	30 mm Stone wool insulation, 80 kg/m ³	10 mm																																																									

See graph on page 10 for intermediate sizes

Annex A - Resistance to fire classification - Mulcol® Multimastic SP

Fire test pipe penetration seal
 Mulcol® Multimastic SP
 Rigid/Flexible wall construction according to I.2.2

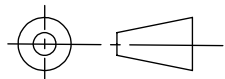


American projection

Scale : 1:5

Company : Mulcol International B.V.

RW-ST-MSP2.2.20



Unit of measure : mm

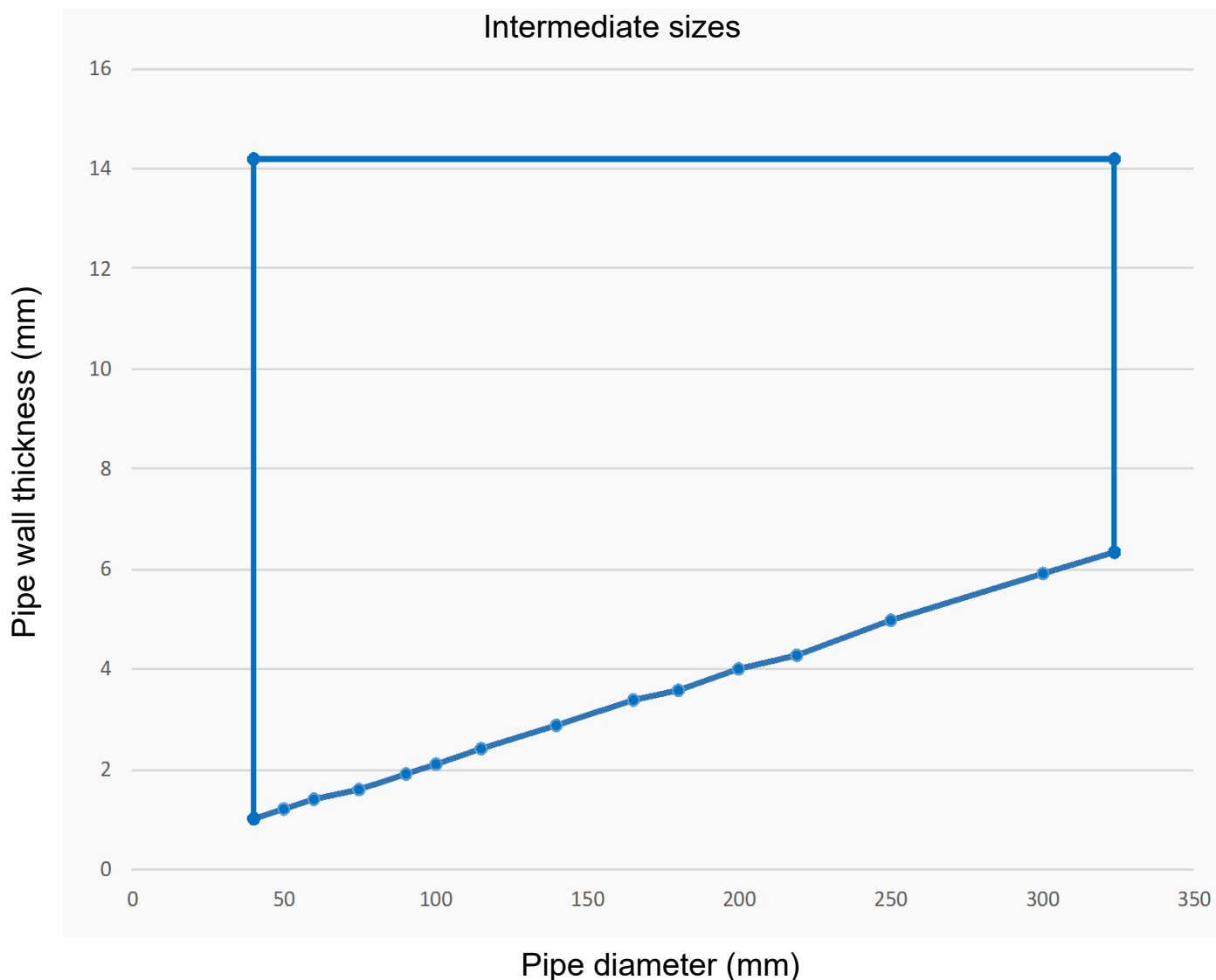
Department : Research & Development

Date : 3-1-2017

Draftsman : R.M.

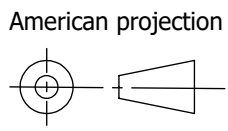
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Intermediate sizes



Annex A - Resistance to fire classification - Mulcol® Multimastic SP

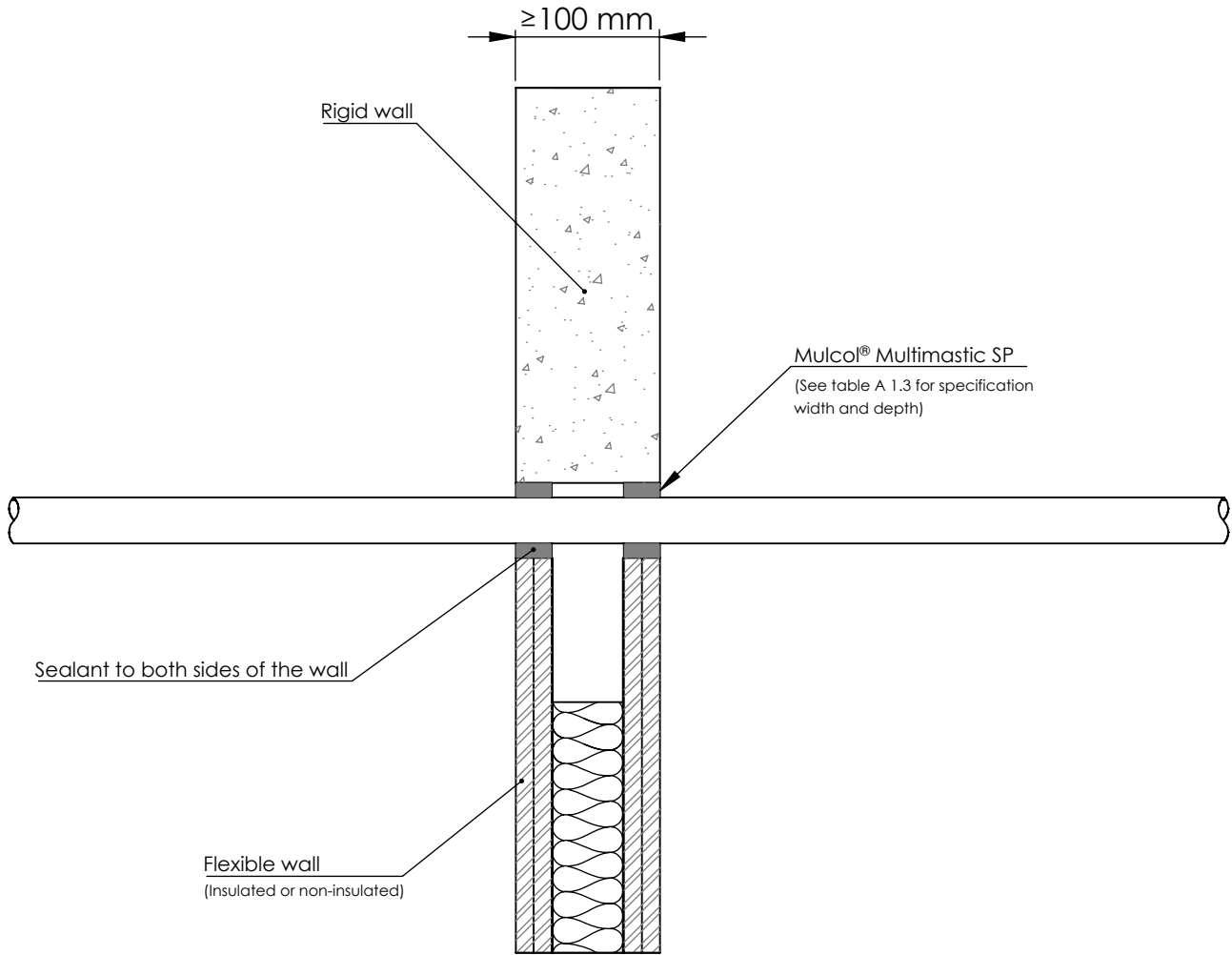
Fire test pipe penetration seal
 Mulcol® Multimastic SP
 Rigid/Flexible wall construction according tot I.2.2



Scale : 1:5
 Unit of measure : mm
 Date : 25-4-2016

Company : Mulcol International B.V.
 Department : Research & Development
 Draftsman : R.M.

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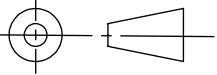


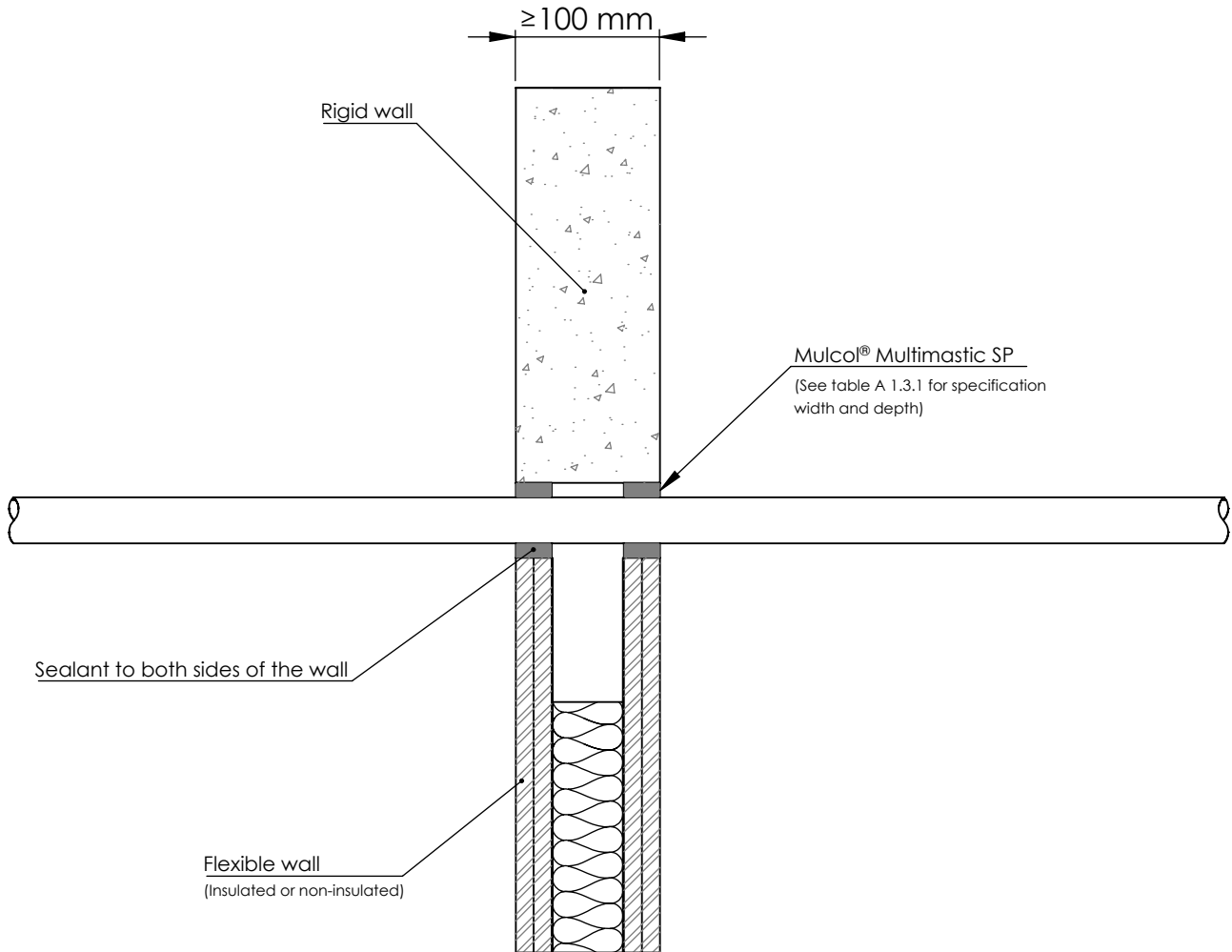
A 1.3 Double side penetration seal with combustible pipes

Services	Pipe size	Classification	Sealant depth	Backing	Seal size	Minimum seal
PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1, PVC-C according to EN 1566-1*	Ø 32 mm / 1.7 mm wall thickness	EI 45 U/C	12.5 mm	None required, PE foam may be utilised	Ø 52 mm	10 mm
PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1, PVC-C according to EN 1566-1*	Ø 32 mm / 1.7 mm wall thickness	EI 90 U/C	25 mm			
PP pipe according to EN 1451-1	Ø 32 mm / 2 mm wall thickness				Ø 90 mm	29 mm

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

Annex A - Resistance to fire classification - Mulcol® Multimastic SP

Fire test pipe penetration seal Mulcol® Multimastic SP Rigid/Flexible wall construction according tot I.2.2			
American projection 	Scale : 1:5	Company : Mulcol International B.V.	FW-PP-MSP2.2.10
	Unit of measure : mm	Department : Research & Development	
	Date : 25-4-2016	Draftsman : R.M.	A4

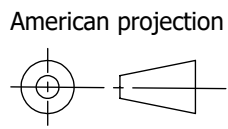


A 1.3.1 Double side penetration seal with combustible pipes

Services	Pipe size	Classification	Sealant depth	Backing	Minimum annular space		
PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1, PVC-C according to EN 1566-1	\varnothing 6-32 mm / 1.0-2.4 mm wall th.	EI 45 U/C	25 mm	None required, PE foam may be utilised	10 mm		
		E 120 U/C, EI 90 U/C			30 mm		
PP pipe according to EN 1451-1	\varnothing 20 mm / 2.2 mm wall th.	EI 120 U/C			25 mm	None required, PE foam may be utilised	30 mm
	\varnothing 20 mm / 2.2-4.4 mm wall th.	EI 60 U/C					10 mm
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	\varnothing 20 mm / 2.0 mm wall th.	EI 60 U/C	25 mm	None required, PE foam may be utilised	10 mm		
		EI 120 U/C			30 mm		

Annex A - Resistance to fire classification - Mulcol® Multimastic SP

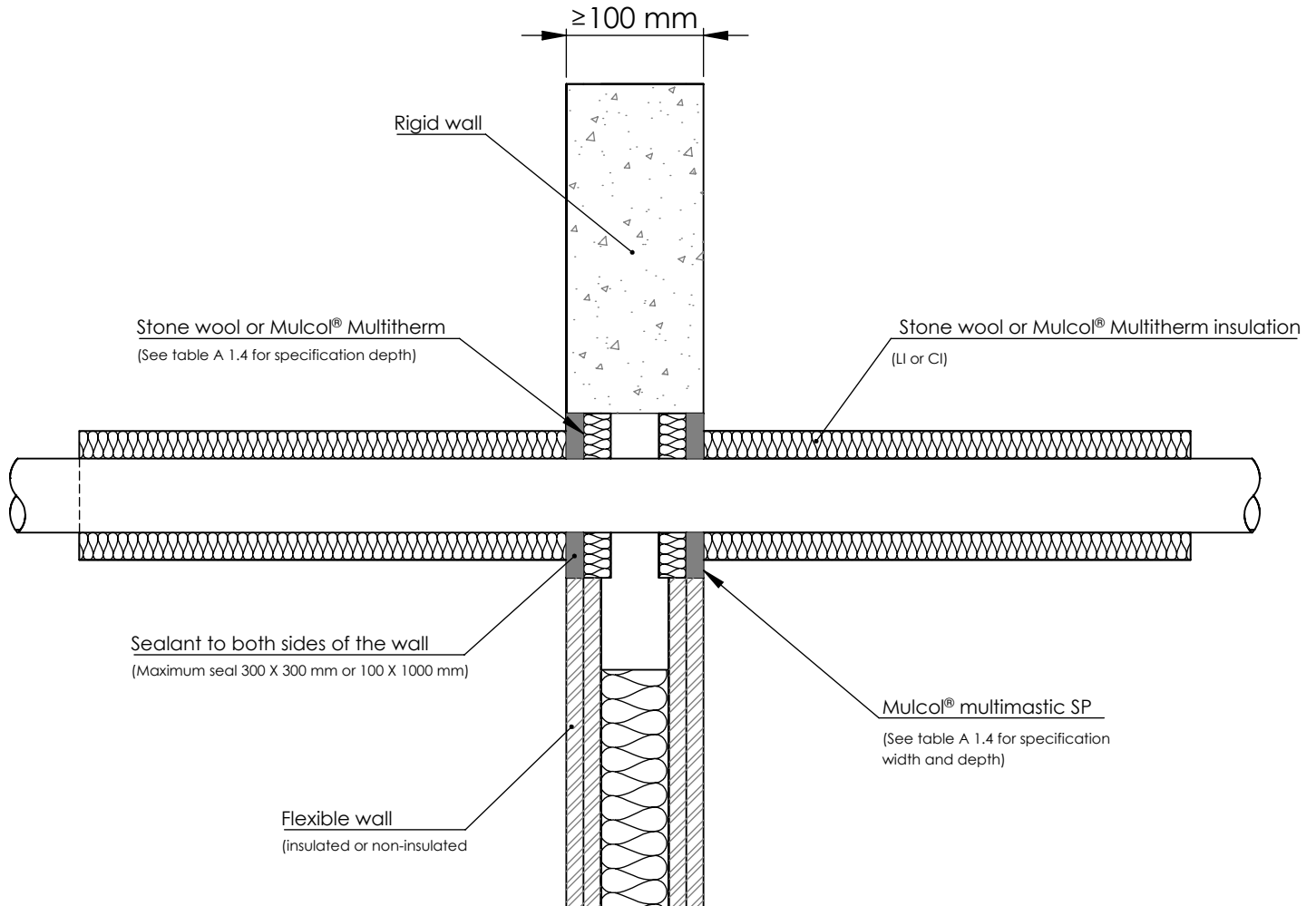
Fire test pipe penetration seal
Mulcol® Multimastic SP
Rigid/Flexible wall construction according to I.2.2



Scale : 1:5
Unit of measure : mm
Date : 25-4-2016

Company : Mulcol International B.V.
Department : Research & Development
Draftsman : R.M.

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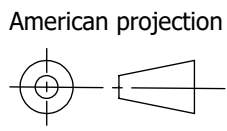


A 1.4 Double side penetration seal with copper and alupex composite pipes

Services	Classification	Sealant depth	Backing	Insulation	Minimum seal
Copper pipe up to $\varnothing 54$ mm / 1-14.2 mm wall th.	EI 120 C/U	12.5 mm	20 mm Stone wool insulation, 40 kg/m ³	500 mm length of 20 mm Stone wool insulation, 80 kg/m ³	10 mm
Alupex composite pipe $\varnothing 75$ mm / 7.5 mm wall th.	EI 60 C/U		20 mm Stone wool insulation, 140 kg/m ³	600 mm length of 25 mm Mulcol® Multitherm insulation	

Annex A - Resistance to fire classification - Mulcol® Multimastic SP

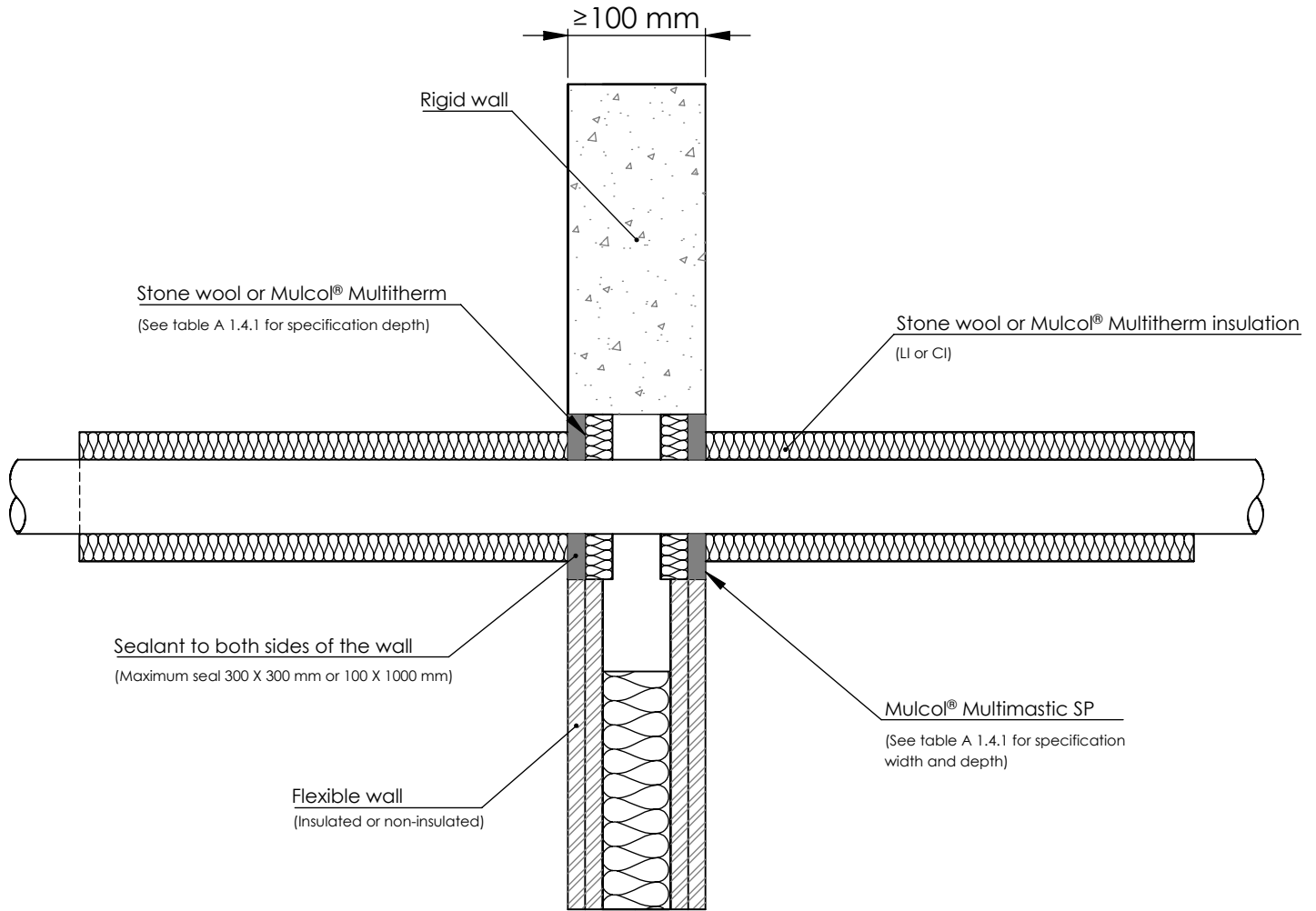
Fire test pipe penetration seal
 Mulcol® Multimastic SP
 Rigid/Flexible wall construction according to I.2.2



Scale : 1:5
 Unit of measure : mm
 Date : 25-4-2016

Company : Mulcol International B.V.
 Department : Research & Development
 Draftsman : R.M.

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A 1.4.1 Double side penetration seal with steel pipes

Services	Classification	Sealant depth	Backing	Insulation	Minimum seal
Steel pipe Ø40 mm / 1-14.2 mm wall th.	EI 120 C/U	12.5 mm	20 mm Stone wool insulation, 40 kg/m ³	500 mm length of 20 mm Stone wool insulation, 80 kg/m ³	10 mm
Steel pipe Ø40 mm / 1-14.2 mm wall th.	E 120, EI 90 C/U				
Steel pipe Ø50 mm / 1.2-14.2 mm wall th.					
Steel pipe Ø60 mm / 1.4-14.2 mm wall th.					
Steel pipe Ø75 mm / 1.7-14.2 mm wall th.					
Steel pipe Ø90 mm / 2-14.2 mm wall th.					
Steel pipe Ø100 mm / 2.2-14.2 mm wall th.					
Steel pipe Ø115 mm / 2.5-14.2 mm wall th.					
Steel pipe Ø140 mm / 3-14.2 mm wall th.	E 120, EI 90 C/U				
Steel pipe Ø165 mm / 3.5-14.2 mm wall th.					
Steel pipe Ø180 mm / 3.8-14.2 mm wall th.					
Steel pipe Ø200 mm / 4.2-14.2 mm wall th.					
Steel pipe Ø219 mm / 4.5-14.2 mm wall th.					

See graph on page 15 for intermediate sizes

Annex A - Resistance to fire classification - Mulcol® Multimastic SP

Fire test pipe penetration seal
 Mulcol® Multimastic SP
 Rigid/Flexible wall construction according to I.2.2

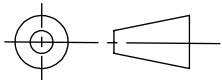


American projection

Scale : 1:5

Company : Mulcol International B.V.

