

RAINWATER SYSTEMS

SPECIFICATION & INSTALLATION GUIDE





The Iplex® vision is to be the leading manufacturer and supplier of plastic building materials in New Zealand.

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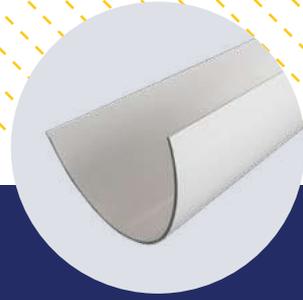
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The Iplex Rainwater™ Systems unique fitting range with rubber ring joint design offers a simple clip in solution reducing assembly time and the need for solvent cement jointing of the spouting profiles.



IPLEX POLYFLOW™



Iplex Polyflow™ is a deep half round profile featuring a rubber ring jointing system for ease of installation and maintenance. The external fascia brackets help prevent leaf buildup and allow for easy cleaning. Iplex Polyflow™ stop ends and corners are symmetrical, reducing the number of different fitting components needed.

Iplex Polyflow™ may be used on residential houses, garages, carports, light commercial buildings, and farm buildings such as hay barns, covered stock yards, pack houses, dairy sheds and wool sheds.

Iplex Polyflow™ spouting and fittings have been tested for resistance to the effects of New Zealand's UV and weathering conditions.

The Iplex Polyflow™ spouting and fittings range complies with AS/NZS 4020 and is safe for carrying drinking water for human consumption.

The Iplex Polyflow™ range has been BRANZ appraised to ensure it meets the minimum requirements of the New Zealand Building Code.

1 **Easy Installation** - Rubber ring joints

2 **Easy Cleaning** - Obstruction free external brackets

3 **Easy Repairs & Maintenance** - Clip in & clip out

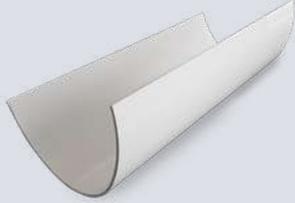
4 **BRANZ Appraised**

5 **15 Year Product Warranty**

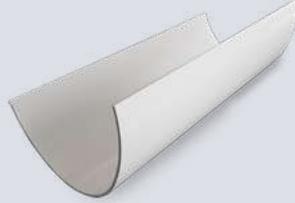


IPLEX POLYFLOW™

PRODUCT RANGE



POLYFLOW SPOUTING 3M
RD500W



POLYFLOW SPOUTING 4M
RD501W



POLYFLOW UNION BRACKET
RD502W



POLYFLOW CORNER 90°
RD503W



POLYFLOW CORNER 135°
RD504W



**POLYFLOW RUNNING
OUTLET**
RD505W



**POLYFLOW EXTERNAL
STOP END**
RD507W



**POLYFLOW INTERNAL
STOP END**
RD508W



**POLYFLOW FASCIA
BRACKET**
RD509W



IPLEX® SPOUTING LUBRICANT
RWL.30

IPLEX POLYFLOW™ SYSTEM COMPONENTS



KEY

- | | | | |
|-----------|-------------------|-----------|-------------------|
| A. | External Stop End | E. | Union Bracket |
| B. | Spouting | F. | Running Outlet |
| C. | 90° Corner | G. | Internal Stop End |
| D. | Fascia Bracket | | |



Technical Information & How To Videos

Scan this QR code for further technical information on Iplex Rainwater™ Systems and to view the How to Videos.

IPLEX POLYFLOW™

ORDERING AND TABLES

PRODUCT RANGE

	White Order Code	Description	Order quantity
	RD500W	Iplex Polyflow™ Spouting 3m	
	RD501W	Iplex Polyflow™ Spouting 4m	
	RD502W	Iplex Polyflow™ Union Bracket (Fix to fascia with 1 screw, after spouting run is fitted into fascia brackets)	
	RD503W	Iplex Polyflow™ Corner 90° Suitable for either internal or external corners. (No screws required) (Install a fascia bracket adjacent to both sides of the corner)	
	RD504W	Iplex Polyflow™ Corner 135° Suitable for either internal or external corners. (No screws required) (Install a fascia bracket adjacent to both sides of the corner)	
	RD505W	Iplex Polyflow™ Running Outlet (Fix to fascia with 2 screws after spouting run is fitted into fascia brackets)	
	RD507W	Iplex Polyflow™ External Stop End (Used on the spouting - suitable in either LH or RH positions)	
	RD508W	Iplex Polyflow™ Internal Stop End (Used inside the running outlet - suitable in either LH or RH position)	
	RD509W	Iplex Polyflow™ Fascia Bracket (Fix to fascia with 3 screws) (Install at max 1.0m centres)	
	RWL.30	Iplex® Spouting Lubricant (Apply sparingly as a lighter smear to each seal gasket before jointing)	