RW-ST-MSP2.2.20



Unit of measure : mm

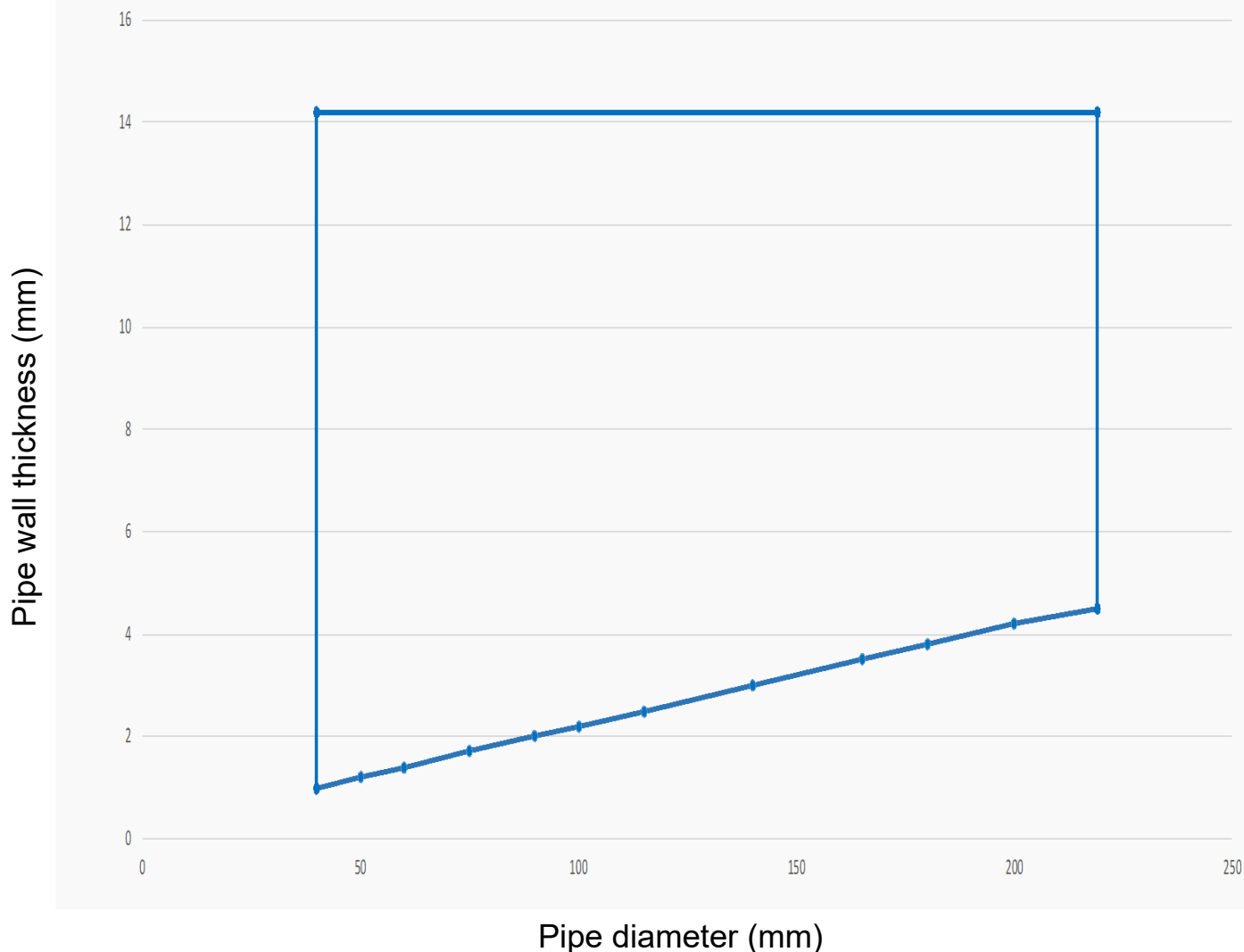
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Date : 3-12-2016


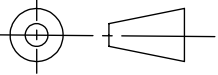
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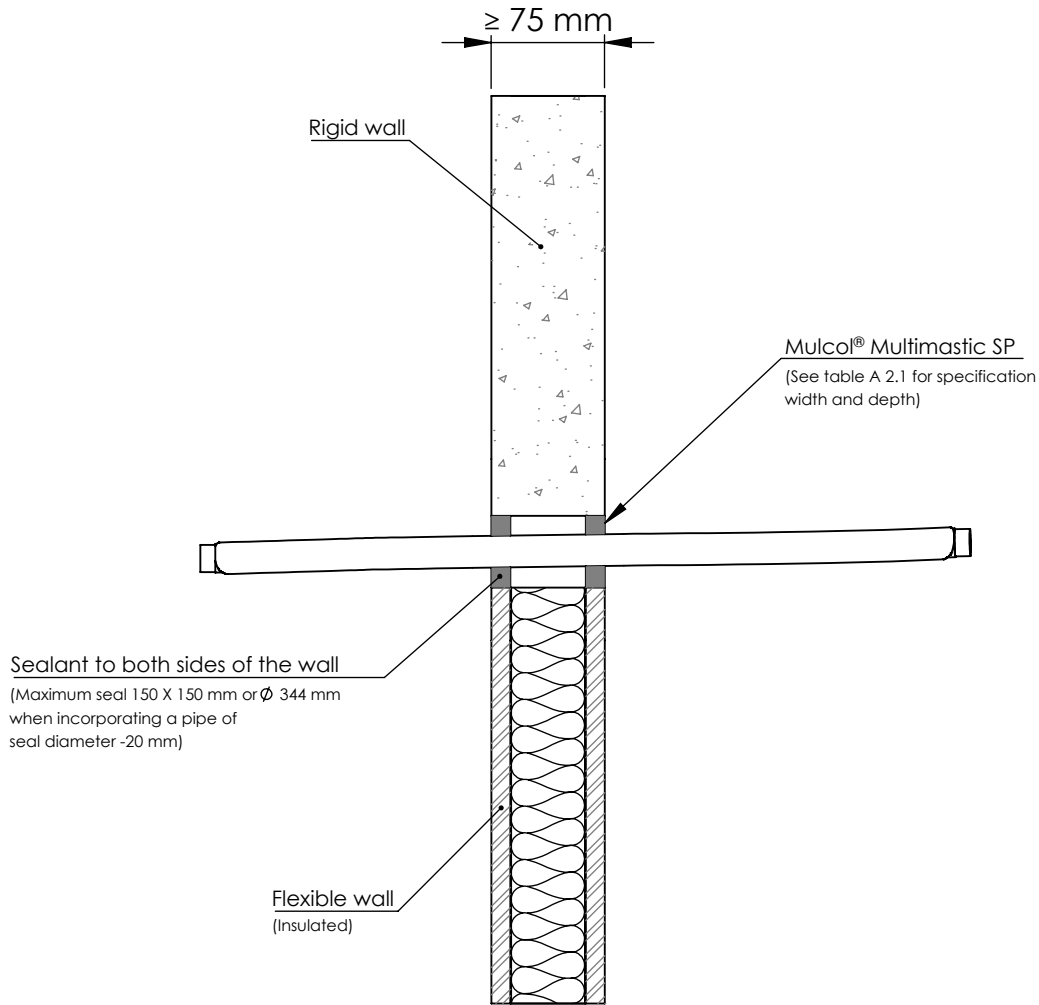
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Intermediate sizes



Annex A - Resistance to fire classification - Mulcol® Multimastic SP

Fire test cable penetration seal Mulcol® Multimastic SP Rigid/Flexible wall construction according to I.2.2			
American projection 	Scale : 1:5	Company : Mulcol International B.V.	FW-EC-MSP2.2.10
	Unit of measure : mm	Department : Research & Development	
	Date : 17-7-2017	Draftsman : R.M.	A4



A 2.1 Double side penetration seal with cables

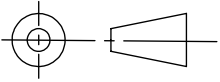
Services	Classification	Sealant depth	Backing	Maximum seal	Minimum seal
Blank seals	EI 60	12.5 mm	Any material	150 X 150 mm or Ø 344 mm	10 mm
Single electrical cables up to Ø 21 mm	E 60, EI 45		None		
Electrical cables up to Ø 21 mm, in bundles up to Ø 100 mm	E 45, EI 30				

Annex A - Resistance to fire classification - Mulcol® Multimastic SP

Fire test cable penetration seal
 Mulcol® Multimastic SP
 Rigid/Flexible wall construction according to I.2.2



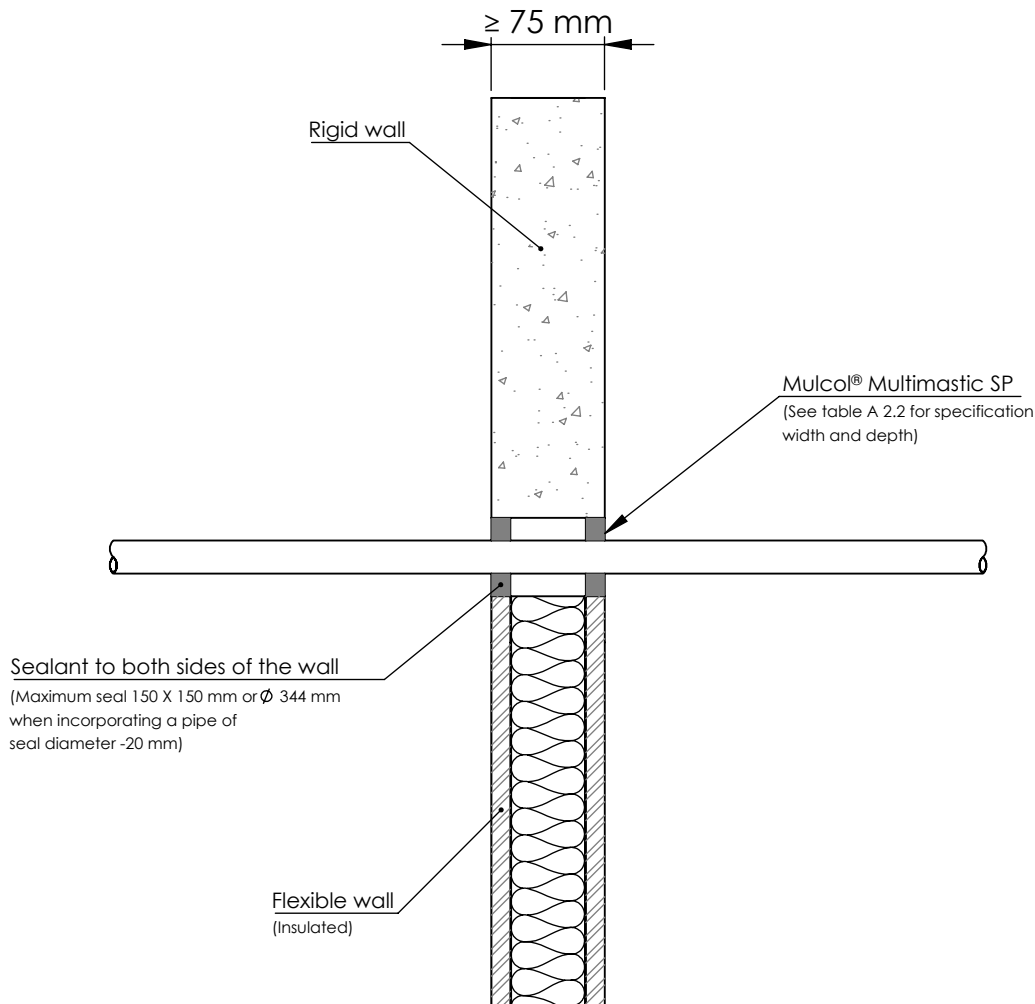
American projection



Scale : 1:5
 Unit of measure : mm
 Date : 25-4-2016

Company : Mulcol International B.V.
 Department : Research & Development
 Draftsman : R.M.

FW-EC-MSP2.2.10
 A4

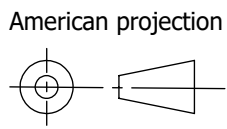


A 2.2 Double side penetration seal with (stainless) steel pipes

Services	Classification	Sealant depth	Backing	Maximum seal	Minimum seal
Steel pipe Ø 5-22 mm / 0.7-11 mm wall thickness	E 60 C/U, EI 30 C/U	12.5 mm	None	150 X 150 mm or Ø 344 mm	10 mm

Annex A - Resistance to fire classification - Mulcol® Multimastic SP

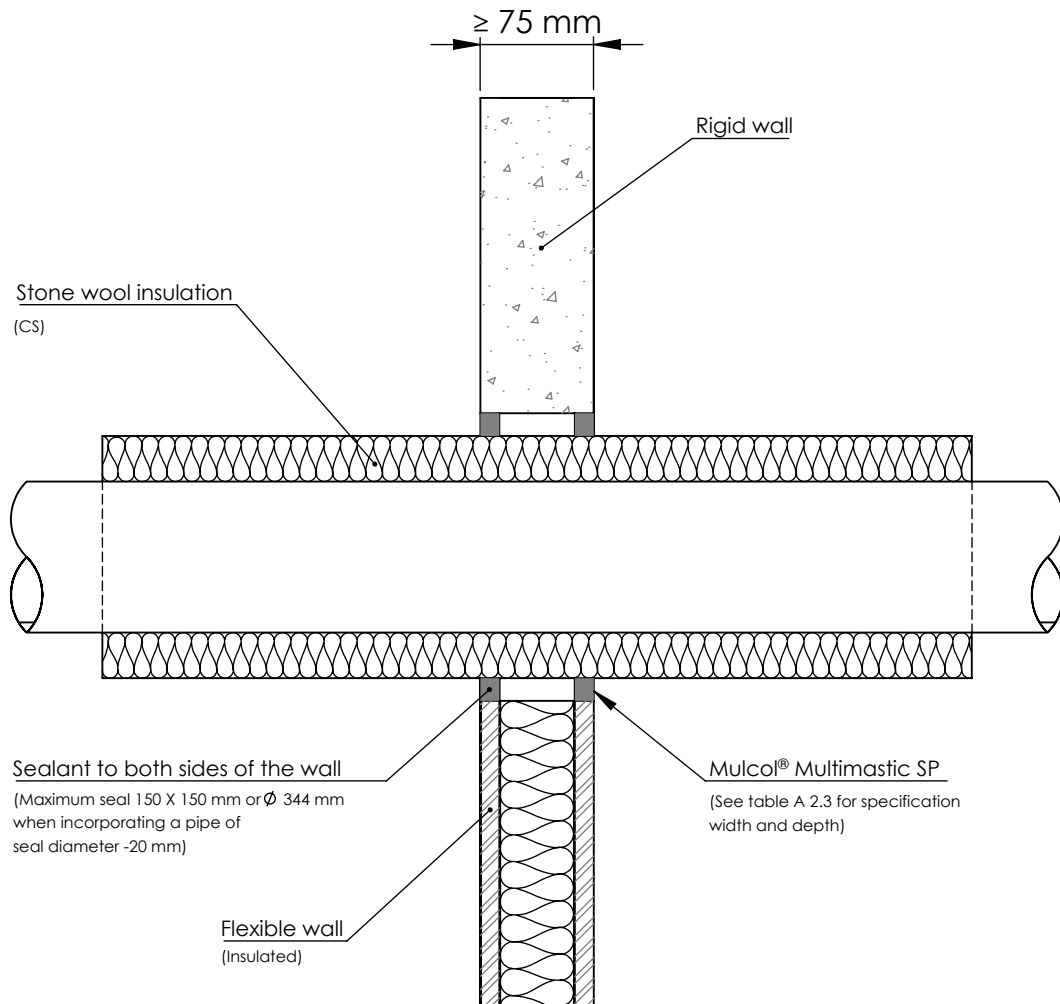
Fire test cable penetration seal
 Mulcol® Multimastic SP
 Rigid/Flexible wall construction according to I.2.2



Scale : 1:5
 Unit of measure : mm
 Date : 17-7-2017

Company : Mulcol International B.V.
 Department : Research & Development
 Draftsman : R.M.

FW-ST-MSP2.2.20
 A4



A 2.3 Double side penetration seal with (stainless) steel pipes

Services	Classification	Sealant depth	Backing	Insulation	Minimum seal
Steel pipe \varnothing 40 mm / 1-14.2 mm wall thickness	E 60 C/U, EI 45 C/U	12.5 mm	None	20 mm Stone wool insulation, 80 kg/m ³	10 mm
Steel pipe \varnothing 40-324 mm / 1-14.2 mm wall thickness				30 mm Stone wool insulation, 80 kg/m ³	

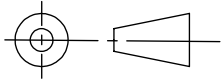
See graph on page 19 for intermediate sizes

Annex A - Resistance to fire classification - Mulcol® Multimastic SP

Fire test pipe penetration seal
 Mulcol® Multimastic SP
 Rigid/Flexible wall construction according to I.2.2



American projection



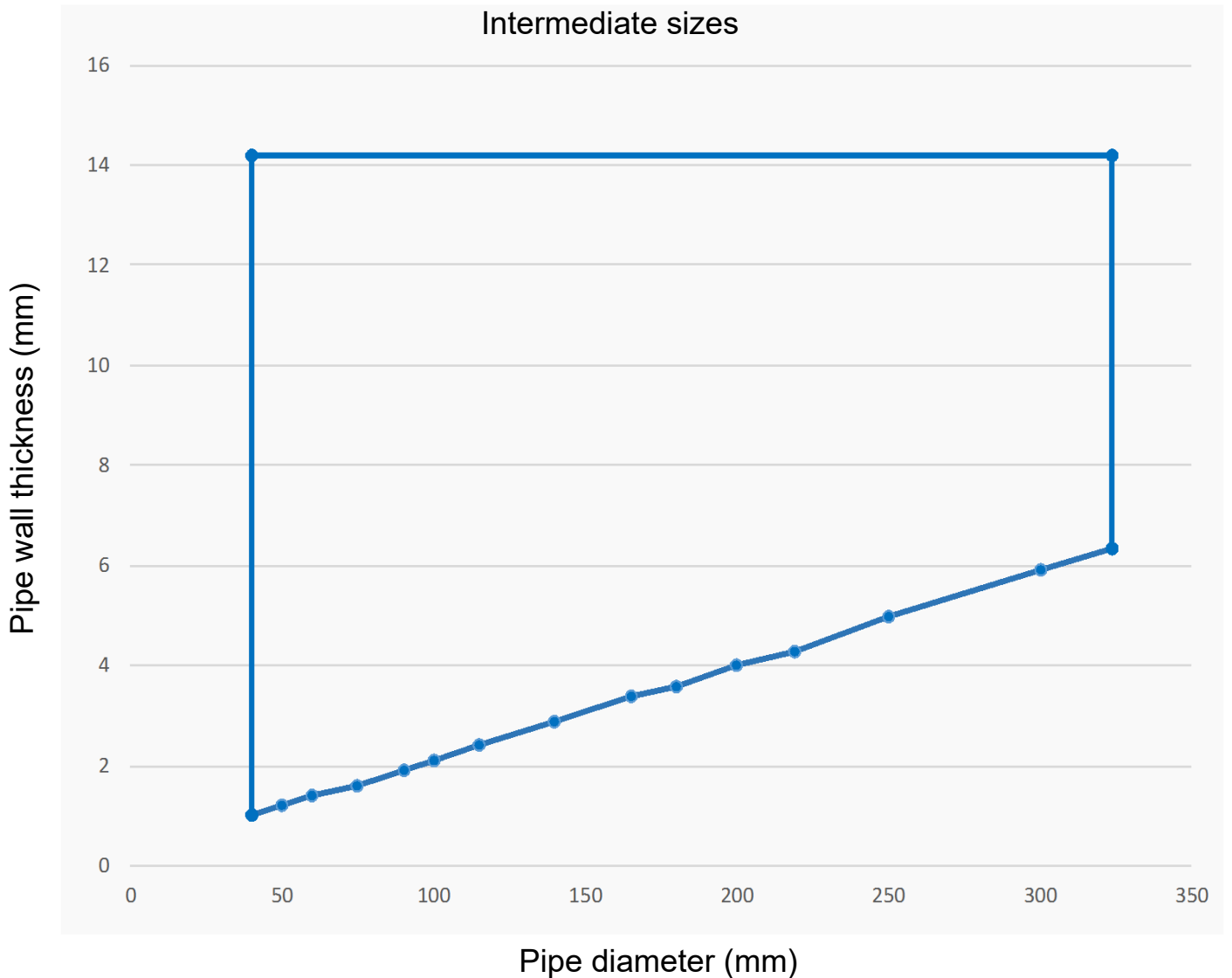
Scale : 1:5
 Unit of measure : mm
 Date : 17-7-2017

Company : Mulcol International B.V.
 Department : Research & Development
 Draftsman : R.M.


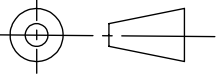
RW-ST-MSP2.2.20

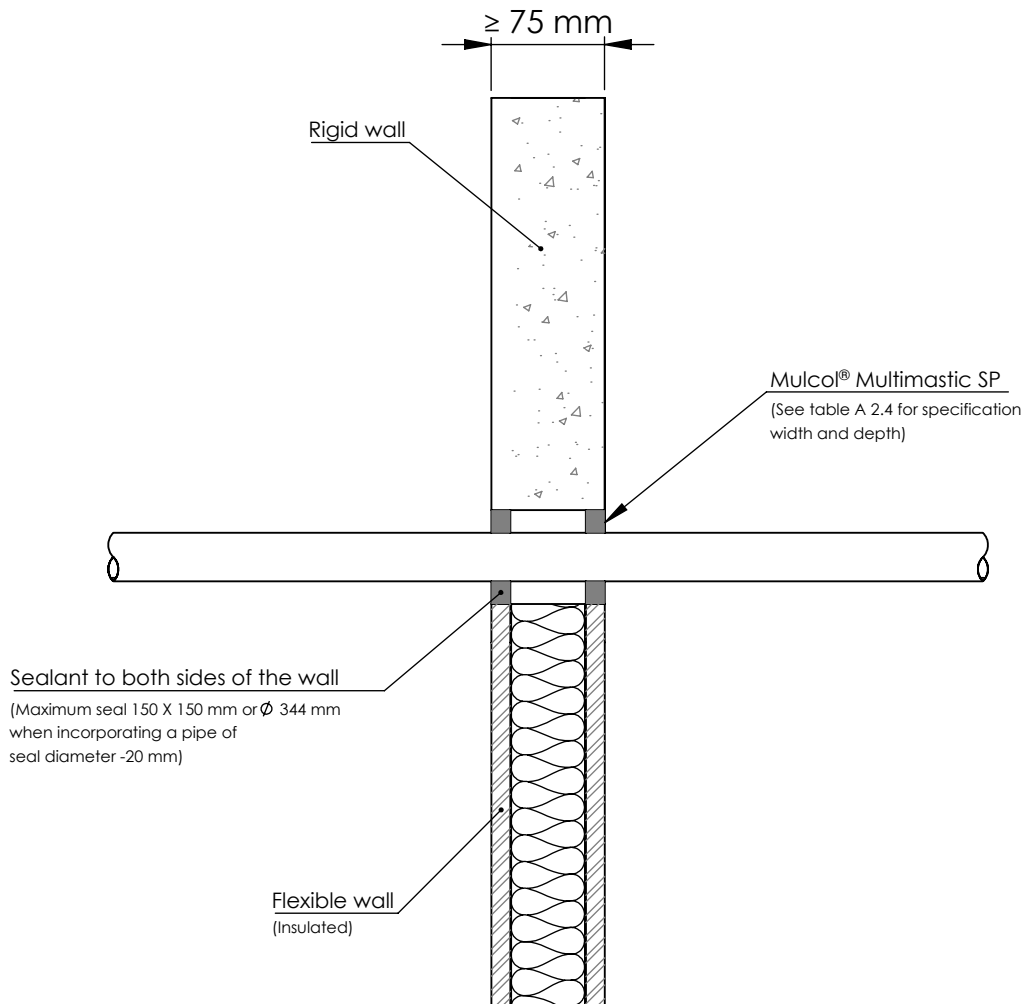
A4

Intermediate sizes



Annex A - Resistance to fire classification - Mulcol® Multimastic SP


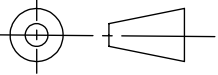
Fire test cable penetration seal Mulcol® Multimastic SP Rigid/Flexible wall construction according to I.2.2			
American projection 	Scale : 1:5	Company : Mulcol International B.V.	FW-PP-MSP2.2.10
	Unit of measure : mm	Department : Research & Development	
	Date : 17-7-2017	Draftsman : R.M.	A4

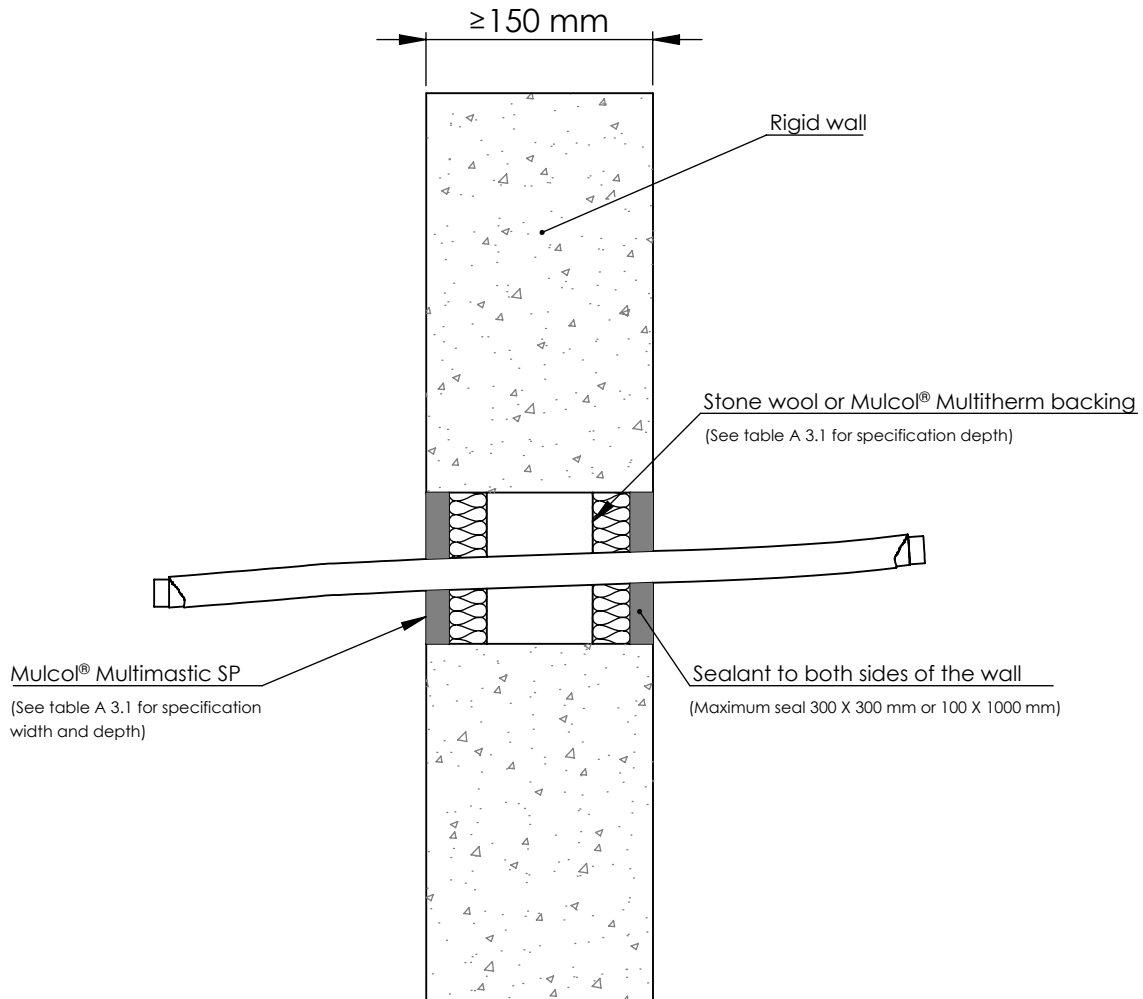


A 2.4 Double side penetration seal with combustible pipes

Services	Pipe size	Classification	Sealant depth	Backing	Minimum seal
PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1, PVC-C according to EN 1566-1, with bundle of cables up to \varnothing 21 mm	\varnothing 6-32 mm / 1.0-1.8 mm wall th.	E 60 U/C, EI 45 U/C	12.5 mm	None	10 mm
PP pipe according to EN 1451-1	\varnothing 20 mm / 2.3 mm wall th.	EI 45 U/C			
	PP pipe according to EN 1451-1, with bundle of cables up to \varnothing 21 mm	\varnothing 21-32 mm / 2.3-4.4 mm wall th.			
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		\varnothing 20 mm / 2.0 mm wall th.			
	\varnothing 20 mm / 2.0 mm wall th.	EI 45 U/C			
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, with bundle of cables up to \varnothing 21 mm	\varnothing 20 mm / 2.0-3.0 mm wall th.	EI 30 U/C			
		E 45 U/C, EI 30 U/C			

Annex A - Resistance to fire classification - Mulcol® Multimastic SP

Fire test cable penetration seal Mulcol® Multimastic SP Rigid wall construction according to I.2.2			
American projection 	Scale : 1:5	Company : Mulcol International B.V.	RW-EC-MSP2.2.10
	Unit of measure : mm	Department : Research & Development	
	Date : 25-4-2016	Draftsman : R.M.	A4

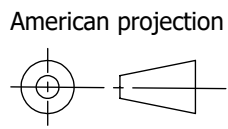


A 3.1 Double side penetration seal with cables

Services	Classification	Sealant depth	Backing	Minimum seal
Blank seals	EI 240	15 mm	25 mm Stone wool insulation, 35 kg/m ³	10 mm
Electrical cables up to $\varnothing 21$ mm, single or in bundle	E 240, EI 120			
Electrical cables $\varnothing 22-80$ mm, single or in bundle	E 120, EI 60			
Blank seals	EI 240	25 mm	48 mm Mulcol® Multitherm insulation	
Electrical cables up to $\varnothing 80$ mm, single or in bundle	E 240, EI 60			
Telecom cables up to $\varnothing 21$ mm, single or in a bundle up to $\varnothing 100$ mm	EI 240			

Annex A - Resistance to fire classification - Mulcol® Multimastic SP

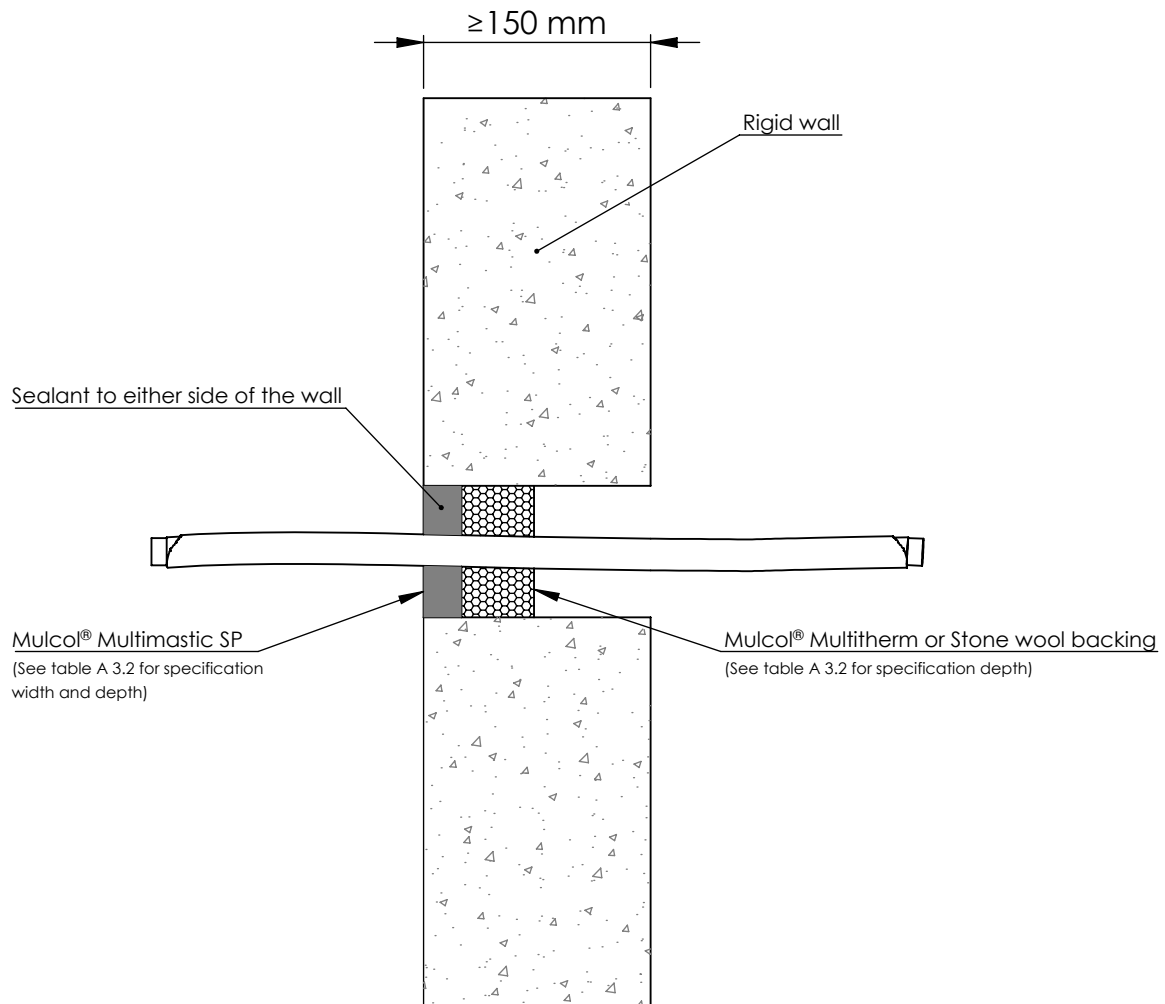
Fire test cable penetration seal
 Mulcol® Multimastic SP
 Rigid wall construction according to I.2.2



Scale : 1:5
 Unit of measure : mm
 Date : 25-4-2016

Company : Mulcol International B.V.
 Department : Research & Development
 Draftsman : R.M.


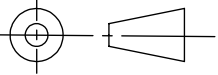
RW-EC-MSP1.2.10
 A4

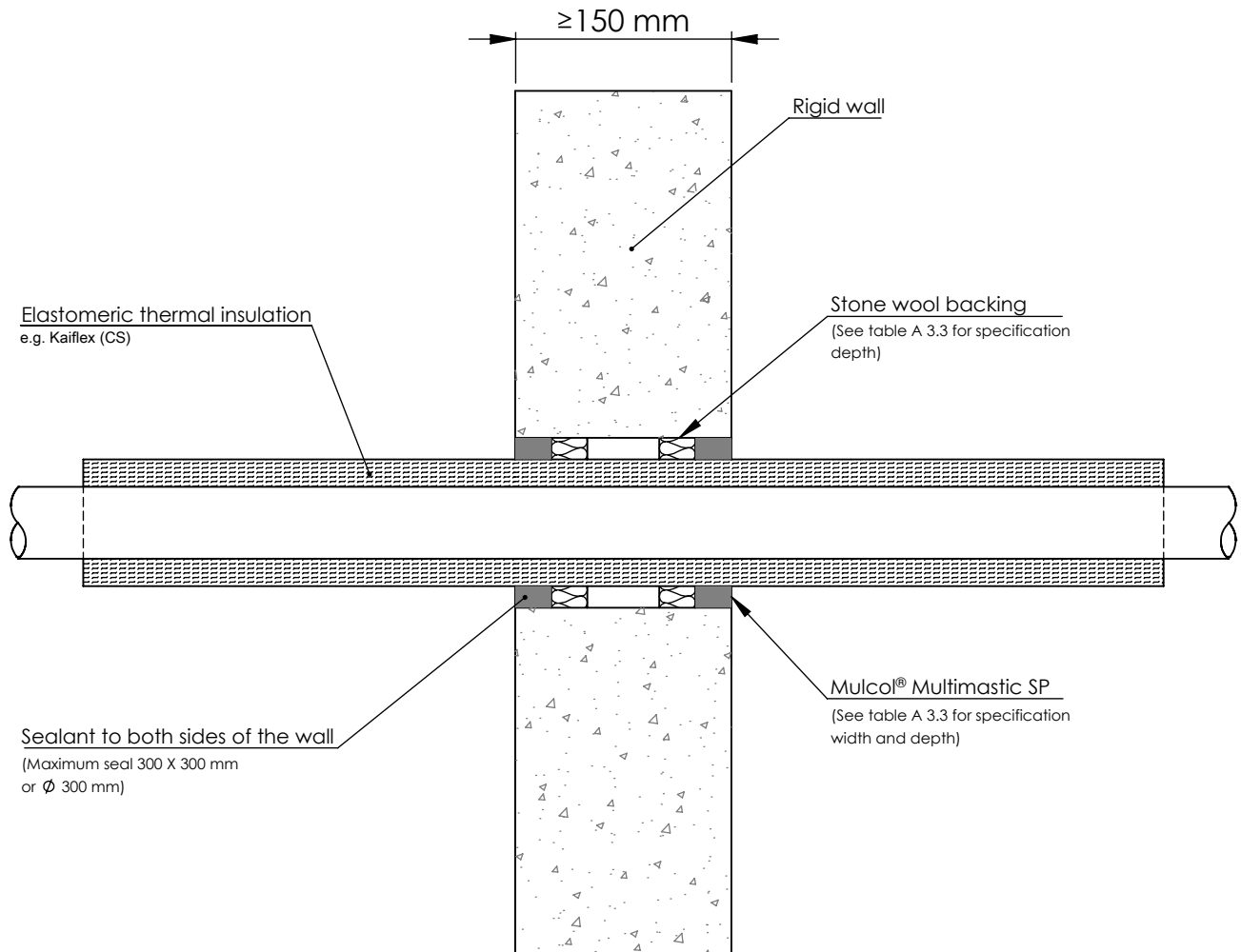


A 3.2 Single side penetration seal with cables

Services	Classification	Sealant depth	Backing	Seal size	Minimum between cable and edge of seal
Single electrical cable up to $\varnothing 21$ mm	E 240, EI 90	25 mm	48 mm Mulcol® Multitherm Backing	$\varnothing 87$ mm	7 mm
Blank seals	E 240, EI 60			300 X 300 mm	
Single electrical cables up to $\varnothing 21$ mm				35 X 35 mm / $\varnothing 36$ mm	
Blank seals	E 240, EI 120				
Single electrical cables up to $\varnothing 21$ mm					

Annex A - Resistance to fire classification - Mulcol® Multimastic SP


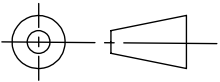
Fire test pipe penetration seal Mulcol® Multimastic SP Rigid wall construction according to I.2.2			
American projection 	Scale : 1:5	Company : Mulcol International B.V.	RW-ST-MSP2.2.22
	Unit of measure : mm	Department : Research & Development	
	Date : 17-7-2017	Draftsman : R.M.	A4

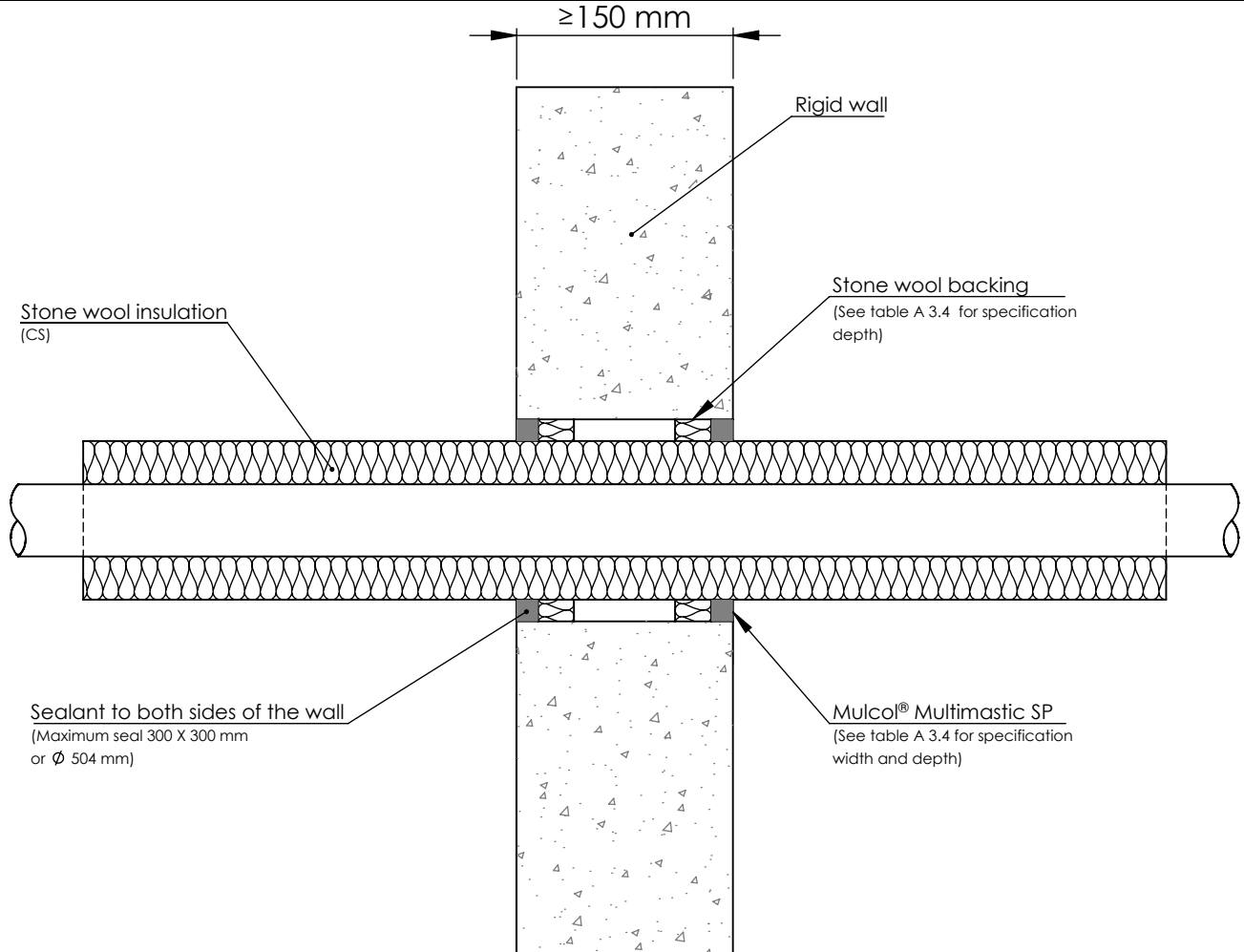


A 3.3 Double side penetration seal with (stainless) steel pipes

Services	Classification	Sealant depth	Backing	Insulation	Minimum seal
Steel pipe \varnothing 22 mm / 2.0-11 mm wall th.	E 240 C/U, EI 180 C/U	25 mm	25 mm Stone wool insulation, 35 kg/m ³	13 mm thick Elastomeric insulation minimum class B-s3,d0	10 mm
Steel pipe \varnothing 22-114 mm / 2.0-11 mm wall th.	E 120 C/U, EI 90 C/U			13-25 mm thick Elastomeric insulation minimum class B-s3,d0	
Steel pipe \varnothing 22-114 mm / 2.0-11 mm wall th.	EI 60 C/U			25-50 mm thick Elastomeric insulation minimum class B-s3,d0	

Annex A - Resistance to fire classification - Mulcol® Multimastic SP

Fire test pipe penetration seal Mulcol® Multimastic SP Rigid wall construction according to I.2.2			
American projection 	Scale : 1:5	Company : Mulcol International B.V.	RW-ST-MSP2.2.20
	Unit of measure : mm	Department : Research & Development	
	Date : 17-7-2017	Draftsman : R.M.	A4



A 3.4 Double side penetration seal with (stainless) steel pipes

Services	Classification	Sealant depth	Backing	Insulation	Minimum seal
Steel pipe \varnothing 40 mm / 1.0-14.2 mm wall th.	EI 240 C/U	15 mm	25 mm Stone wool insulation, 35 kg/m ³	20 mm Stone wool insulation, 40 kg/m ³	10 mm
Steel pipe \varnothing 40 mm / 1.0-14.2 mm wall th.				30-80 mm Stone wool insulation, 80 kg/m ³	
Steel pipe \varnothing 50 mm / 1.2-14.2 mm wall th.					
Steel pipe \varnothing 60 mm / 1.4-14.2 mm wall th.					
Steel pipe \varnothing 75 mm / 1.6-14.2 mm wall th.					
Steel pipe \varnothing 90 mm / 1.9-14.2 mm wall th.					
Steel pipe \varnothing 100 mm / 2.1-14.2 mm wall th.					
Steel pipe \varnothing 115 mm / 2.4-14.2 mm wall th.					
Steel pipe \varnothing 140 mm / 2.9-14.2 mm wall th.					
Steel pipe \varnothing 165 mm / 3.4-14.2 mm wall th.					
Steel pipe \varnothing 180 mm / 3.6-14.2 mm wall th.					
Steel pipe \varnothing 200 mm / 4.0-14.2 mm wall th.					
Steel pipe \varnothing 219 mm / 4.3-14.2 mm wall th.					
Steel pipe \varnothing 250 mm / 5.0-14.2 mm wall th.					
Steel pipe \varnothing 300 mm / 5.9-14.2 mm wall th.					
Steel pipe \varnothing 324 mm / 6.35-14.2 mm wall th.					

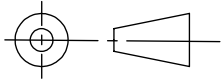
See graph on page 25 for intermediate sizes

Annex A - Resistance to fire classification - Mulcol® Multimastic SP

Fire test pipe penetration seal
 Mulcol® Multimastic SP
 Rigid/Flexible wall construction according to I.2.2



American projection



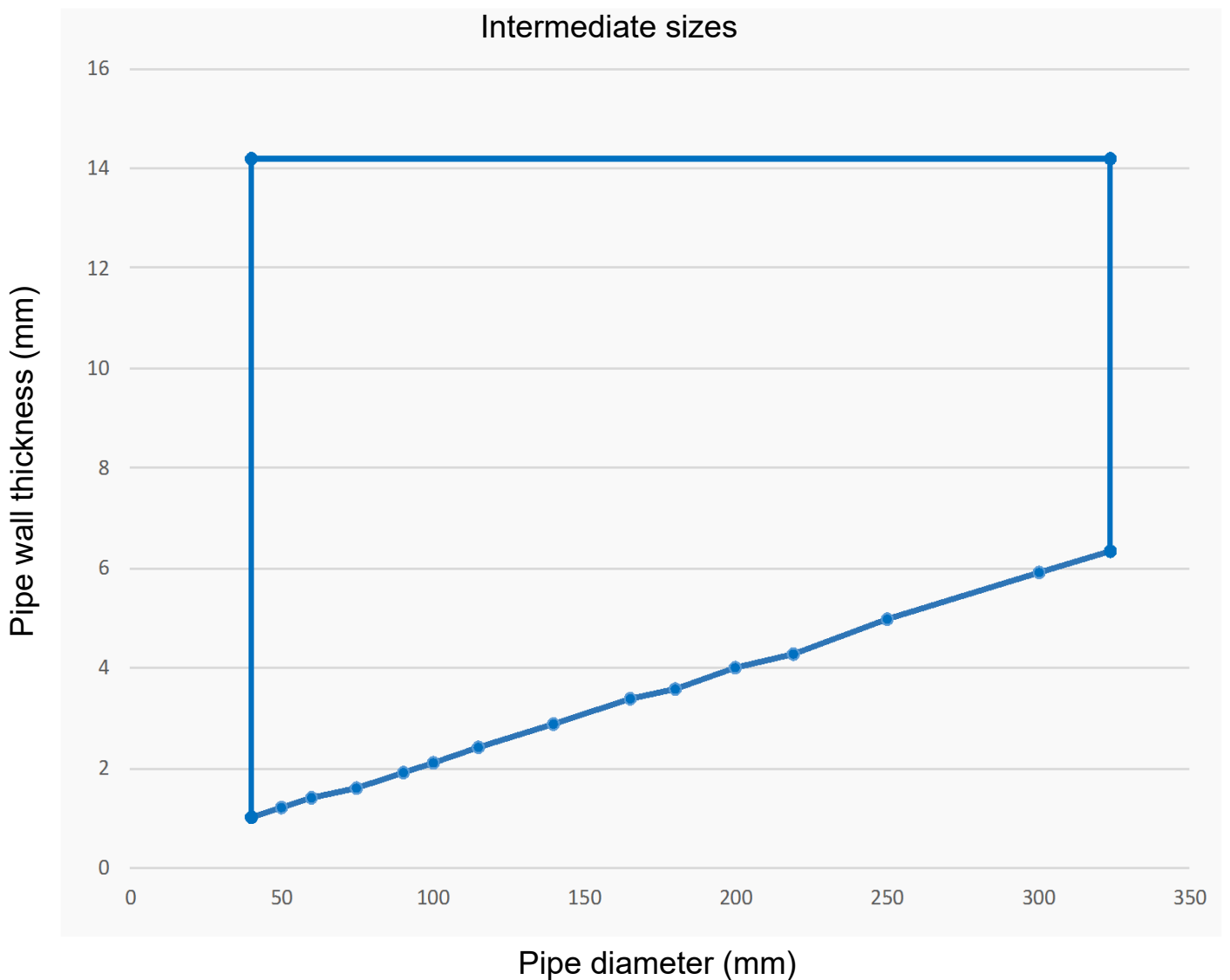
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 Unit of measure : mm
 Date : 25-4-2016

Company : Mulcol International B.V.
 Department : Research & Development
 Draftsman : R.M.