IPLEX POLYFLOW™

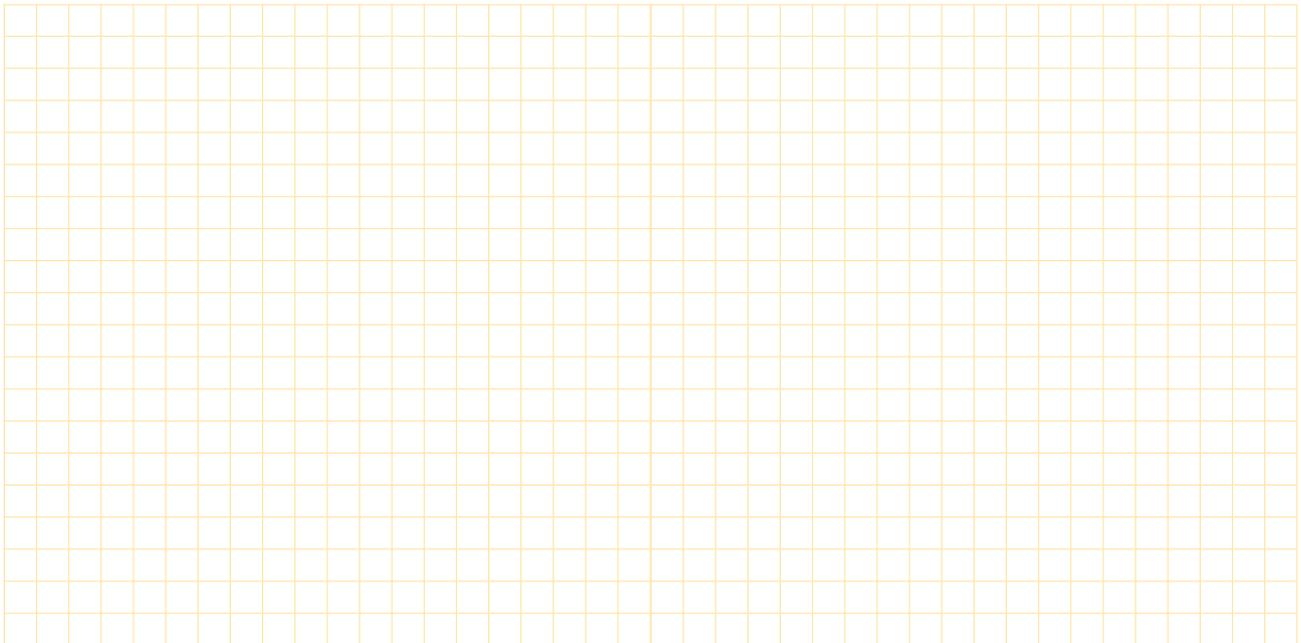
DESIGN AND CALCULATION

THE SELECTION PROCESS	White Order Code	Qty	Iplex Polyflow™ Product Description
<p>The spouting profile and number of downpipes will depend on the amount of rainfall you expect, the size of house and pitch of the roof. Larger roof areas collect more rainwater and require more downpipes to drain it.</p> <p>Use the calculation grid below to identify your needs and which components you require.</p> <p>Then, list the items you require in the ordering table.</p>	RD500W		Spouting 3M
	RD501W		Spouting 4M
	RD502W		Union Bracket
	RD503W		Corner 90°
	RD504W		Corner 135°
	RD505W		Running Outlet
	RD507W		External Stop End
	RD508W		Internal Stop End
	RD509W		Fascia Bracket

CALCULATING YOUR NEEDS

Draw your roofline with scaled measurements , including ridge, hip and valley lines. Mark the positions of the downpipes, these will be at the low points of the spouting runs and may be determined by existing downpipes or stormwater outlets.

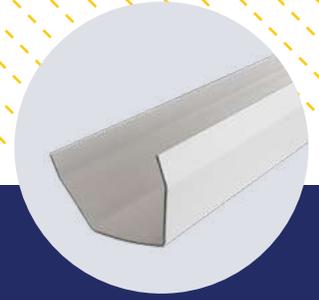
Note: Include RWL.30 jointing lubricant- allow approximately 1 tube per 60 lineal metres of spouting run.



Note: For more information check the product technical page at www.iplex.co.nz or contact us on 0800 800 262.