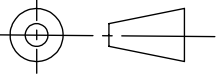
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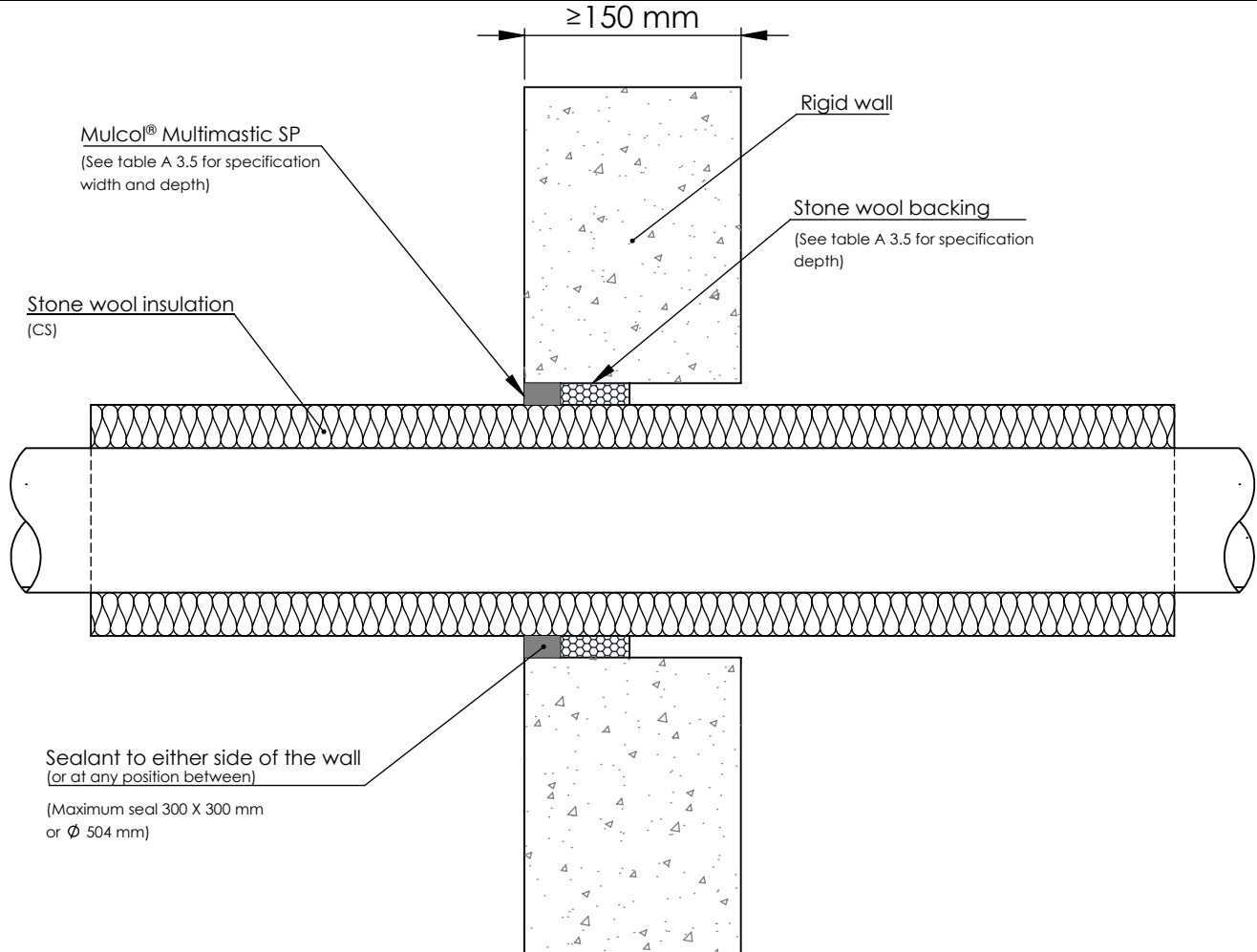
A4

Intermediate sizes



Annex A - Resistance to fire classification - Mulcol® Multimastic SP

Fire test pipe penetration seal Mulcol® Multimastic SP Rigid wall construction according to I.2.2			
American projection 	Scale : 1:5 Unit of measure : mm Date : 17-7-2017	Company : Mulcol International B.V. Department : Research & Development Draftsman : R.M.	RW-ST-MSP1.2.20 A4


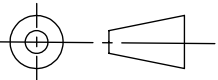


A 3.5 Double side penetration seal with (stainless) steel pipes

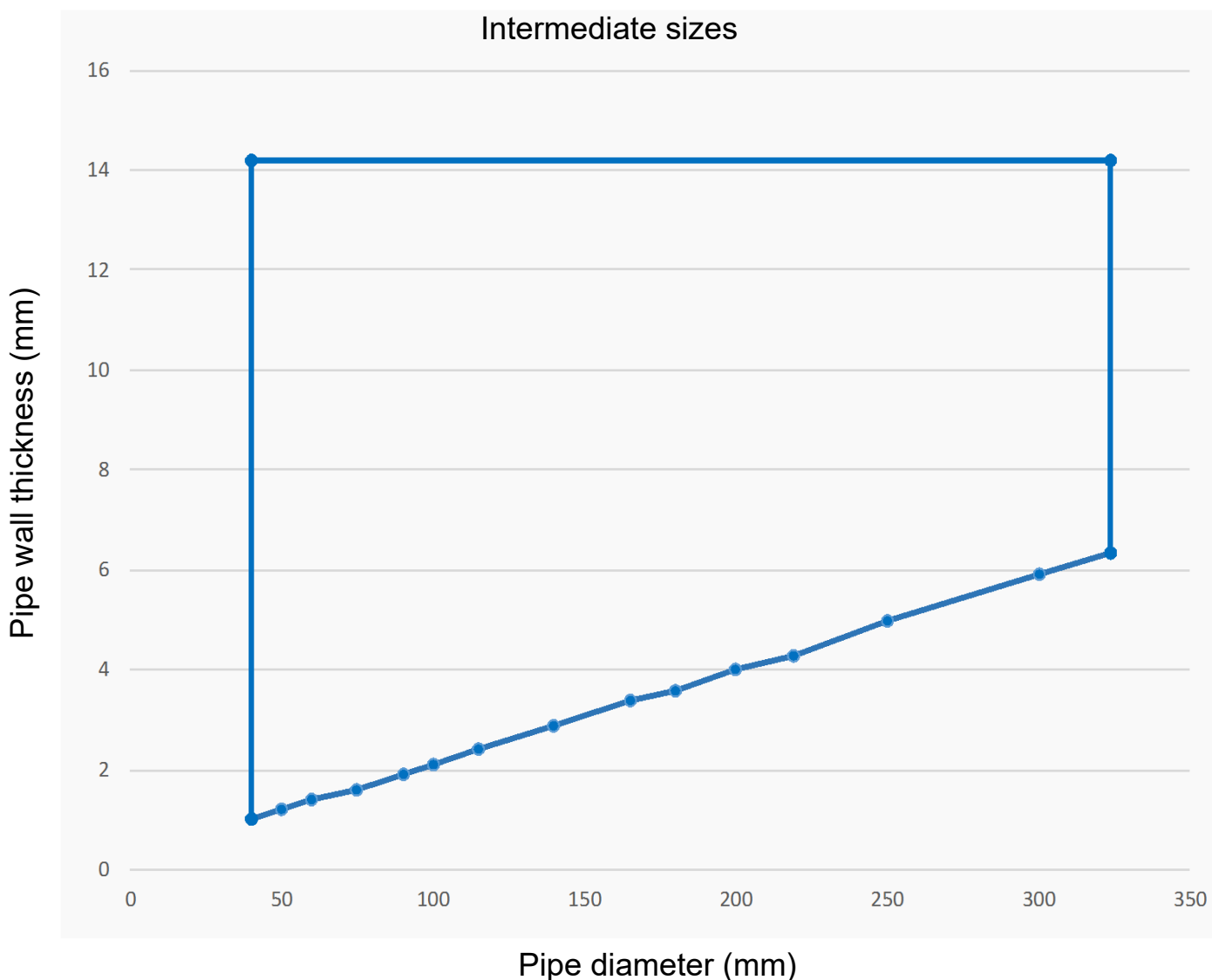
Services	Classification	Sealant depth	Backing	Insulation	Minimum seal
Steel pipe Ø 40 mm / 1.0-14.2 mm wall th.	EI 180 C/U	25 mm	48 mm Mulcol® Multitherm Backing	30-80 mm Stone wool insulation, 80 kg/m ³	10 mm
Steel pipe Ø 40 mm / 1.0-14.2 mm wall th.					
Steel pipe Ø 50 mm / 1.2-14.2 mm wall th.					
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 27 for intermediate sizes


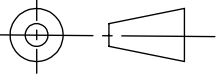
Annex A - Resistance to fire classification - Mulcol® Multimastic SP

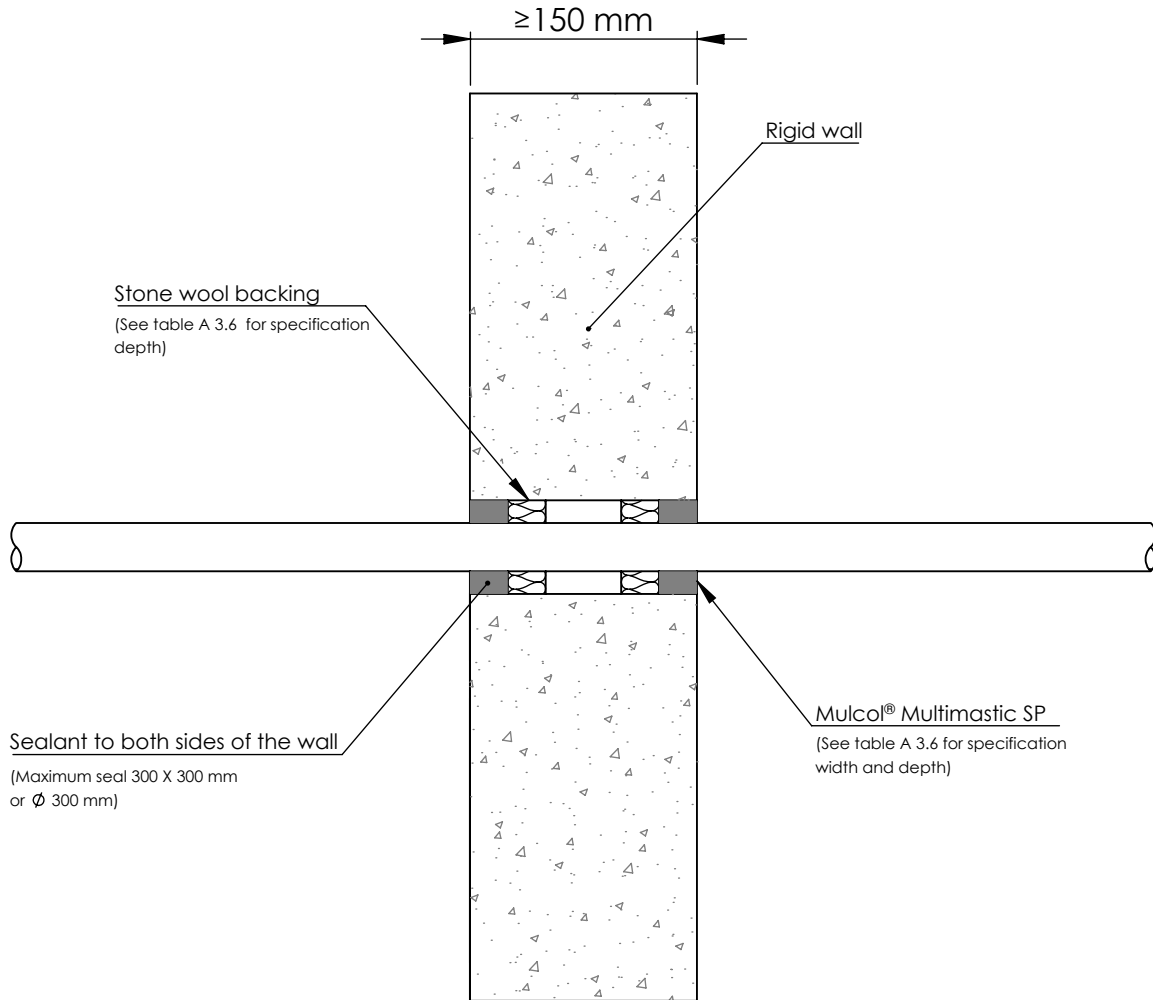
Fire test pipe penetration seal Mulcol® Multimastic SP Rigid/Flexible wall construction according to I.2.2			
American projection 	Scale : 1:5	Company : Mulcol International B.V.	RW-ST-MSP1.2.20
	Unit of measure : mm	Department : Research & Development	
	Date : 25-4-2016	Draftsman : R.M.	A4

Intermediate sizes



Annex A - Resistance to fire classification - Mulcol® Multimastic SP


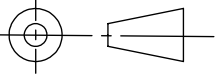
Fire test pipe penetration seal Mulcol® Multimastic SP Rigid wall construction according to I.2.2			
American projection 	Scale : 1:5	Company : Mulcol International B.V.	RW-PP-MSP2.2.10
	Unit of measure : mm	Department : Research & Development	
	Date : 17-7-2017	Draftsman : R.M.	A4

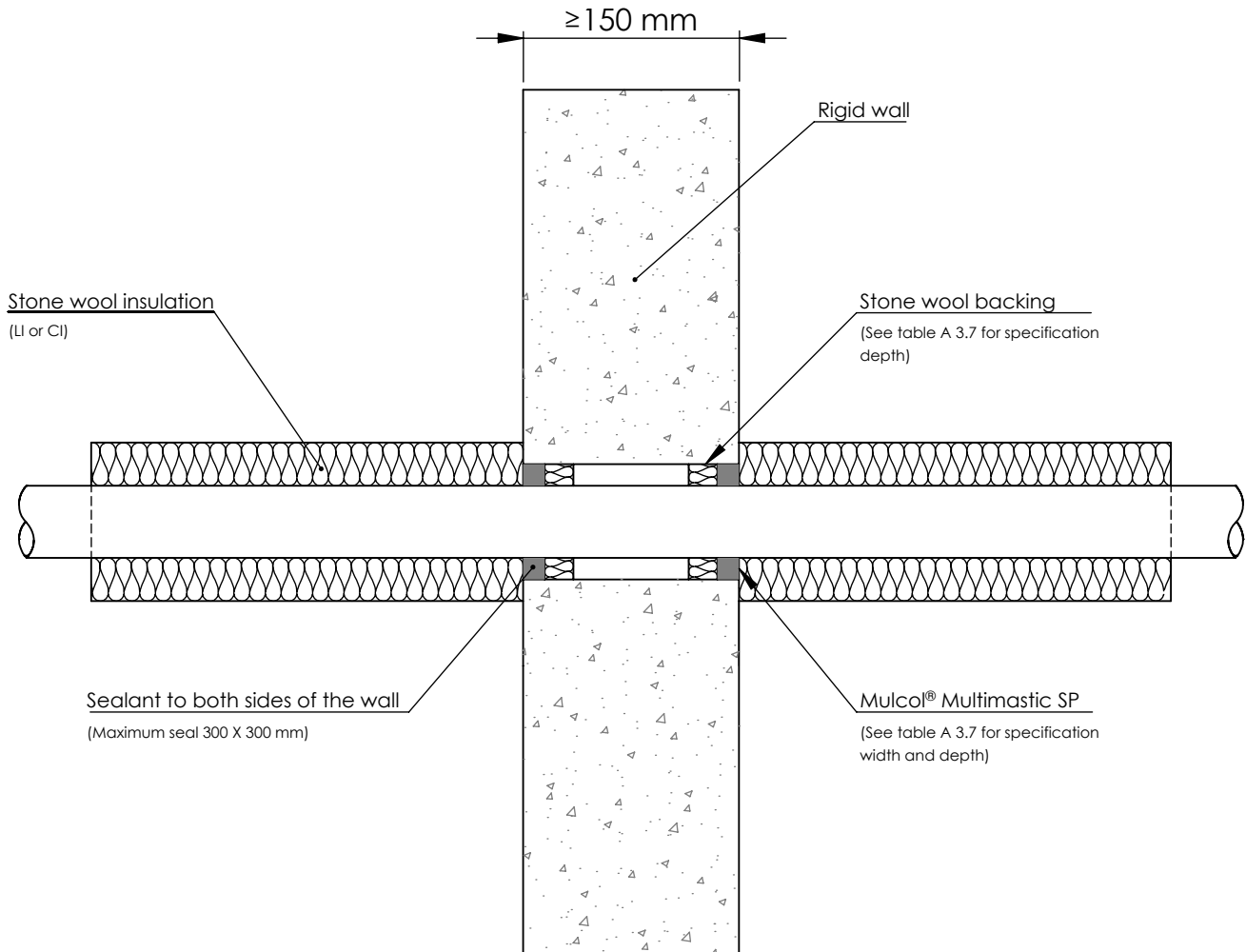


A 3.6 Double side penetration seal with combustible pipes

Services	Pipe size	Classification	Sealant depth	Backing	Minimum seal
PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1, PVC-C according to EN 1566-1	Ø 32 mm / 1.6 mm wall th.	EI 240 U/C	25 mm	25 mm Stone wool insulation, 35 kg/m ³	10 mm
PP pipe according to EN 1451-1	Ø 32 mm / 2.0-4.4 mm wall th.	EI 180 C/U			
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	Ø 20-32 mm / 2.0 mm wall th.	EI 240 C/U			

Annex A - Resistance to fire classification - Mulcol® Multimastic SP

Fire test pipe penetration seal Mulcol® Multimastic SP Rigid wall construction according to I.2.2			
American projection 	Scale : 1:5	Company : Mulcol International B.V.	RW-ST-MSP2.2.20
	Unit of measure : mm	Department : Research & Development	
	Date : 25-4-2016	Draftsman : R.M.	A4



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

Services	Classification	Sealant depth	Backing	Insulation	Minimum seal
Steel pipe Ø 40 mm / 1.5-14.2 mm wall th.	EI 240 C/U	15 mm	20 mm Stone wool insulation, 40 kg/m ³	1000 mm length of 20 mm Stone wool insulation, 80 kg/m ³	10 mm
Steel pipe Ø 40 mm / 1.5-14.2 mm wall th.	E 240 C/U, EI 120 C/U				
Steel pipe Ø 50 mm / 1.7-14.2 mm wall th.					
Steel pipe Ø 60 mm / 1.9-14.2 mm wall th.					
Steel pipe Ø 75 mm / 2.2-14.2 mm wall th.					
Steel pipe Ø 90 mm / 2.5-14.2 mm wall th.					
Steel pipe Ø 100 mm / 2.7-14.2 mm wall th.					
Steel pipe Ø 115 mm / 3.0-14.2 mm wall th.					
Steel pipe Ø 140 mm / 3.5-14.2 mm wall th.					
Steel pipe Ø 165 mm / 3.9-14.2 mm wall th.					
Steel pipe Ø 180 mm / 4.2-14.2 mm wall th.					
Steel pipe Ø 200 mm / 4.6-14.2 mm wall th.					
Steel pipe Ø 219 mm / 5.0-14.2 mm wall th.					

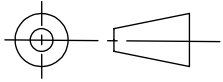
See graph on page 30 for intermediate sizes

Annex A - Resistance to fire classification - Mulcol® Multimastic SP

Fire test pipe penetration seal
 Mulcol® Multimastic SP
 Rigid wall construction according to I.2.2



American projection



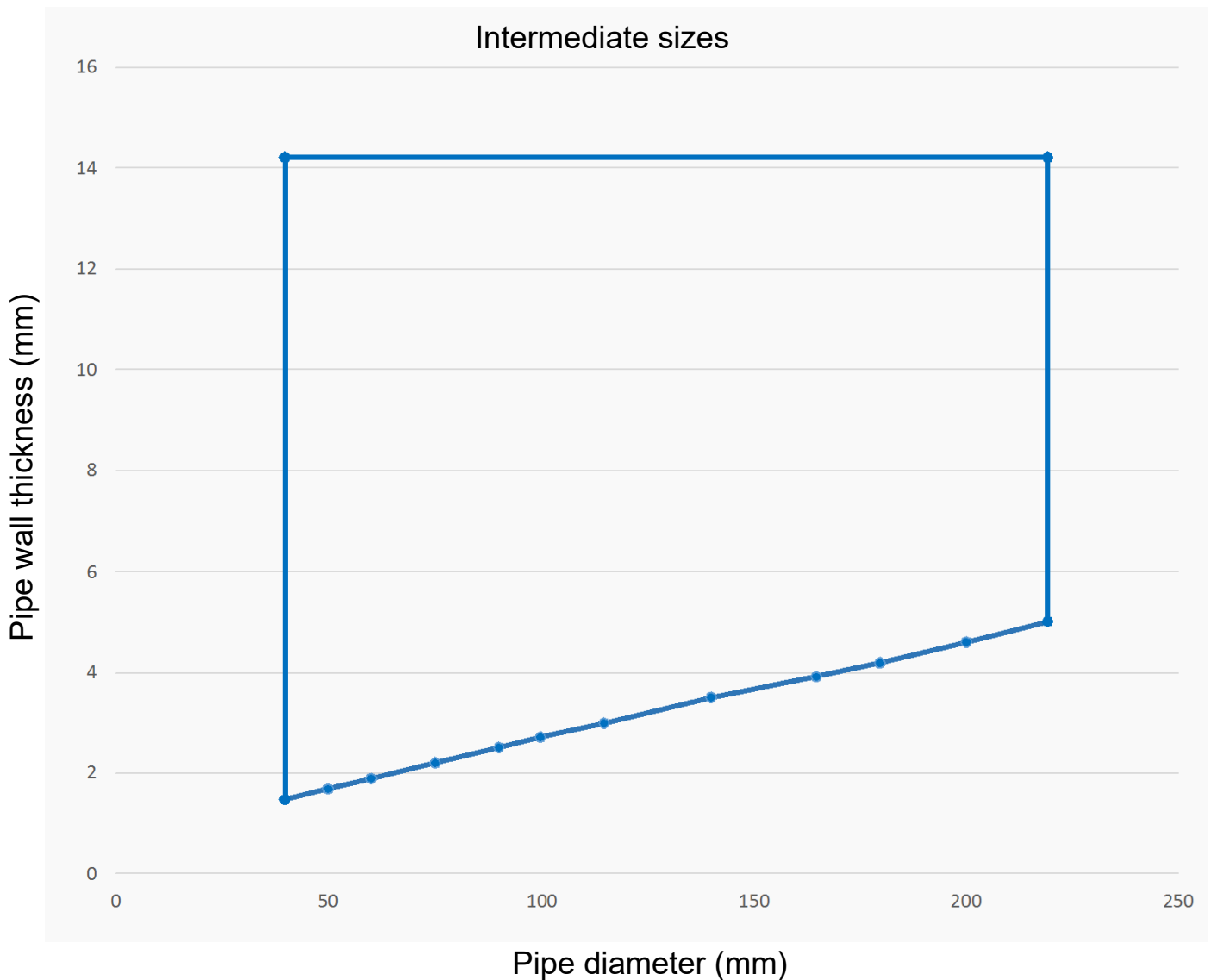
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 Unit of measure : mm
 Date : 25-4-2016

Company : Mulcol International B.V.
 Department : Research & Development
 Draftsman : R.M.


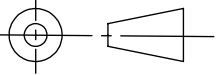
RW-ST-MSP2.2.20

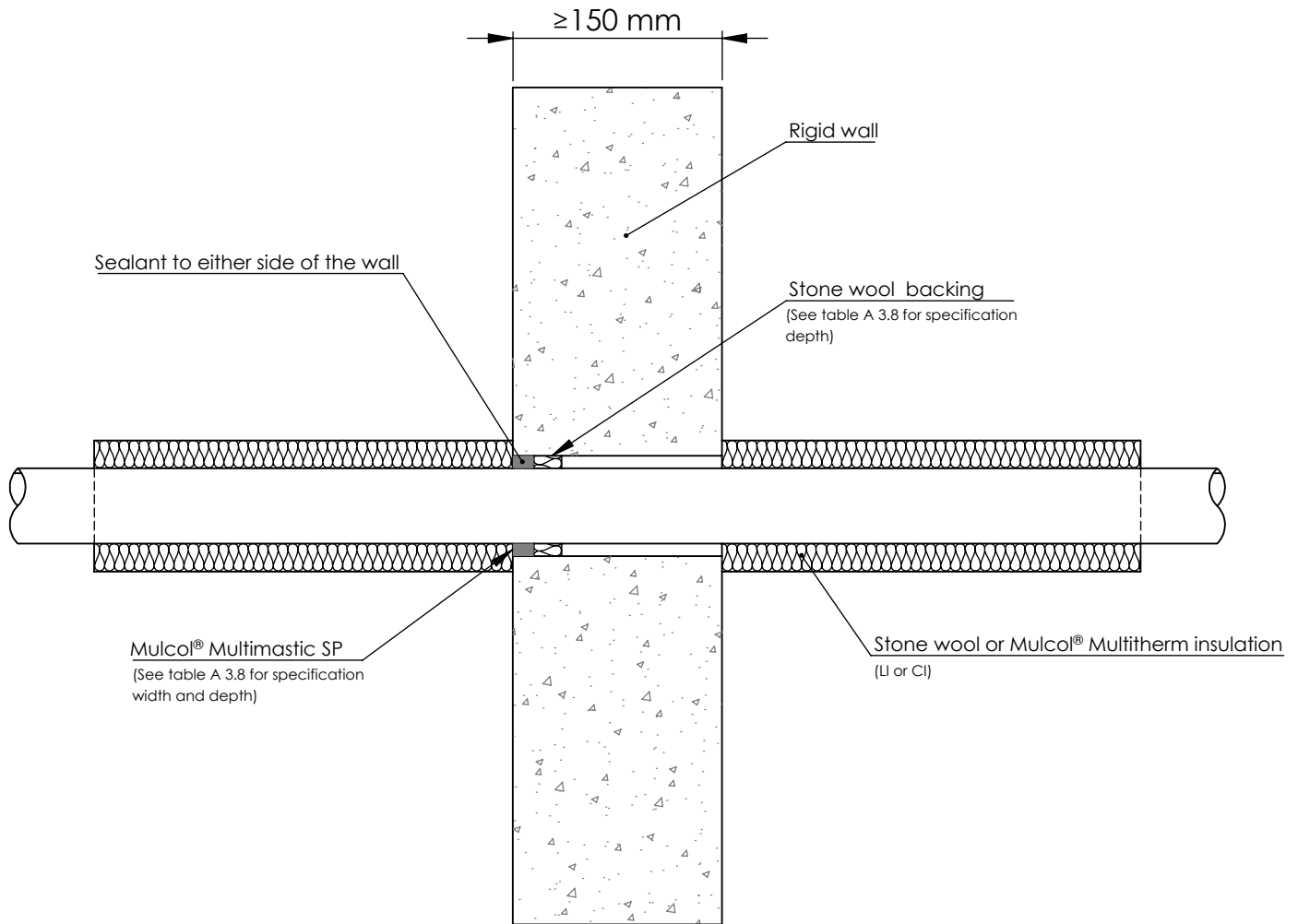
A4

Intermediate sizes



Annex A - Resistance to fire classification - Mulcol® Multimastic SP


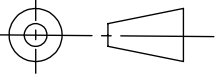
Fire test pipe penetration seal Mulcol® Multimastic SP Rigid wall construction according to I.2.2			
American projection 	Scale : 1:5	Company : Mulcol International B.V.	RW-ST-MSP1.2.20
	Unit of measure : mm	Department : Research & Development	
	Date : 25-4-2016	Draftsman : R.M.	A4

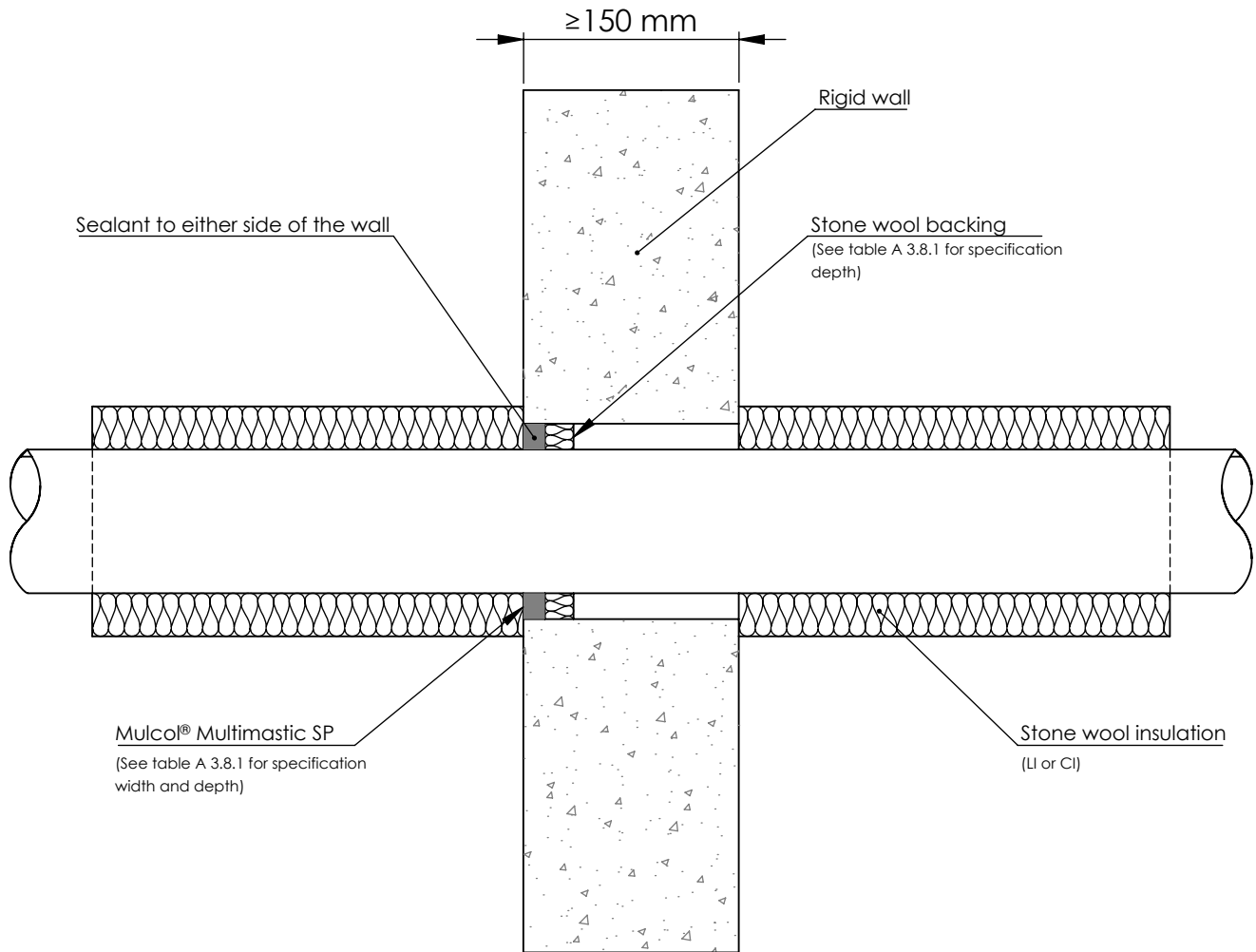


A 3.8 Single side penetration seal with copper and alupex composite pipes

Services	Classification	Sealant depth	Backing	Insulation	Seal size
Copper pipe up to $\varnothing 54$ mm / 0.9-14.2 mm wall th.	E 240 C/U, EI 180 C/U	15 mm	20 mm Stone wool insulation, 40 kg/m ³	1000 mm length of 20 mm Stone wool insulation, 80 kg/m ³	8-9 mm
Copper pipe up to $\varnothing 12$ mm / 0.9-5 mm wall th.	EI 240 C/U				8 mm
Alupex composite pipe $\varnothing 75$ mm / 7.5 mm wall th.	EI 120 C/U			600 mm length of 25 mm Mulcol® Multitherm insulation	30 mm

Annex A - Resistance to fire classification - Mulcol® Multimastic SP

Fire test pipe penetration seal Mulcol® Multimastic SP Rigid wall construction according to I.2.2			
American projection 	Scale : 1:5	Company : Mulcol International B.V.	RW-ST-MSP1.2.20
	Unit of measure : mm	Department : Research & Development	
	Date : 25-4-2016	Draftsman : R.M.	A4



A 3.8.1 Single side penetration seal with (stainless) steel pipes

Services	Classification	Sealant depth	Backing	Insulation	Seal size
Steel pipe Ø 40 mm / 1.5-14.2 mm wall th.	EI 240 C/U	15 mm	20 mm Stone wool insulation, 40 kg/m ³	1000 mm length of 20 mm Stone wool insulation, 80 kg/m ³	6-18 mm
Steel pipe Ø 40 mm / 1.5-14.2 mm wall th.	E 180, EI 90 C/U			1000 mm length of 30 mm Stone wool insulation, 80 kg/m ³	
Steel pipe Ø 50 mm / 1.7-14.2 mm wall th.					
Steel pipe Ø 60 mm / 1.9-14.2 mm wall th.					
Steel pipe Ø 75 mm / 2.2-14.2 mm wall th.					
Steel pipe Ø 90 mm / 2.5-14.2 mm wall th.					
Steel pipe Ø 100 mm / 2.7-14.2 mm wall th.					
Steel pipe Ø 115 mm / 3.0-14.2 mm wall th.					
Steel pipe Ø 140 mm / 3.5-14.2 mm wall th.					
Steel pipe Ø 165 mm / 3.9-14.2 mm wall th.					
Steel pipe Ø 180 mm / 4.2-14.2 mm wall th.					
Steel pipe Ø 200 mm / 4.6-14.2 mm wall th.					
Steel pipe Ø 219 mm / 5.0-14.2 mm wall th.					

See graph on page 33 for intermediate sizes

Annex A - Resistance to fire classification - Mulcol® Multimastic SP

Fire test pipe penetration seal
 Mulcol® Multimastic SP
 Rigid wall construction according to I.2.2

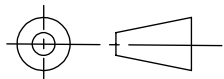


American projection

Scale : 1:5

Company : Mulcol International B.V.

RW-ST-MSP1.2.20



Unit of measure : mm

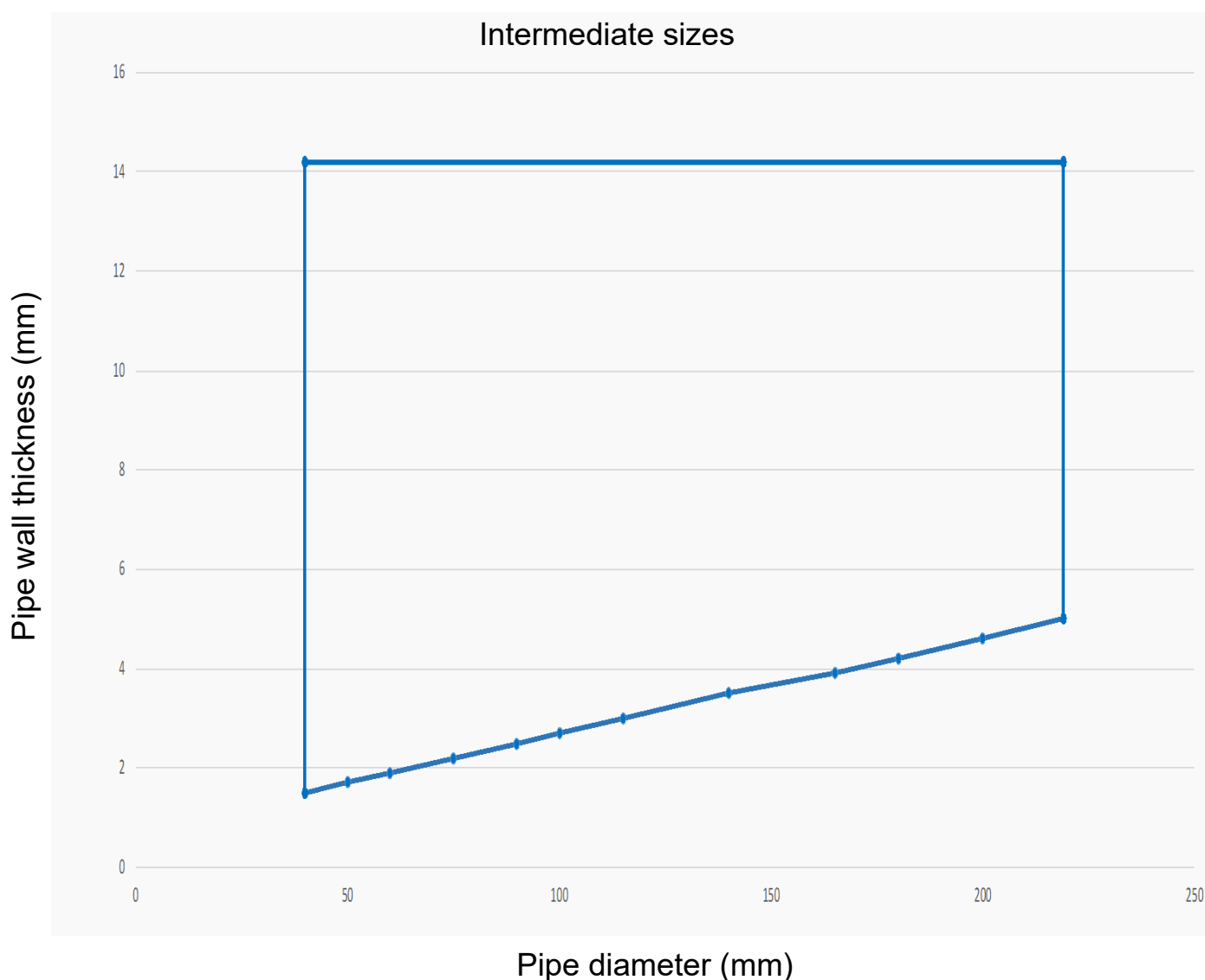
Department : Research & Development

Date : 3-12-2016


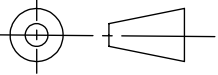
Draftsman : R.M.

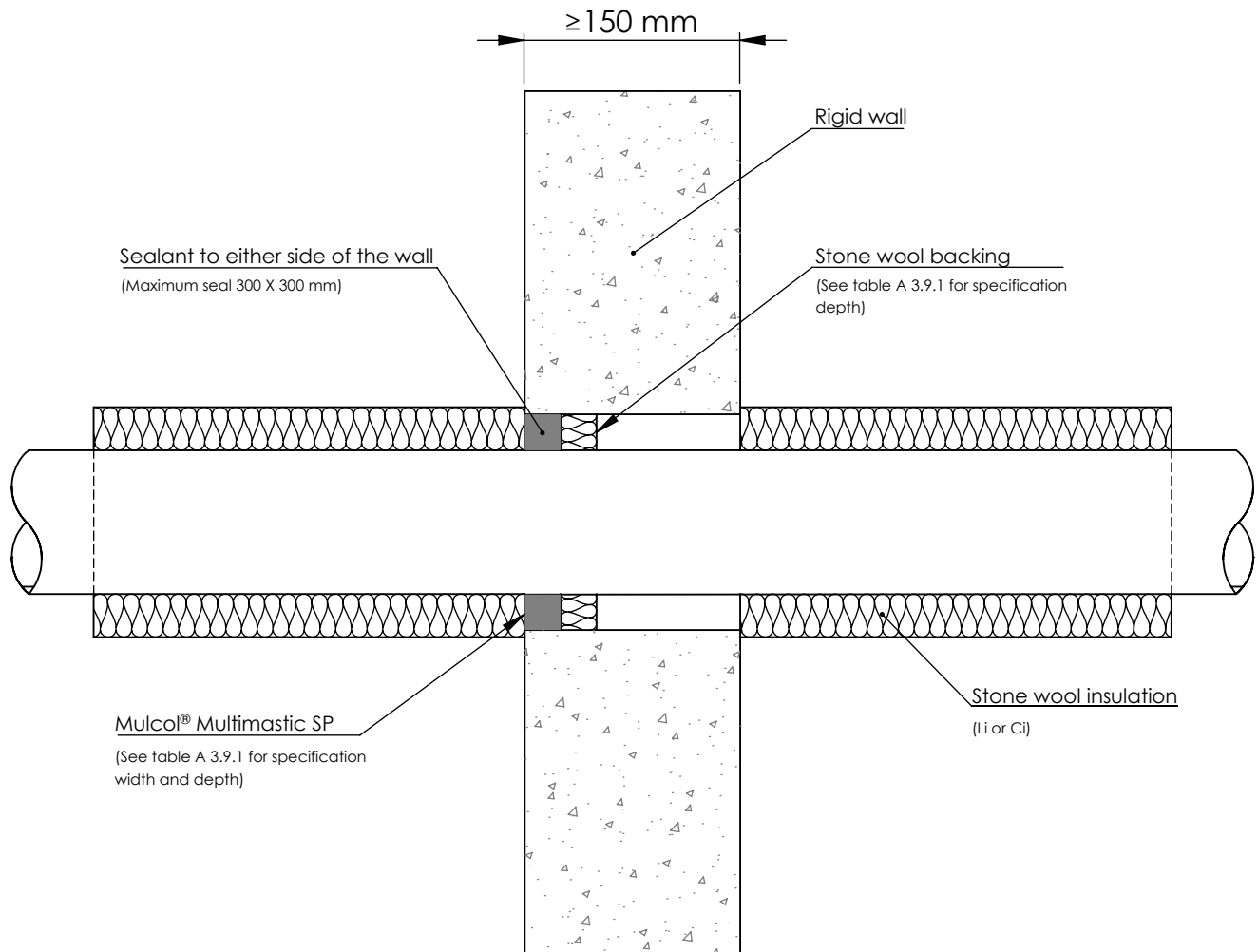
A4

Intermediate sizes



Annex A - Resistance to fire classification - Mulcol® Multimastic SP

Fire test pipe penetration seal Mulcol® Multimastic SP Rigid wall construction according to I.2.2			
American projection 	Scale : 1:5	Company : Mulcol International B.V.	RW-ST-MSP1.2.20
	Unit of measure : mm	Department : Research & Development	
	Date : 25-4-2016	Draftsman : R.M.	A4



A 3.9.1 Single side penetration seal with (stainless) steel pipes

Services	Classification	Sealant depth	Backing	Insulation	Minimum seal
Steel pipe Ø 40 mm / 1.5-14.2 mm wall th.	E 240 C/U, EI 60 C/U	25 mm	25 mm Stone wool insulation, 40 kg/m ³	1000 mm length of 20 mm Stone wool insulation, 80 kg/m ³	10 mm
Steel pipe Ø 50 mm / 1.7-14.2 mm wall th.				1000 mm length of 30 mm Stonel wool insulation, 80 kg/m ³	
Steel pipe Ø 60 mm / 1.9-14.2 mm wall th.					
Steel pipe Ø 75 mm / 2.2-14.2 mm wall th.					
Steel pipe Ø 90 mm / 2.5-14.2 mm wall th.					
Steel pipe Ø 100 mm / 2.7-14.2 mm wall th.					
Steel pipe Ø 115 mm / 3.0-14.2 mm wall th.					
Steel pipe Ø 140 mm / 3.5-14.2 mm wall th.					
Steel pipe Ø 165 mm / 3.9-14.2 mm wall th.					
Steel pipe Ø 180 mm / 4.2-14.2 mm wall th.					
Steel pipe Ø 200 mm / 4.6-14.2 mm wall th.					
Steel pipe Ø 219 mm / 5.0-14.2 mm wall th.					

See graph on page 36 for intermediate sizes

Annex A - Resistance to fire classification - Mulcol® Multimastic SP

Fire test pipe penetration seal
 Mulcol® Multimastic SP
 Rigid wall construction according to I.2.2

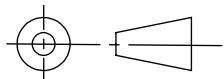


American projection

Scale : 1:5

Company : Mulcol International B.V.

RW-ST-MSP2.2.20



Unit of measure : mm

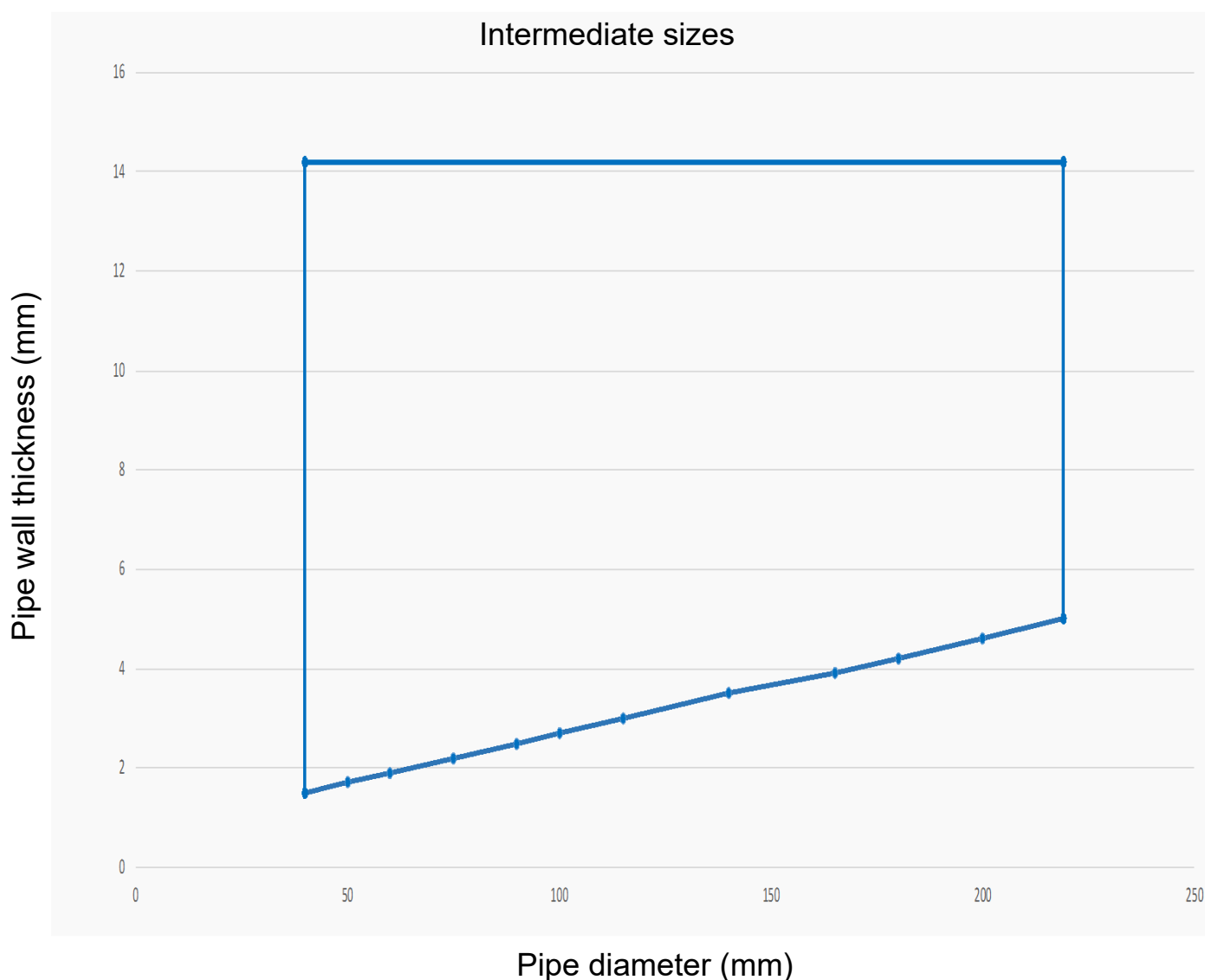
Department : Research & Development

Date : 3-12-2016

Draftsman : R.M.

A4

Intermediate sizes

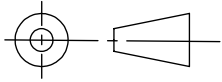


Annex A - Resistance to fire classification - Mulcol® Multimastic SP

Fire test cable penetration seal
 Mulcol® Multimastic SP
 Rigid floor construction according to I.2.2



American projection

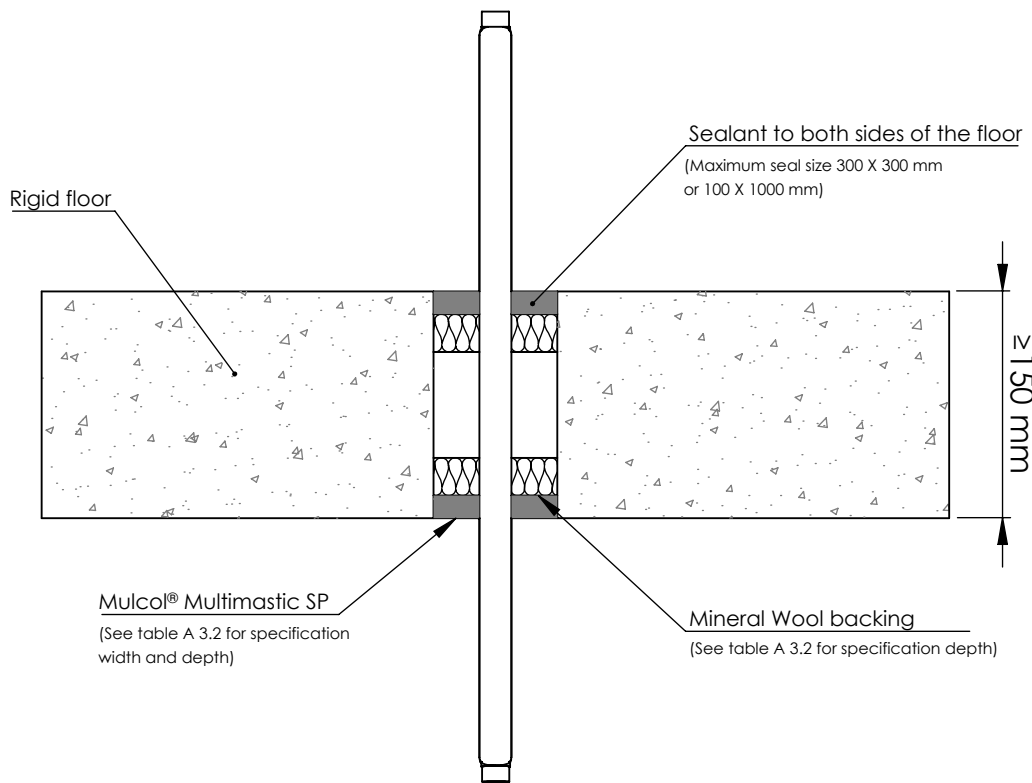


Scale : 1:5
 Unit of measure : mm
 Date : 25-4-2016

Company : Mulcol International B.V.
 Department : Research & Development
 Draftsman : R.M.

RF-EC-MSP2.2.10

A4



A 4.1 Double side penetration seal with cables

Services	Classification	Sealant depth	Backing	Seal size	Service from edge of seal
Blank seals	EI 240	15 mm	25 mm Stone wool Insulation, 35 kg/m ³	300 X 300 mm	7 mm
Electrical cables up to \varnothing 21 mm, single or in a bundle	EI 120				
Electrical cables up to \varnothing 22 - 50 mm, single or in a bundle	E 120, EI 90				
Electrical cables up to \varnothing 51 - 80 mm, single or in a bundle	E 120, EI 60				

Annex A - Resistance to fire classification - Mulcol® Multimastic SP

Fire test cable penetration seal
 Mulcol® Multimastic SP
 Rigid floor construction according to I.2.2



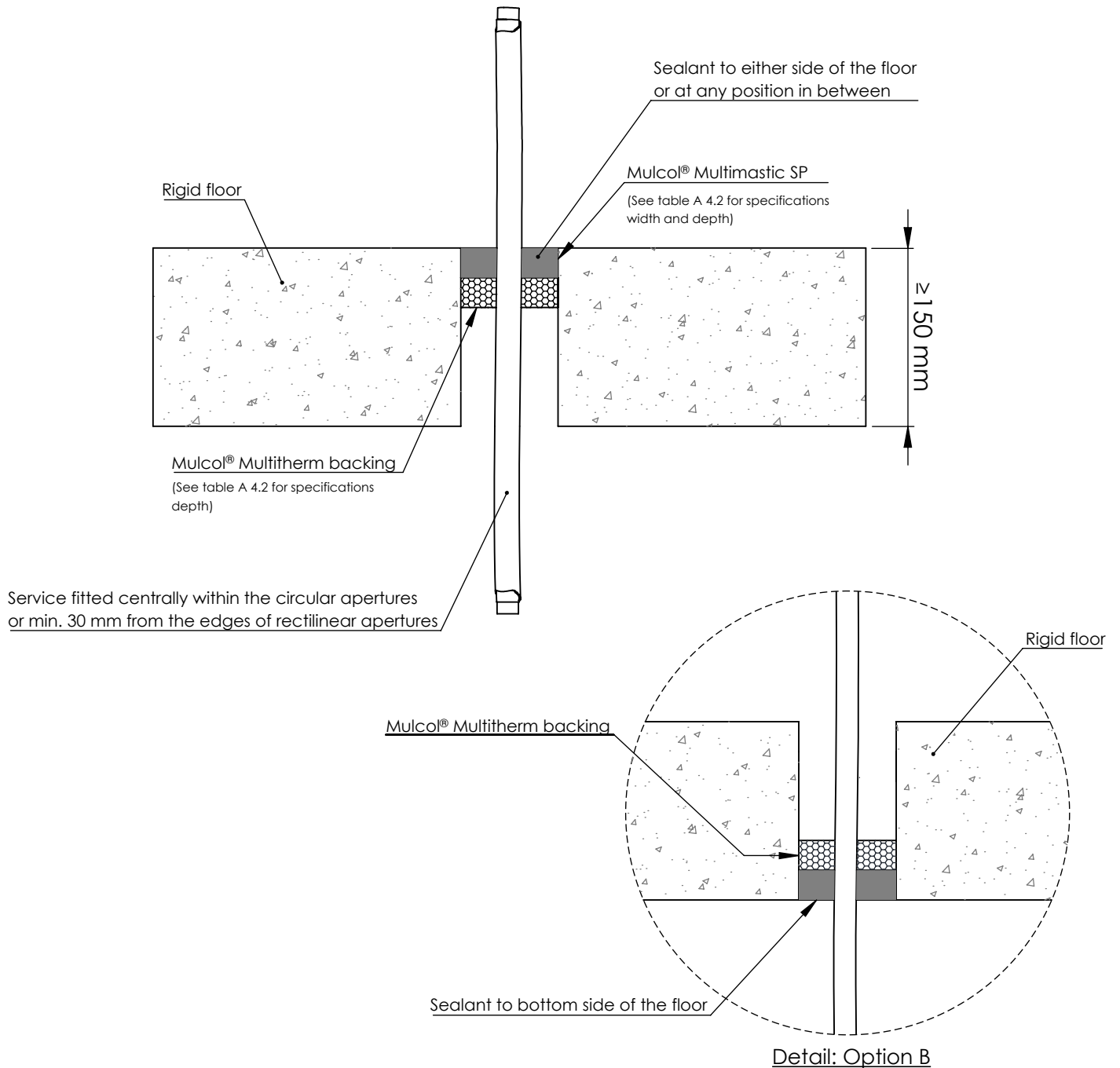
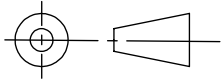
American projection

Scale : 1:5
 Unit of measure : mm
 Date : 25-4-2016

Company : Mulcol International B.V.
 Department : Research & Development
 Draftsman : R.M.