Iplex SQUARE™



Iplex Square™ provides a clean modern angular profile featuring a rubber ring jointing system for ease of installation and maintenance. The external fascia brackets help prevent leaf buildup and allow for easy cleaning. Iplex Square™ stop ends and corners are symmetrical, reducing the number of different fitting components needed.

Iplex Square™ may be used on residential houses, garages, carports, light commercial buildings, and farm buildings such as hay barns, covered stock yards, pack houses, dairy sheds and wool sheds.

Iplex Square™ spouting and fittings have been tested for resistance to the effects of New Zealand's UV and weathering conditions.

The Iplex Square™ spouting and fittings range complies with AS/NZS 4020 and is safe for carrying drinking water for human consumption.

1 Easy Installation - Rubber ring joints

2 Easy Cleaning - Obstruction free external brackets

3 Easy Repairs & Maintenance - Clip in & clip out

4 BRANZ Appraised

5 15 Year Product Warranty



IPLEX SQUARE™

PRODUCT RANGE



SQUARE SPOUTING 2M

RS200W



SQUARE SPOUTING 4M

RS201W



SQUARE UNION BRACKET

RS202W



SQUARE CORNER 90°

RS203W



**SQUARE SPOUTING
CORNER 135°**

RS204W



SQUARE CORNER 150°

RS215W



SQUARE RUNNING OUTLET

RS205W



**SQUARE SHORT STOP END
OUTLET**

RS206W



**SQUARE EXTERNAL STOP
END**

RS207W



**SQUARE INTERNAL STOP
END**

RS208W



SQUARE FASCIA BRACKET

RS209W



**SQUARE TO 65MM ROUND
DOWNPipe ADAPTOR**

RS231W



IPLEX® SPOUTING LUBRICANT

RWL.30

Iplex SQUARE™ SYSTEM COMPONENTS



KEY

- | | | | |
|-----------|-------------------|-----------|----------------------------------|
| A. | External Stop End | F. | Square to Round Downpipe Adaptor |
| B. | Spouting Length | G. | Running Outlet |
| C. | 90° Corner | H. | Internal Stop End |
| D. | Fascia Bracket | I. | Short Stop End Outlet |
| E. | Union Bracket | | |



Technical Information & How To Videos

Scan this QR code for further technical information on Iplex Rainwater™ Systems and to view the How to Videos.

IPLEX SQUARE™

ORDERING AND TABLES

PRODUCT RANGE

	White Order Code	Description	Order quantity
	RS200W	Iplex Square™ Spouting 2m	
	RS201W	Iplex Square™ Spouting 4m	
	RS202W	Iplex Square™ Union Bracket (Fix to fascia with 1 screw after spouting run is fitted into fascia brackets)	
	RS203W	Iplex Square™ Corner 90° Suitable for either internal or external corners (No screws required) (Install a fascia bracket adjacent to both sides of corner)	
	RS204W	Iplex Square™ Corner 135° Suitable for either internal or external corners (No screws required) (Install a fascia bracket adjacent to both sides of corner)	
	RS215W	Iplex Square™ Corner 150° Suitable for either internal or external corners (No screws required) (Install a fascia bracket adjacent to both sides of corner)	
	RS205W	Iplex Square™ Running Outlet (Use with RS231 square to round adaptor) (Fix to fascia with 2 screws after the spouting run is fitted into fascia brackets) (Use with RS231 square to round adaptor)	
	RS206W	Iplex Square™ Short Stop End Outlet Suitable in either LH or RH positions (Install with RS209 fascia bracket) (Use with RS231 square to round adaptor)	
	RS207W	Iplex Square™ External Stop End (Used on the spouting - suitable in either LH or RH position)	
	RS208W	Iplex Square™ Internal Stop End (Used inside the running outlet - suitable in either LH or RH position)	
	RS209W	Iplex Square™ Fascia Bracket (Fix to fascia with 3 screws) (Fix at max 1.0m centres)	
	RS231W	Iplex Square™ to 65mm Round Downpipe Adaptor (Fix to running outlet with 2 screws)	
	RWL.30	Iplex® Spouting Lubricant (Apply sparingly as a lighter smear to each seal gasket before jointing)	