RF-EC-MSP1.2.10


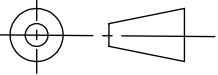
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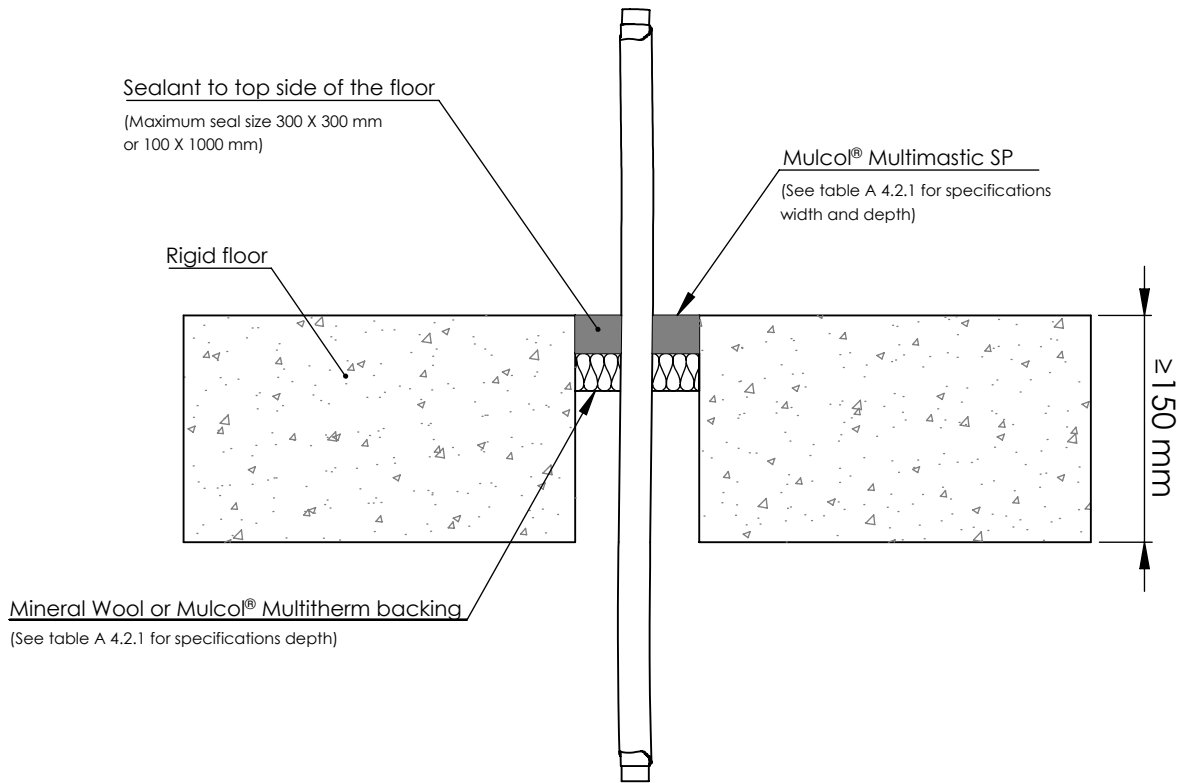


A 4.2 Single side penetration seal with cables

Services	Classification	Sealant depth	Backing	Seal size	Service from edge of seal
Single electrical cables up to $\varnothing 21$ mm	E 120, EI 60	25 mm	25 mm Mulcol® Multitherm Backing	$\varnothing 82$ mm or max 100 X 1000 mm	30 mm

Annex A - Resistance to fire classification - Mulcol® Multimastic SP

Fire test cable penetration seal Mulcol® Multimastic SP Rigid floor construction according to I.2.2			
American projection 	Scale : 1:5	Company : Mulcol International B.V.	FW-EC-MSP1.2.10
	Unit of measure : mm	Department : Research & Development	
	Date : 25-4-2016	Draftsman : R.M.	A4



A 4.2.1 Single side penetration seal with cables

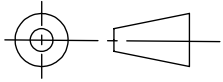
Services	Classification	Sealant depth	Backing	Maximum seal	Service from edge of seal
Blank seals	E 90, EI 60	15 mm	20 mm Stone wool insulation, 35 kg/m ³	300 X 300 mm	10 mm
	EI 120	25 mm	25 mm Stone wool insulation, 35 kg/m ³		
	EI 240		48 mm Mulcol® Multitherm Backing		
Single electrical cable up to \varnothing 21 mm	E 120, EI 90	25 mm	48 mm Mulcol® Multitherm Backing	300 X 300 mm	10 mm
Single 'E cable' - 1 X 185 mm ² core HD603.3 electrical cable with PVC insulation, PVC sheath between \varnothing 23-27 mm	EI 240				

Annex A - Resistance to fire classification - Mulcol® Multimastic SP

Fire test Pipe penetration seal
 Mulcol® Multimastic SP
 Rigid floor construction according tot I.2.2



American projection

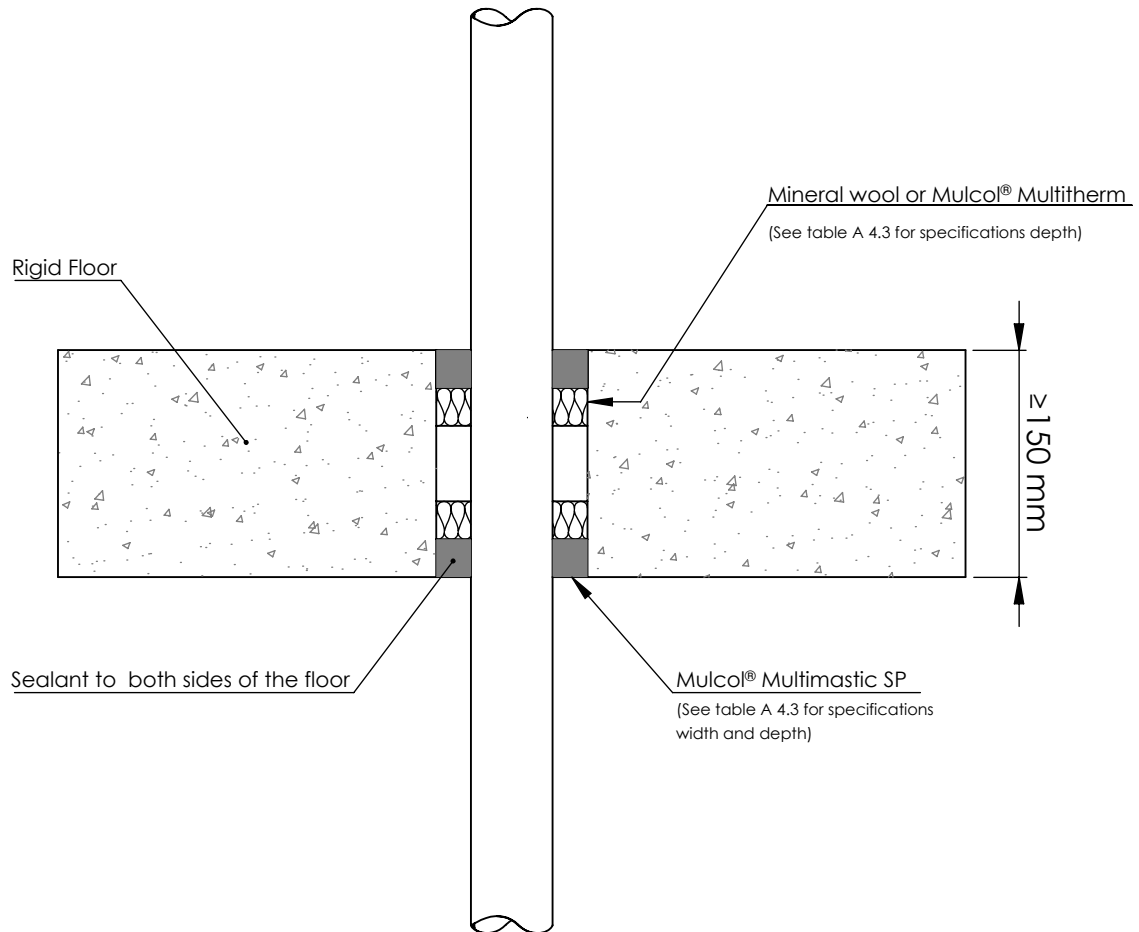


Scale : 1:5
 Unit of measure : mm
 Date : 25-4-2016

Company : Mulcol International B.V.
 Department : Research & Development
 Draftsman : R.M.

RF-ST-MSP2.2.10


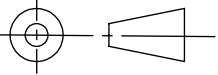
A4

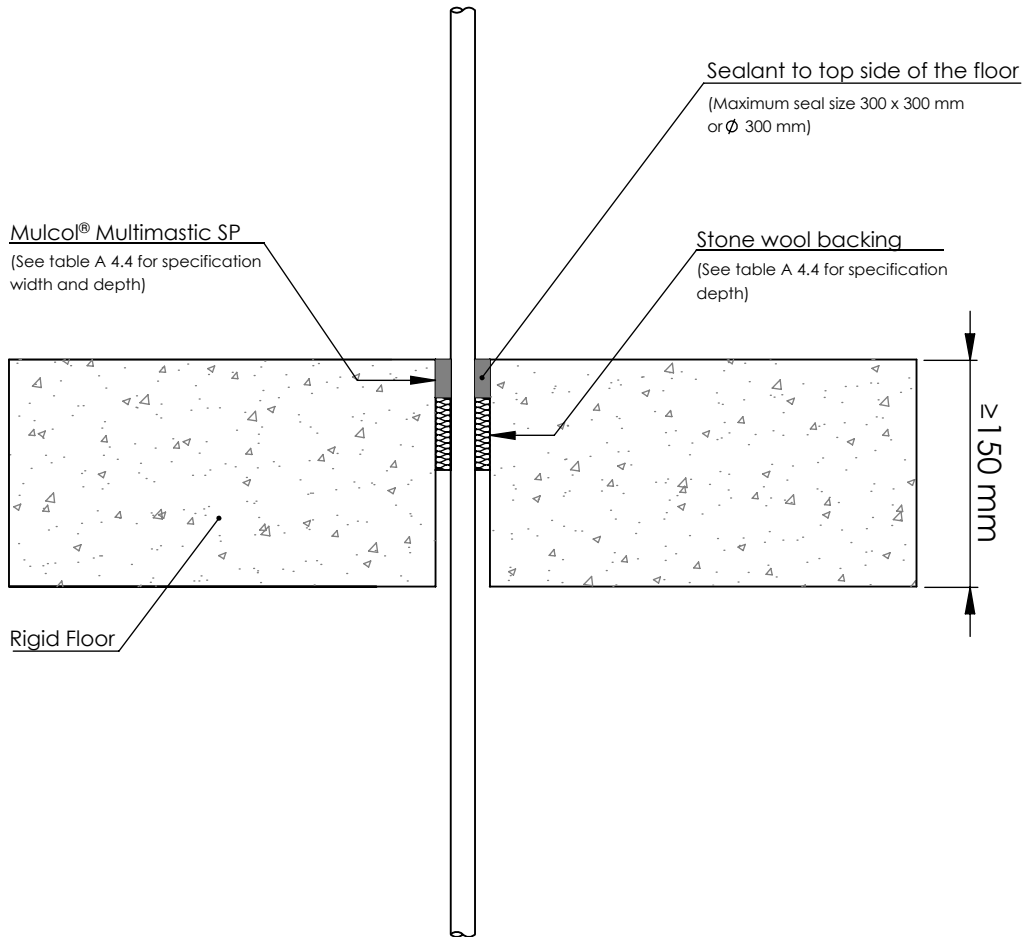


A 4.3 Double side penetration seal with copper and (stainless) steel pipes

Services	Classification	Sealant depth	Backing	Maximum seal	Minimum seal
Copper pipe up to \varnothing 54 mm / 2.0-14.2 mm wall th.	E 120 C/U, EI 20 C/U	25 mm	25 mm Stone wool insulation, 140 kg/m ³	300 X 300 mm	10 mm
Steel pipe up to \varnothing 54 mm / 1.5-14.2 mm wall th.	E 120 C/U, EI 20 C/U				
Steel pipe \varnothing 16 mm / 1.5-7.5 mm wall th.	EI 240 C/U				
Steel pipe \varnothing 16 mm / 1.5-7.5 mm wall th.	EI 120 C/U		25 mm Mulcol® Multitherm Backing	Up to 100 X 1000 mm	

Annex A - Resistance to fire classification - Mulcol® Multimastic SP


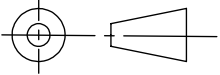
Fire test pipe penetration seal Mulcol® Multimastic SP Rigid floor construction according to I.2.2			
American projection 	Scale : 1:5	Company : Mulcol International B.V.	RF-ST-MSP1.2.20
	Unit of measure : mm	Department : Research & Development	
	Date : 17-7-2017	Draftsman : R.M.	A4

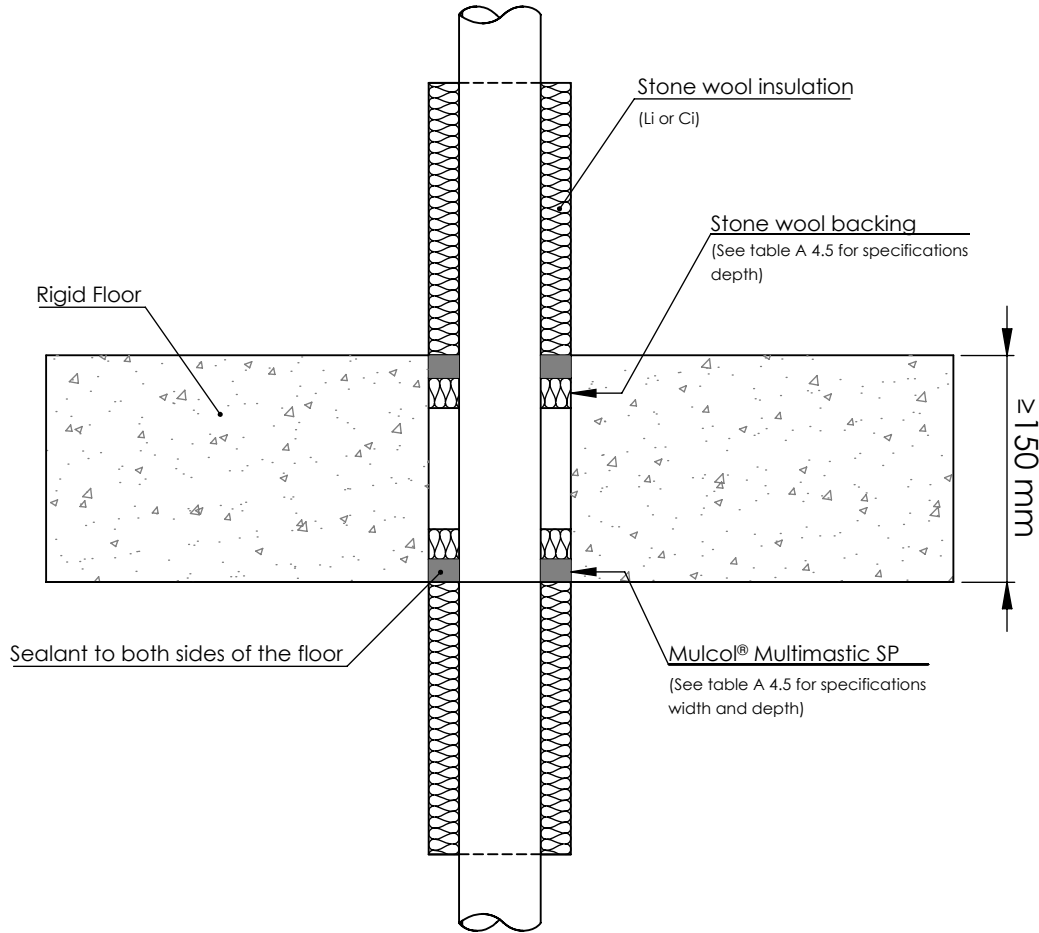


A 4.4 Single side penetration seal with (stainless) steel pipes

Services	Classification	Sealant depth	Backing	Maximum seal size	Minimum seal
Steel pipe \varnothing 4-16 mm / 1.0-8.0 mm wall th.	EI 120 C/U	25 mm	48 mm Stone wool insulation, 33 kg/m ³	300 x 300 mm or \varnothing 300 mm	10 mm

Annex A - Resistance to fire classification - Mulcol® Multimastic SP

Fire test pipe penetration seal Mulcol® Multimastic SP Rigid floor construction according to I.2.2			
American projection 	Scale : 1:5	Company : Mulcol International B.V.	RF-ST-MSP2.2.20
	Unit of measure : mm	Department : Research & Development	
	Date : 25-4-2016	Draftsman : R.M.	A4



A 4.5 Double side penetration seal with (stainless) steel pipes

Services	Classification	Sealant depth	Backing	Insulation	Maximum seal
Steel pipe Ø 40 mm / 1.0-14.2 mm wall th.	EI 240 C/U	15 mm	20 mm Stone wool insulation, 40 kg/m ³	1000 mm length of 20 mm Stone wool insulation, 80 kg/m ³	300 X 300 mm or 100 X 1000 mm
Steel pipe Ø 40 mm / 1.0-14.2 mm wall th.	E 240, EI 120 C/U				
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 / 1.7-14.2 mm wall th.					
Steel pipe Ø 90 mm / 2.0-14.2 mm wall th.					
Steel pipe Ø 100 mm / 2.2-14.2 mm wall th.					
Steel pipe Ø 115 mm / 2.5-14.2 mm wall th.					
Steel pipe Ø 140 mm / 3.0-14.2 mm wall th.					
Steel pipe Ø 165 mm / 3.5-14.2 mm wall th.					
Steel pipe Ø 180 mm / 3.8-14.2 mm wall th.					
Steel pipe Ø 200 mm / 4.2-14.2 mm wall th.					
Steel pipe Ø 219 mm / 4.5-14.2 mm wall th.					

See graph on page 43 for intermediate sizes

Annex A - Resistance to fire classification - Mulcol® Multimastic SP

Fire test pipe penetration seal
 Mulcol® Multimastic SP
 Rigid floor construction according to I.2.2

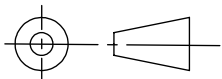


American projection

Scale : 1:5

Company : Mulcol International B.V.

RW-ST-MSP2.2.20



Unit of measure : mm

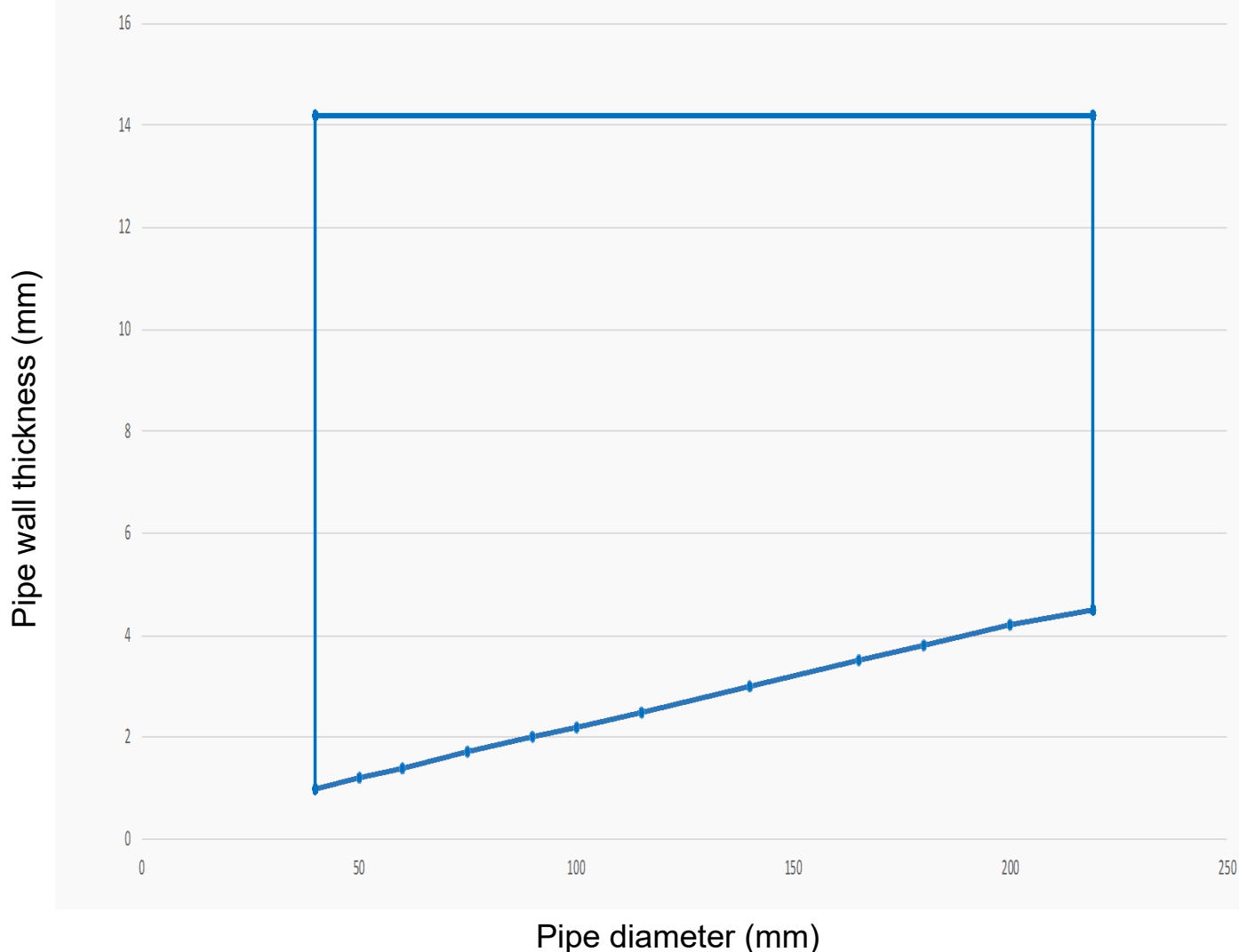
Department : Research & Development

Date : 25-4-2016

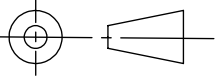
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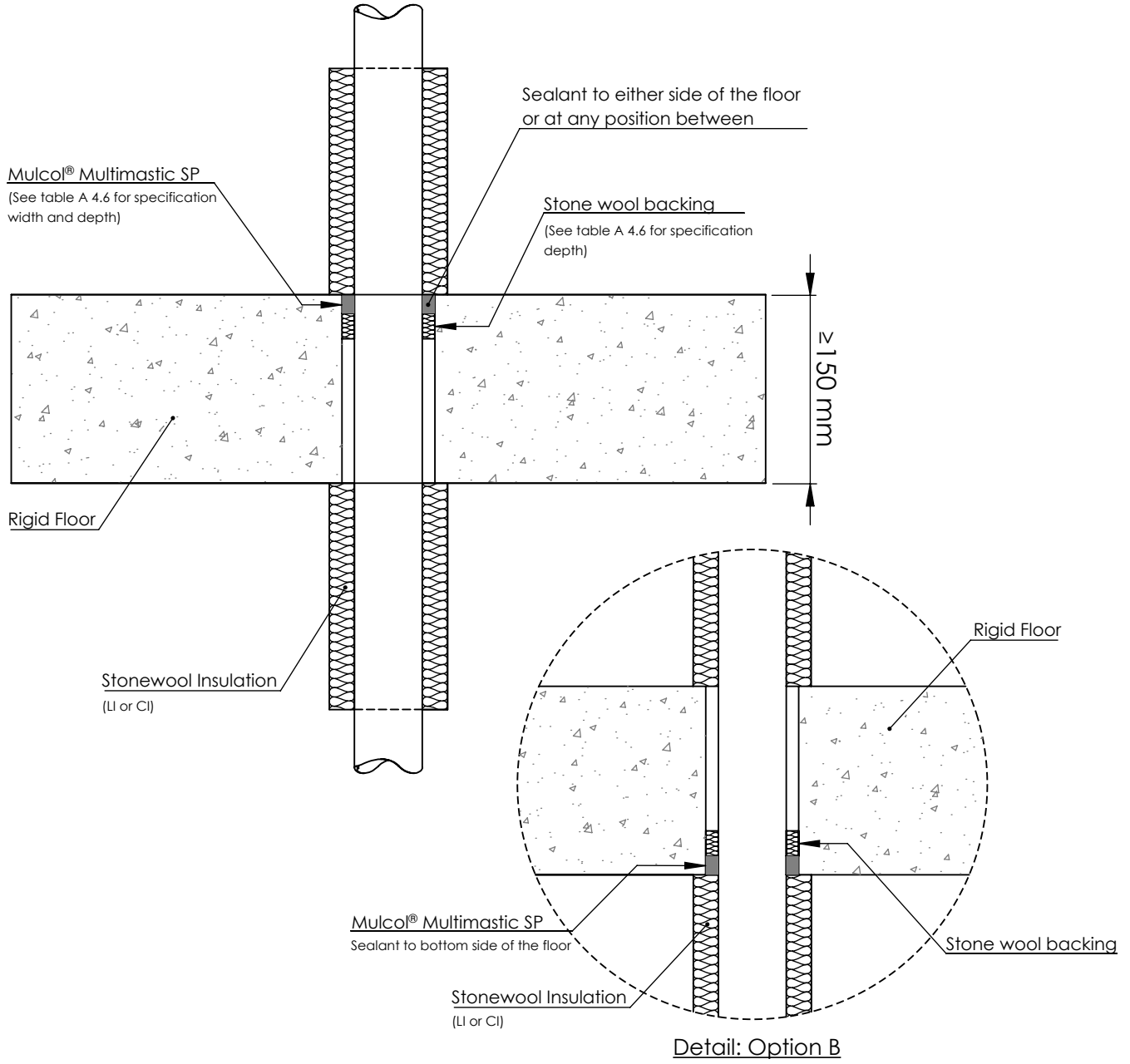
A4

Intermediate sizes



Annex A - Resistance to fire classification - Mulcol® Multimastic SP


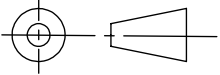
Fire test pipe penetration seal Mulcol® Multimastic SP Rigid floor construction according to I.2.2		MULCOL FIRE PROTECTION	
American projection 	Scale : 1:5	Company : Mulcol International B.V.	RF-ST-MSP1.2.20
	Unit of measure : mm	Department : Research & Development	
	Date : 25-4-2016	Draftsman : R.M.	A4