IPLEX SQUARE™

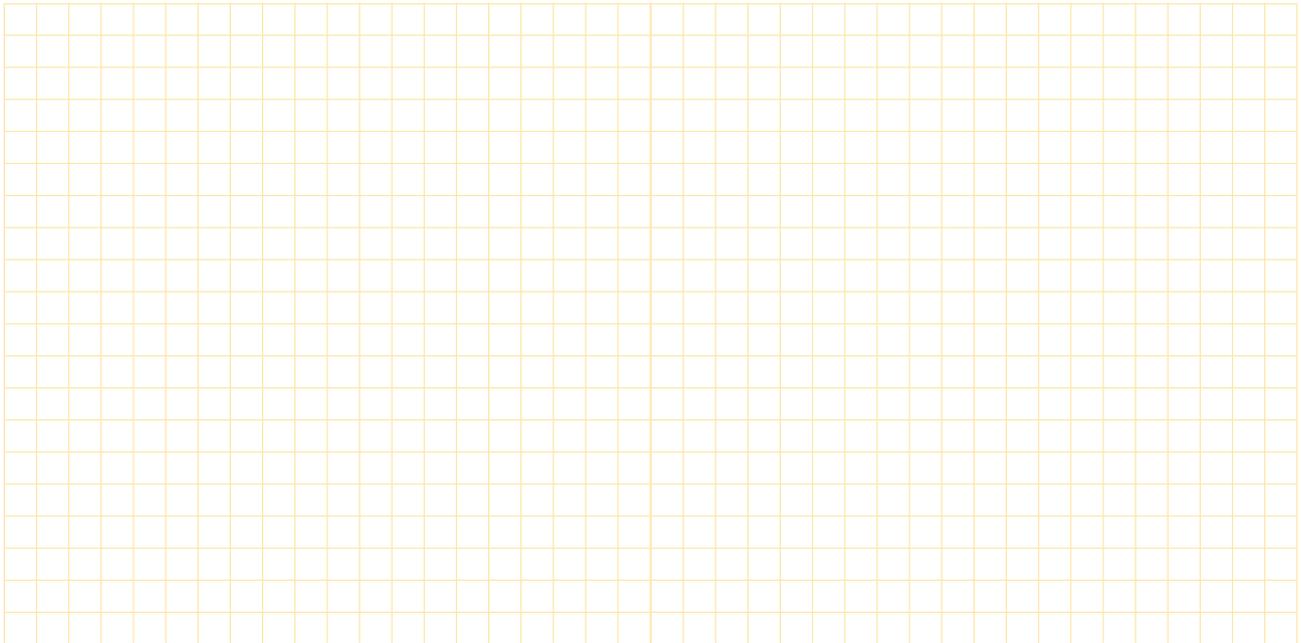
DESIGN AND CALCULATION

THE SELECTION PROCESS	White Order Code	Qty	Iplex Square™ Product Description
<p>The spouting profile and number of downpipes will depend on the amount of rainfall you expect, the size of house and pitch of the roof. Larger roof areas collect more rainwater and require more downpipes to drain it.</p> <p>Use the calculation grid below to identify your needs and which components you require.</p> <p>Then, list the items you require in the ordering table.</p>	RS200W		Spouting 2m
	RS201W		Spouting 4m
	RS202W		Union Bracket
	RS203W		Corner 90°
	RS204W		Corner 135°
	RS215W		Corner 150°
	RS205W		Running Outlet
	RS206W		Short Stop End Outlet
	RS207W		External Stop End
	RS208W		Internal Stop End
	RS209W		Fascia Bracket
	RS231W		65mm Round Downpipe Adaptor

CALCULATING YOUR NEEDS

Draw your roofline with scaled measurements, including ridge, hip and valley lines. Mark the positions of the downpipes, these will be at the low points of the spouting runs and may be determined by existing downpipes or storm water outlets.

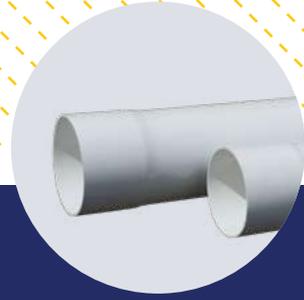
Note: Include RWL.30 jointing lubricant - allow approximately 1 tube per 60 lineal metres of spouting run.



Note: For more information check the product technical page at www.iplex.co.nz or contact us on 0800 800 262.



Iplex® DOWNPIPE



Iplex® PVC-U downpipes and fittings are a solvent cement joint system. Iplex® downpipes and fittings may be used on residential houses, garages, carports, light commercial buildings, and farm buildings such as hay barns, covered stock yards, pack houses, dairy sheds and wool sheds.

Iplex Rainwater™ downpipe and fittings have been tested for resistance to the effects of New Zealand's UV and weathering conditions.

Iplex Rainwater™ downpipe and fittings comply with AS/NZS 4020 and are safe for carrying drinking water for human consumption.