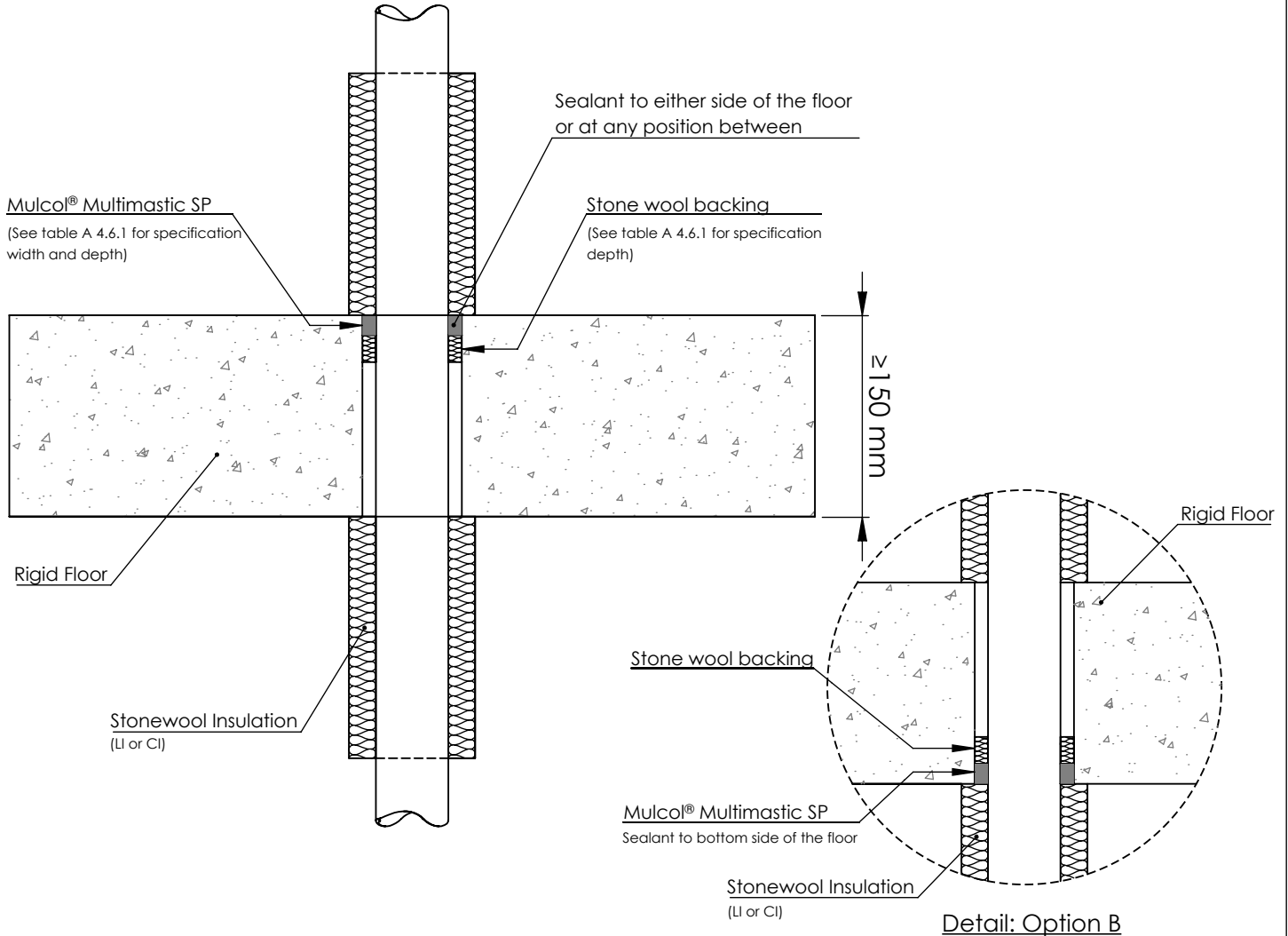


A 4.6 Single side penetration seal with copper pipes

Services	Classification	Sealant depth	Backing	Insulation	Max seal
Copper pipe up to $\varnothing 54$ mm / 0.9-14.2 mm wall th.	E 240 C/U, EI 180 C/U	15 mm	20 mm Stone wool insulation, 40 kg/m ³ or 20 mm Mulcol® Multitherm Backing	1000 mm length of 20 mm Stone wool insulation, 80 kg/m ³	10 mm width around pipe
Copper pipe up to $\varnothing 12$ mm / 0.9-5 mm wall th.	EI 240 C/U	15 mm			
Copper pipe up to $\varnothing 54$ mm / 0.9-14.2 mm wall th.	EI 120 C/U	25 mm			
Copper pipe up to $\varnothing 54$ mm / 0.9-14.2 mm wall th.	E 90 C/U, EI 60 C/U	15 mm			
Copper pipe up to $\varnothing 12$ mm / 0.9-5 mm wall th.					
Copper pipe up to $\varnothing 54$ mm / 0.9-14.2 mm wall th.	EI 120 C/U	25 mm			300 X 300 mm

Annex A - Resistance to fire classification - Mulcol® Multimastic SP

Fire test pipe penetration seal Mulcol® Multimastic SP Rigid floor construction according to I.2.2			
American projection 	Scale : 1:5	Company : Mulcol International B.V.	RF-ST-MSP1.2.20
	Unit of measure : mm	Department : Research & Development	
	Date : 25-4-2016	Draftsman : R.M.	A4


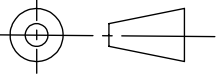


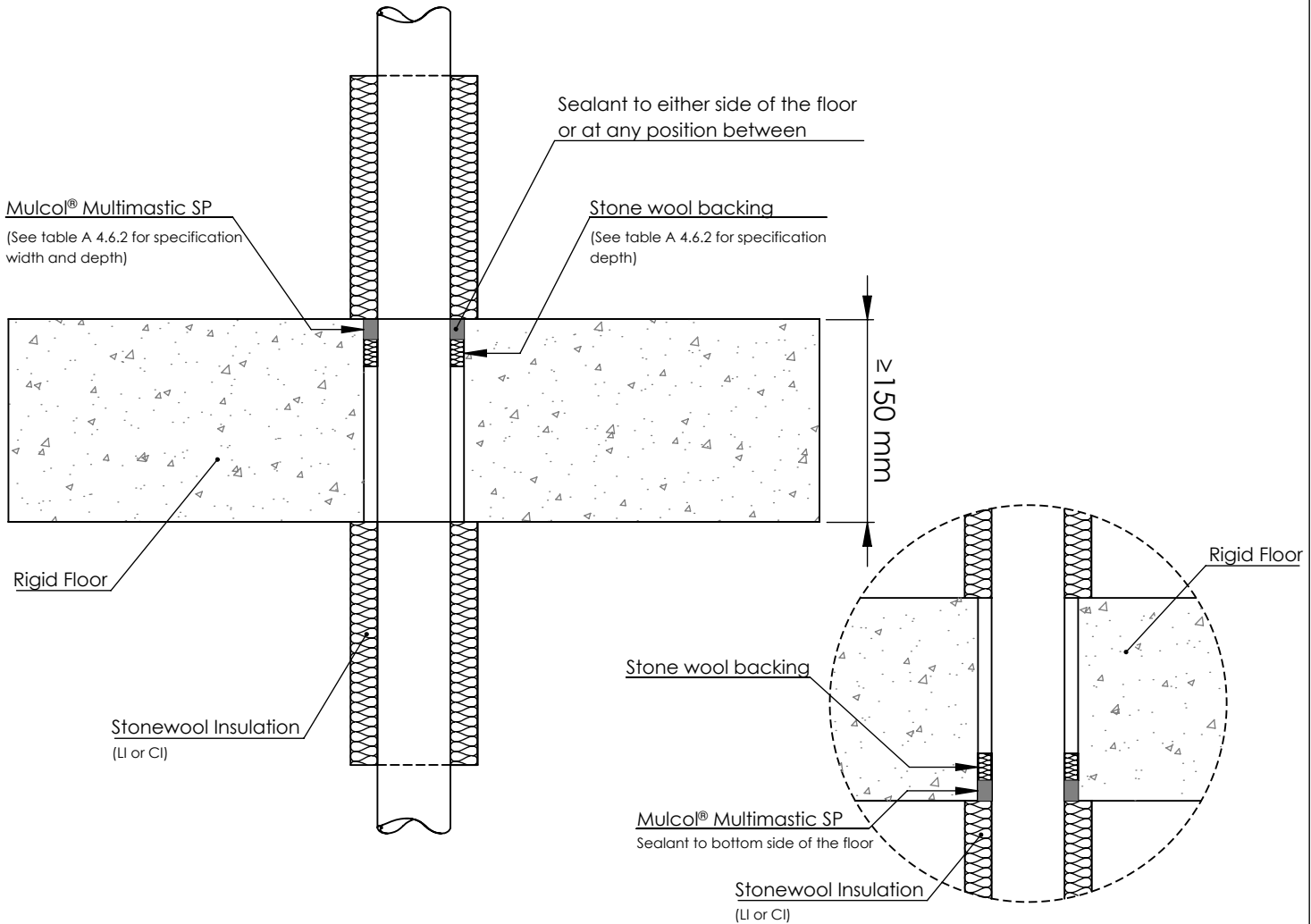
A 4.6.1 Single side penetration seal with (stainless) steel pipes

Services	Classification	Sealant depth	Backing	Insulation	Maximum seal		
Steel pipe Ø 40 mm / 1.0-14.2 mm wall th.	EI 240 C/U	15 mm	20 mm Stone wool insulation, 40 kg/m ³ or 20 mm Mulcol® Multitherm Backing	1000 mm length of 20 mm Stone wool insulation, 80 kg/m ³	10 mm width around pipe		
Steel pipe Ø 40 mm / 1.0-14.2 mm wall th.	E 240, EI 90 C/U			15 mm		20 mm Stone wool insulation, 40 kg/m ³ or 20 mm Mulcol® Multitherm Backing	1000 mm length of 30 mm Stonel wool insulation, 80 kg/m ³
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 / 1.7-14.2 mm wall th.							
Steel pipe Ø 90 mm / 2.0-14.2 mm wall th.							
Steel pipe Ø 100 mm / 2.2-14.2 mm wall th.							
Steel pipe Ø 115 mm / 2.5-14.2 mm wall th.							
Steel pipe Ø 140 mm / 3.0-14.2 mm wall th.							
Steel pipe Ø 165 mm / 3.5-14.2 mm wall th.							
Steel pipe Ø 180 mm / 3.8-14.2 mm wall th.							
Steel pipe Ø 200 mm / 4.2-14.2 mm wall th.							
Steel pipe Ø 219 mm / 4.5-14.2 mm wall th.							

See graph on page 48 for intermediate sizes

Annex A - Resistance to fire classification - Mulcol® Multimastic SP

Fire test pipe penetration seal Mulcol® Multimastic SP Rigid floor construction according to I.2.2			
American projection 	Scale : 1:5	Company : Mulcol International B.V.	RF-ST-MSP1.2.20
	Unit of measure : mm	Department : Research & Development	
	Date : 25-4-2016	Draftsman : R.M.	A4



A 4.6.2 Single side penetration seal with (stainless) steel pipes

Services	Classification	Sealant depth	Backing	Insulation	Maximum seal
Steel pipe Ø 40 mm / 1.0-14.2 mm wall th.	E 90, EI 60 C/U	15 mm	20 mm Stone wool insulation, 40 kg/m ³ or 20 mm Mulcol® Multitherm Backing	1000 mm length of 20 mm Stone wool insulation, 80 kg/m ³	300 x 300 mm
Steel pipe Ø 40 mm / 1.0-14.2 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 / 1.7-14.2 mm wall th.					
Steel pipe Ø 90 mm / 2.0-14.2 mm wall th.					
Steel pipe Ø 100 mm / 2.2-14.2 mm wall th.					
Steel pipe Ø 115 mm / 2.5-14.2 mm wall th.					
Steel pipe Ø 140 mm / 3.0-14.2 mm wall th.					
Steel pipe Ø 165 mm / 3.5-14.2 mm wall th.					
Steel pipe Ø 180 mm / 3.8-14.2 mm wall th.					
Steel pipe Ø 200 mm / 4.2-14.2 mm wall th.					
Steel pipe Ø 219 mm / 4.5-14.2 mm wall th.					

See graph on page 48 for intermediate sizes

Annex A - Resistance to fire classification - Mulcol® Multimastic SP

Fire test pipe penetration seal
 Mulcol® Multimastic SP
 Rigid floor construction according to I.2.2

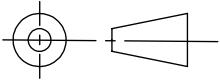


American projection

Scale : 1:5

Company : Mulcol International B.V.

RF-ST-MSP1.2.20



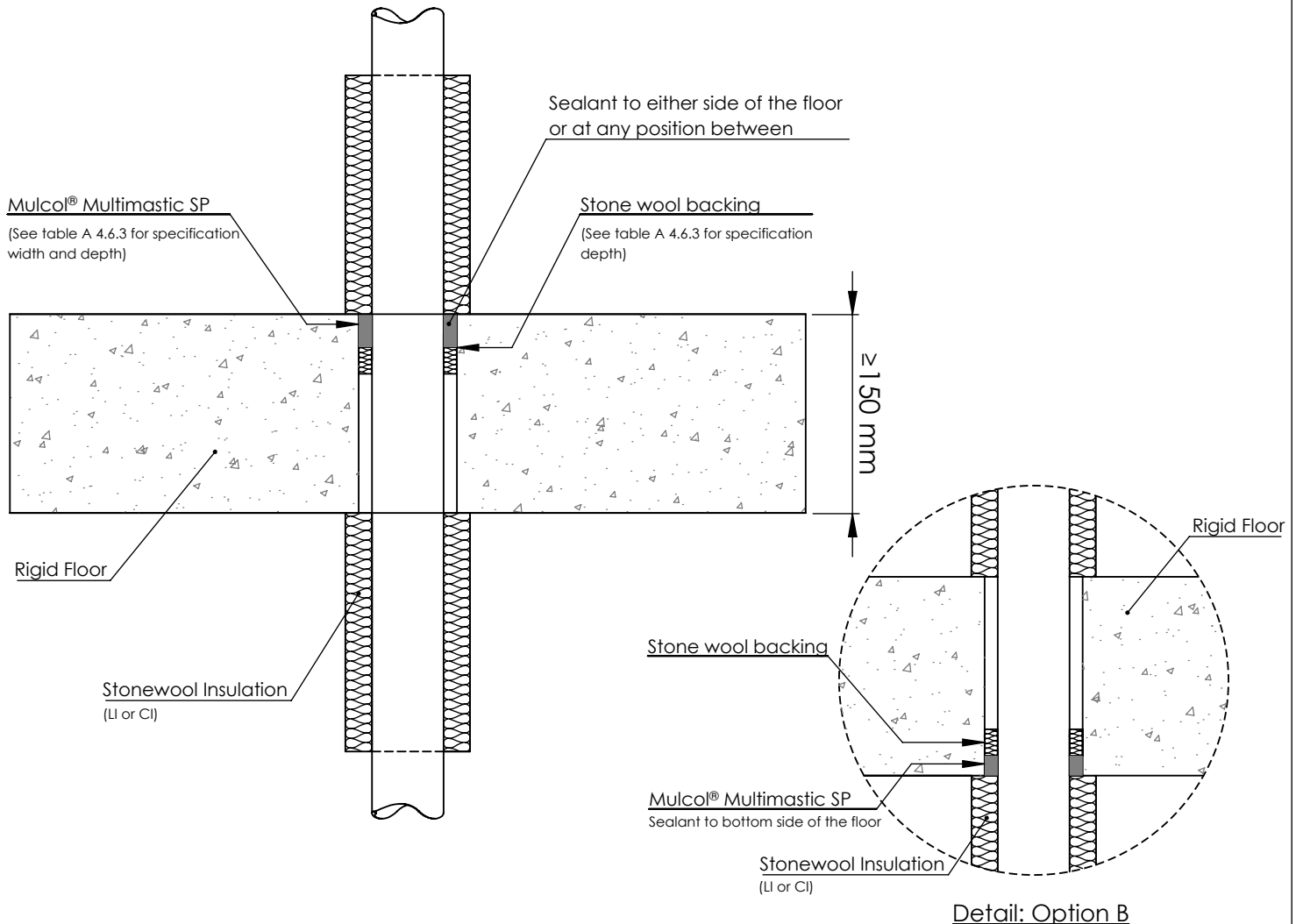
Unit of measure : mm

Department : Research & Development

Date : 25-4-2016

Draftsman : R.M.

A4



A 4.6.3 Single side penetration seal with (stainless) steel pipes

Services	Classification	Sealant depth	Backing	Insulation	Maximum seal
Steel pipe Ø40 mm / 1.0-14.2 mm wall th.	E 120, EI 90 C/U	25 mm	20 mm Stone wool insulation, 40 kg/m ³ or 20 mm Mulcol® Multitherm Backing	1000 mm length of 20 mm Stone wool insulation, 80 kg/m ³	300 x 300 mm or up to 100 x 1000 mm
Steel pipe Ø40 mm / 1.0-14.2 mm wall th.					
Steel pipe Ø50 mm / 1.2-14.2 mm wall th.					
Steel pipe Ø60 mm / 1.4-14.2 mm wall th.					
Steel pipe Ø75 mm / 1.7-14.2 mm wall th.					
Steel pipe Ø90 mm / 2.0-14.2 mm wall th.					
Steel pipe Ø100 mm / 2.2-14.2 mm wall th.					
Steel pipe Ø115 mm / 2.5-14.2 mm wall th.					
Steel pipe Ø140 mm / 3.0-14.2 mm wall th.					
Steel pipe Ø165 mm / 3.5-14.2 mm wall th.					
Steel pipe Ø180 mm / 3.8-14.2 mm wall th.					
Steel pipe Ø200 mm / 4.2-14.2 mm wall th.					
Steel pipe Ø219 mm / 4.5-14.2 mm wall th.					

See graph on page 48 for intermediate sizes

Annex A - Resistance to fire classification - Mulcol® Multimastic SP

Fire test pipe penetration seal
 Mulcol® Multimastic SP
 Rigid floor construction according to I.2.2

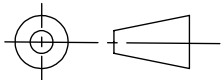


American projection

Scale : 1:5

Company : Mulcol International B.V.

RW-ST-MSP1.2.20



Unit of measure : mm

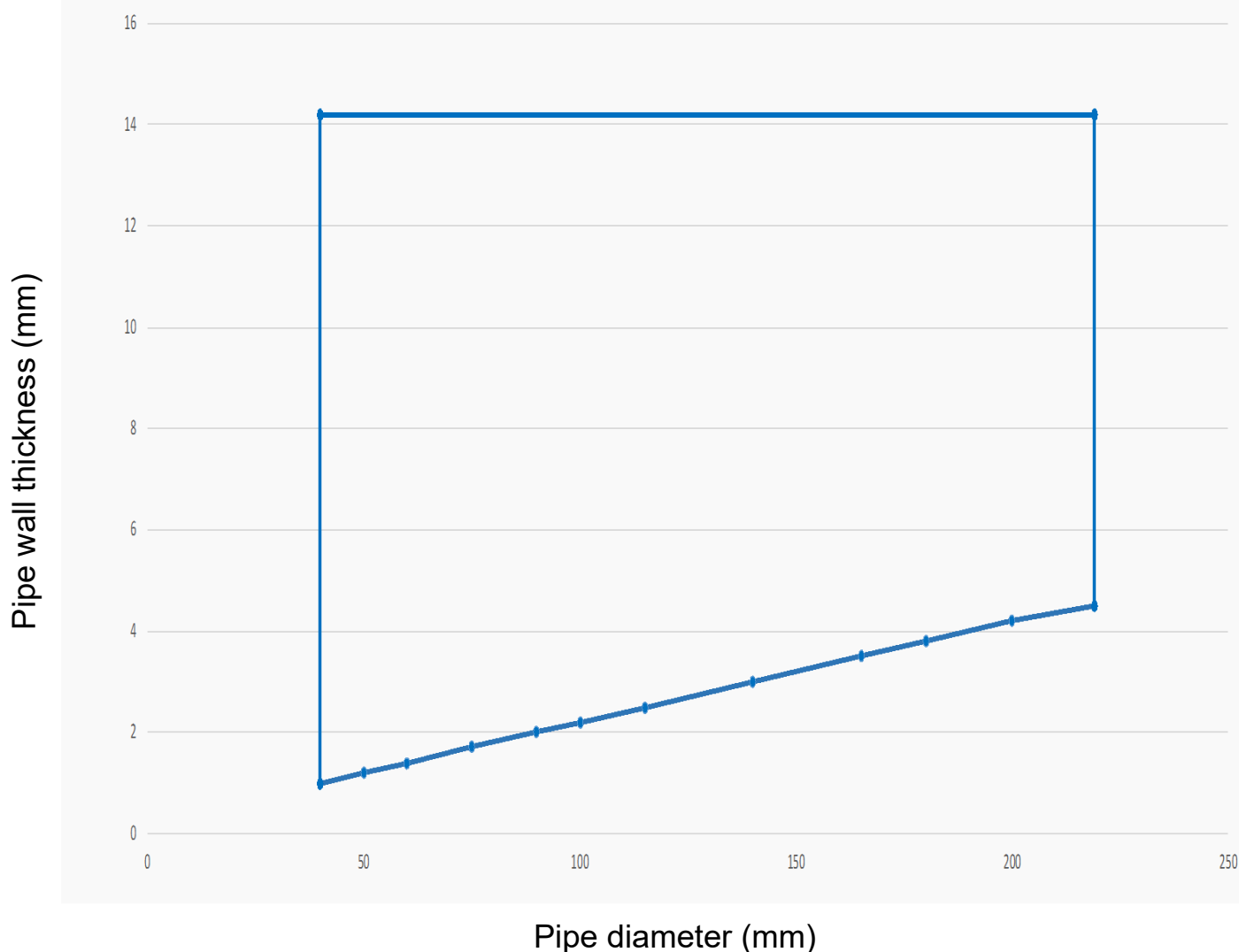
Department : Research & Development

Date : 3-12-2016


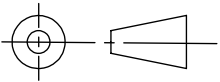
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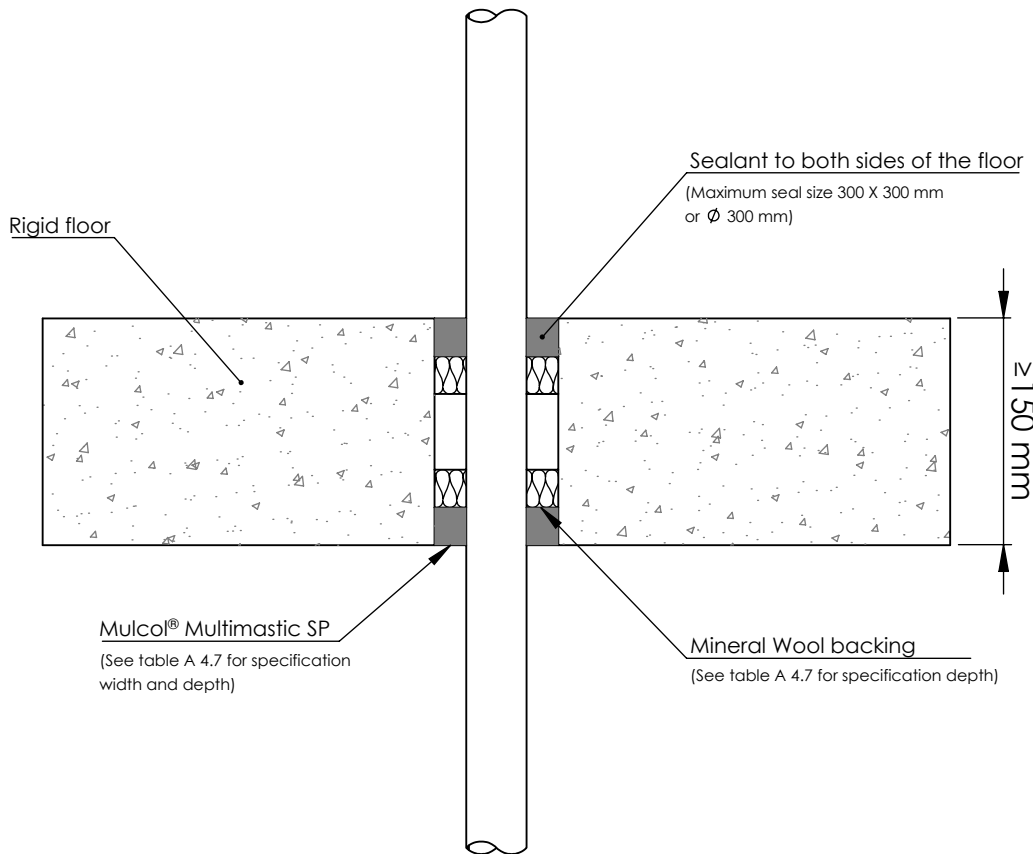
A4

Intermediate sizes



Annex A - Resistance to fire classification - Mulcol® Multimastic SP

Fire test cable penetration seal Mulcol® Multimastic SP Rigid floor construction according to I.2.2			
American projection 	Scale : 1:5	Company : Mulcol International B.V.	RF-EC-MSP2.2.10
	Unit of measure : mm	Department : Research & Development	
	Date : 17-7-2017	Draftsman : R.M.	A4



A 4.7 Double side penetration seal with combustible pipes

Services	Pipe size	Classification	Sealant depth	Backing	Minimum seal
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 / 1.6-3.7 wall thickness, with bundle of cables up to Ø 21 mm	EI 240 U/C	25 mm	25 mm Stone wool Insulation, 33 kg/m ³	10 mm
	Up to Ø 50 mm / 1.6-3.7 wall thickness				
PP pipe according to EN 1451-1	Ø 12 mm / 1.2 wall thickness	EI 240 U/C			
	Ø 13-75 mm / 1.2-6.8 wall thickness	EI 90 U/C			
	Up to Ø 40 mm / 1.2-1.8 wall thickness, with bundle of cables up to Ø 21 mm	EI 180 U/C			
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	Ø 20-40 mm / 2.0-2.4 wall thickness	EI 240 U/C			
	Up to Ø 40 mm / 2.0-2.4 wall thickness, with bundle of cables up to Ø 21 mm	EI 180 U/C			

Annex A - Resistance to fire classification - Mulcol® Multimastic SP

Fire test pipe penetration seal

Mulcol® Multimastic SP

Rigid floor according to construction I.2.2

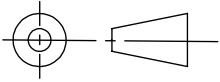


American projection

Scale : 1:5

Company : Mulcol International B.V.

RF-PP-MSP2.2.10



Unit of measure : mm

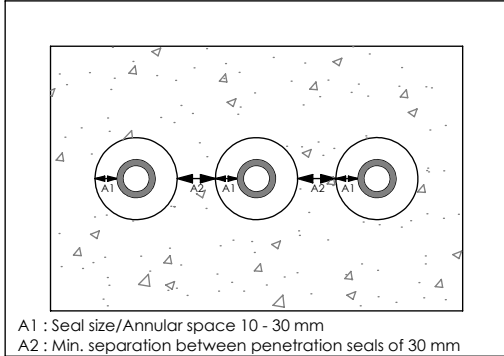
Department : Research & Development

Date : 25-4-2016

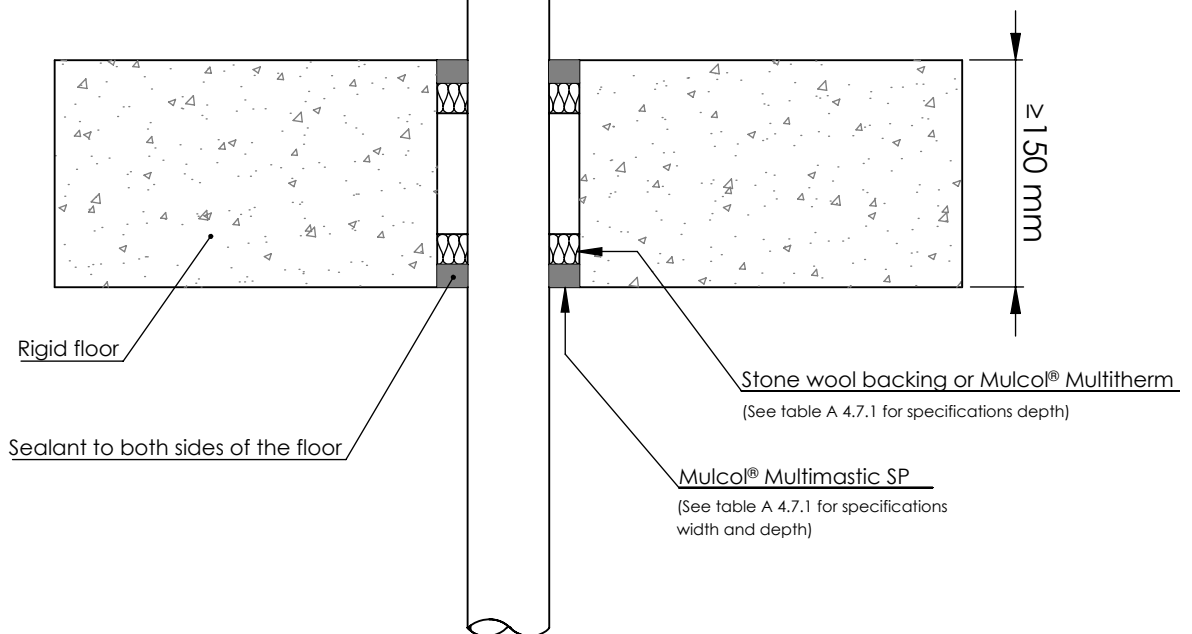
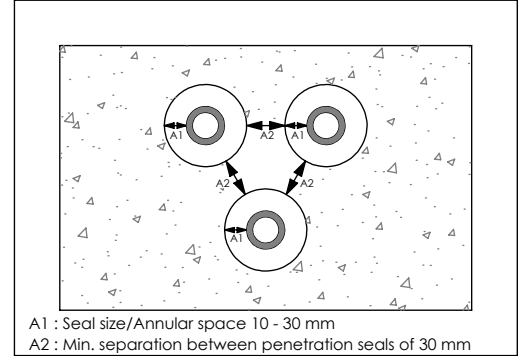
Draftsman : R.M.

A4

Option 1



Option 2

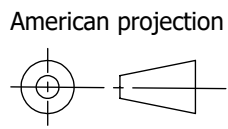


A 4.7.1 Double side penetration seal with combustible pipes

Services	Classification	Sealant depth	Backing	Maximum seal size	Minimum seal width
PP pipe according to EN 1451-1 Ø 40 mm / 3 mm wall th.	EI 120 U/C	25 mm	25 mm Mulcol® Multitherm Backing	Ø 100 mm	10 mm
PP pipe according to EN 1451-1 Ø 75 mm / 2.8 mm wall th.	EI 180 U/C			Ø 130 mm	20 mm
PE (PE-HD) 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 Ø 40mm and 4 mm wall th.	EI 240 U/C		25 mm Stone wool insulation, 140 kg/m ³	Ø 100 mm	10 mm
PVC-U pipes according to EN 1329-1, EN 1453-1 or EN 1452-1, PVC-C according to EN 1566-1 up to Ø 40 mm and 1.6-3.4 mm wall th.	EI 240 U/C			Ø 100 mm	

Annex A - Resistance to fire classification - Mulcol® Multimastic SP

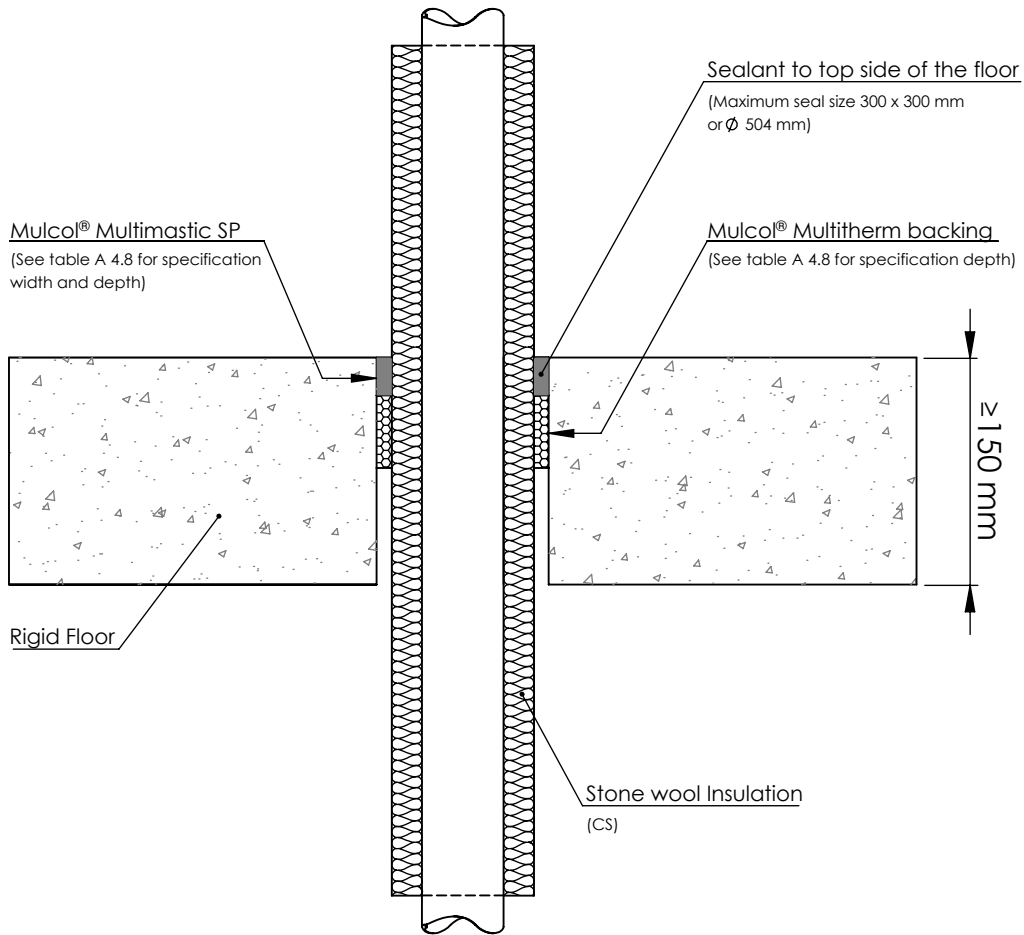
Fire test pipe penetration seal
 Mulcol® Multimastic SP
 Rigid floor construction according to I.2.2



Scale : 1:5
 Unit of measure : mm
 Date : 17-7-2017

Company : Mulcol International B.V.
 Department : Research & Development
 Draftsman : R.M.

RF-ST-MSP1.2.20
 A4



A 4.8 Single side penetration seal with (stainless) steel pipes

Services	Classification	Sealant depth	Backing	Insulation	Minimum seal
Steel pipe Ø 40 mm / 1.0-14.2 mm wall th.	EI 240 C/U	25 mm	48 mm Mulcol® Multitherm Backing	20 mm Stone wool insulation, 80 kg/m ³	10 mm
Steel pipe Ø 40 mm / 1.0-14.2 mm wall th.				30-80 mm Stone wool insulation, 80 kg/m ³	
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 52 for intermediate sizes

Annex A - Resistance to fire classification - Mulcol® Multimastic SP

Fire test pipe penetration seal
 Mulcol® Multimastic SP
 Rigid/Flexible wall construction according to I.2.2

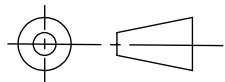


American projection

Scale : 1:5

Company : Mulcol International B.V.

RW-ST-MSP1.2.20



Unit of measure : mm

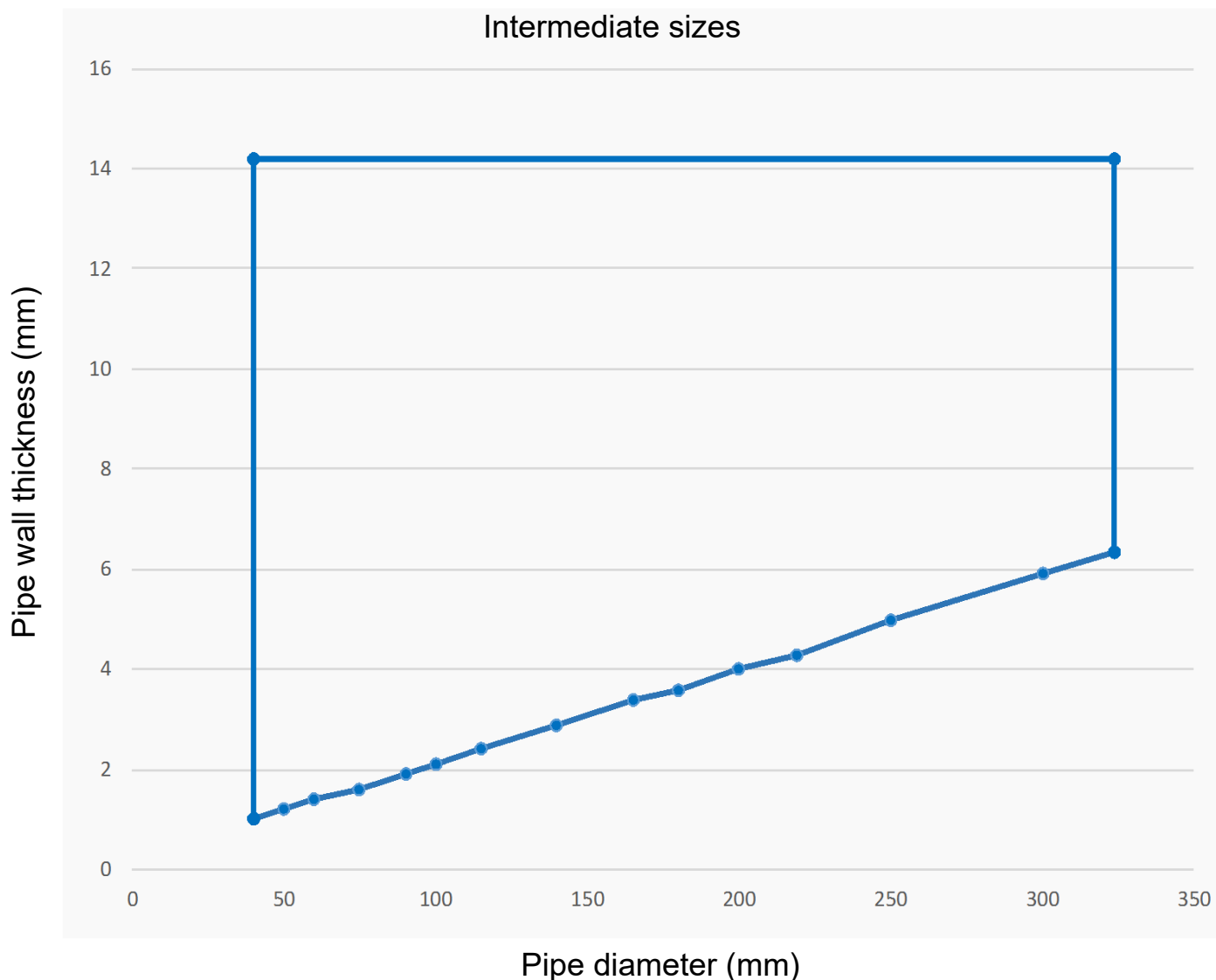
Department : Research & Development

Date : 3-1-2017


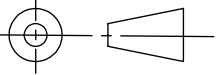
Draftsman : R.M.

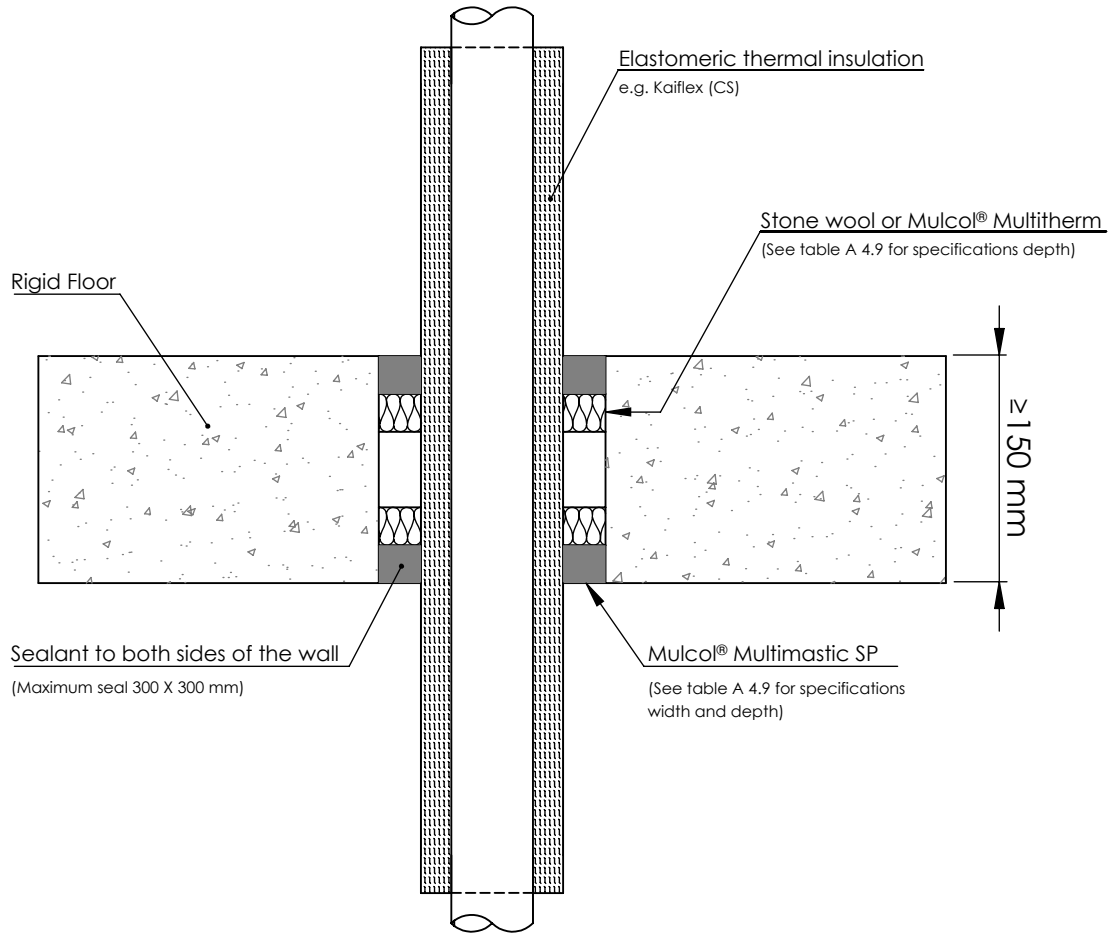
A4

Intermediate sizes



Annex A - Resistance to fire classification - Mulcol® Multimastic SP

Fire test pipe penetration seal Mulcol® Multimastic SP Rigid floor construction according tot I.2.2			
American projection 	Scale : 1:5	Company : Mulcol International B.V.	RF-ST-MSP2.2.22
	Unit of measure : mm	Department : Research & Development	
	Date : 25-4-2016	Draftsman : R.M.	A4



A 4.9 Double side penetration seal with (stainless) steel pipes

Services	Classification	Sealant depth	Backing	Insulation	Maximum seal
Steel pipe Ø 40 mm / 1.0-14.2 mm wall th.	EI 180 C/U	25 mm	20 mm Stone wool insulation, 40 kg/m ³	13 - 19 mm Kaiflex ST Insulation	300 X 300 mm
Steel pipe Ø 40 mm / 1.0-14.2 mm wall th.	EI 60 C/U		25 mm Mulcol® Multitherm Backing		
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 / 2.0-14.2 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 54 for intermediate sizes

Annex A - Resistance to fire classification - Mulcol® Multimastic SP

Fire test pipe penetration seal
 Mulcol® Multimastic SP
 Rigid floor construction according to I.2.2

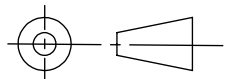


American projection

Scale : 1:5

Company : Mulcol International B.V.

RW-ST-MSP2.2.20



Unit of measure : mm

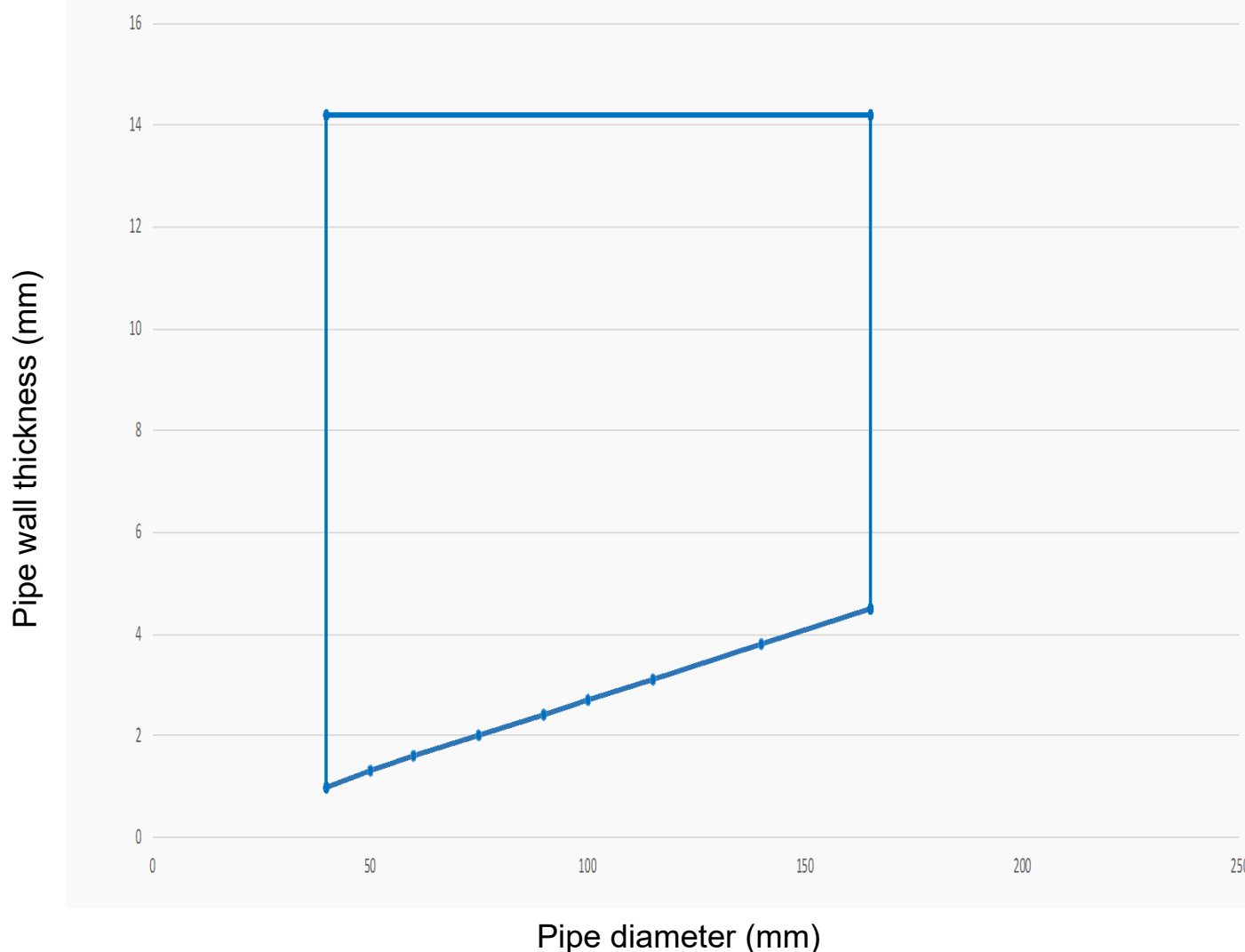
Department : Research & Development

Date : 25-4-2016

Draftsman : R.M.

A4

Intermediate sizes

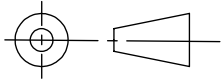


Annex A - Resistance to fire classification - Mulcol® Multimastic SP

Fire test pipe penetration seal
 Mulcol® Multimastic SP
 Rigid floor construction according to I.2.2



American projection

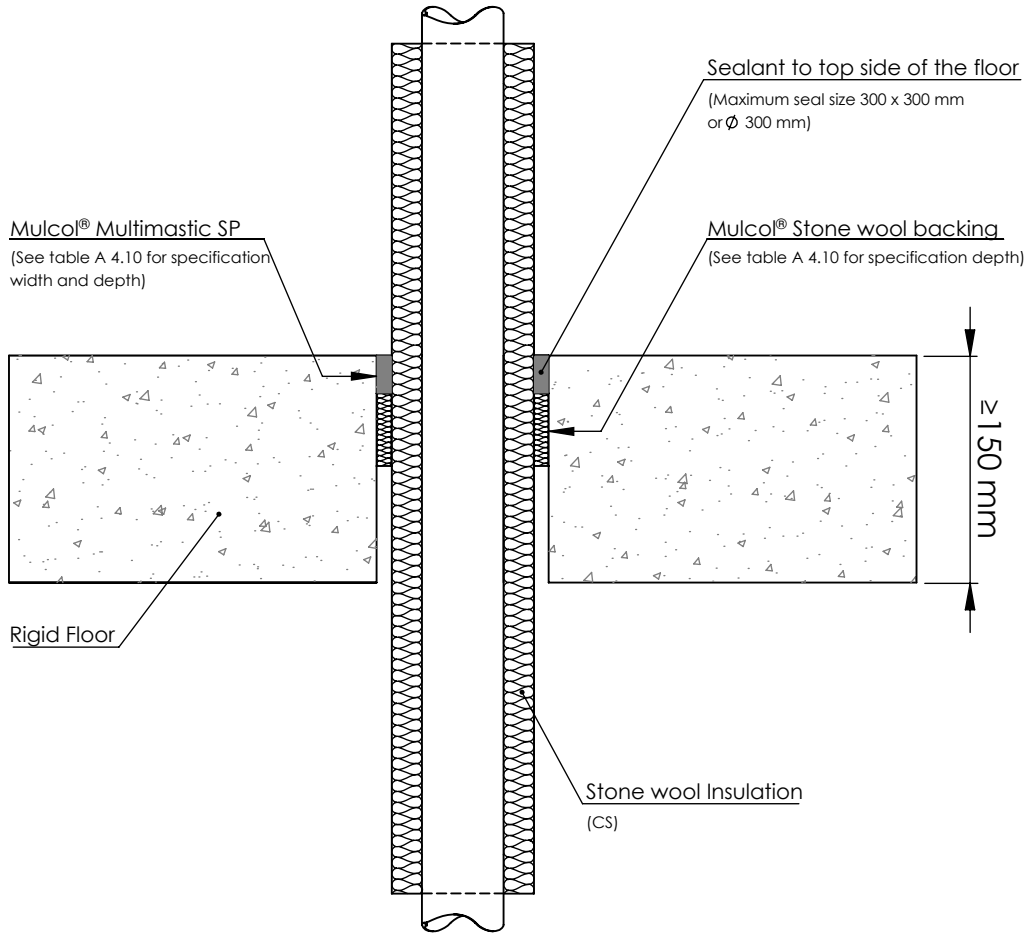


Scale : 1:5
 Unit of measure : mm
 Date : 17-7-2017

Company : Mulcol International B.V.
 Department : Research & Development
 Draftsman : R.M.

RF-ST-MSP1.2.20

A4



A 4.10 Single side penetration seal with copper pipes

Services	Classification	Sealant depth	Backing	Insulation	Minimum seal	Min. separation between seals
Copper pipe Ø 12 mm / 0.9-6 mm wall th.	EI 240 C/U	25 mm	48 mm Stone wool, 33 kg/m ³	20-80 mm Stone wool insulation, 80 kg/m ³	10 mm	30 mm
Copper pipe Ø 13-54 mm / 0.9-14.2 mm wall th.	E 240 C/U, EI 180 C/U					