1 Range of Sizes and Fittings

2 Range of Adaptors

3 Female & Female (F&F) bends that can be converted to Male & Female (M&F). 65mm + 80mm

4 BRANZ Appraised

5 15 Year Product Warranty



IPLEX® DOWNPIPES

PRODUCT RANGE



DOWNPIPE
65mm RP65.3SOE



DOWNPIPE
80mm RP80.3SOE



**DOWNPIPE OR
STORMWATER PIPE**
90mm 700SN4.90.6 SOE



SOCKET BEND 95° F&F
65mm RWB.65.95
80mm RWB.80.95



JUNCTION F&F&M
65mm RWJ.65.95
80mm RWJ.80.95



PIPE SUPPORT CLIPS
65mm DPC.65
80mm DPC.80



SOCKET BEND 112° F&F
65mm RWB.65.112
80mm RWB.80.112



**DOWNPIPE STORMWATER
ADAPTOR**
65mm DPA.65.90
80mm DPA.80.90



GUTTER POP
80mm GP.80



DOWNPIPE SOCKET JOINER
65mm RWSOC.65
80mm RWSOC.80



DOWNPIPE SOLVENT CEMENT
DSC150W

Note: Iplex® 65mm and 80 mm PVC-U rainwater downpipes are suitable for above ground applications only. Iplex Superstorm® 90mm, 100mm or 150mm PVC-U stormwater pipes and fittings may be used for underground rainwater pipes or for larger diameter above ground rainwater down pipes.

* Iplex Superstorm® stormwater pipes and fittings used above ground, must be painted with a pale-coloured UV resistant water based paint system, for weathering protection.

IPLEX® DOWNPIPES SYSTEM COMPONENTS



KEY

- | | | | |
|-----------|-------------------|-----------|--------------------------------|
| A. | Socket Bend | D. | Junction |
| B. | Downpipe | E. | Downpipe Socket Joiner |
| C. | Pipe Support Clip | F. | Downpipe to Stormwater Adaptor |

IPLEX® DOWNPIPES

ORDERING AND TABLES

PRODUCT RANGE

The spouting profile and number of downpipes you need will depend on the amount of rainfall you expect, the size of house and the pitch angle of the roof. Larger roof areas collect more rainwater and require more downpipes to drain it.

	Order Code	Description	Size (mm)	Order quantity
	RP65.3SOE White	Downpipe , above ground application, 65mm	65 x 3m	
	RP80.3SOEW White	Downpipe , above ground application, 80mm	80 x 3m	
	700SN4.90.6 SOE Grey	Downpipe or stormwater pipe , above* or below ground application, 90mm	90 x 6m	
	RWB.65.95 White	Socket bend 95° F&F (convertable to M&F)	65 x 95°	
	RWB.80.95 White	Socket bend 95° F&F (convertable to M&F)	80 x 95°	
	RWB.65.112 White	Socket bend 112° F&F (convertable to M&F)	65 x 112°	
	RWB.80.112 White	Socket bend 112° F&F (convertable to M&F)	80 x 112°	
	RWJ.65.95 White	Junction F&F&M	65 x 95°	
	RWJ.80.95 White	Junction F&F&M	80 x 95°	
	DPC.65 White	Pipe support clips	65mm	
	DPC.80 White	Pipe support clips	80mm	
	DPA.65.90 White	Downpipe to stormwater adaptor F&F	65mm x 90mm	
	DPA.80.90 White	Downpipe to stormwater adaptor F&F	80mm x 90mm	
	RWSOC.65 White	Downpipe socket joiner M&F	65mm	
	RWSOC.80 White	Downpipe socket joiner M&F	80mm	
	GP.80 White	Gutter pop (Allows 80mm downpipe connection directly to the spouting profile. Cut 80mm round hole and solvent cement flange to inside of spouting.)	80mm	
	DSC150 White	Downpipe Solvent Cement (use with white Iplex® PVC downpipe fittings)	150ml	

Note: Iplex® 65mm and 80 mm PVC-U rainwater downpipes are suitable for above ground applications only. Iplex Superstorm® 90mm, 100mm or 150mm PVC-U stormwater pipes and fittings may be used for underground rainwater pipes or for larger diameter above ground rainwater down pipes.

* Iplex Superstorm® stormwater pipes and fittings used above ground, must be painted with a pale-coloured UV resistant water based paint system, for weathering protection.

IPLEX® DOWNPIPES ○ DESIGN AND CALCULATION

THE SELECTION PROCESS

The number of downpipes will depend on the amount of rainfall you expect, the size of house and pitch angle of the roof. Larger roof areas collect more rainwater and require more downpipes to drain it.

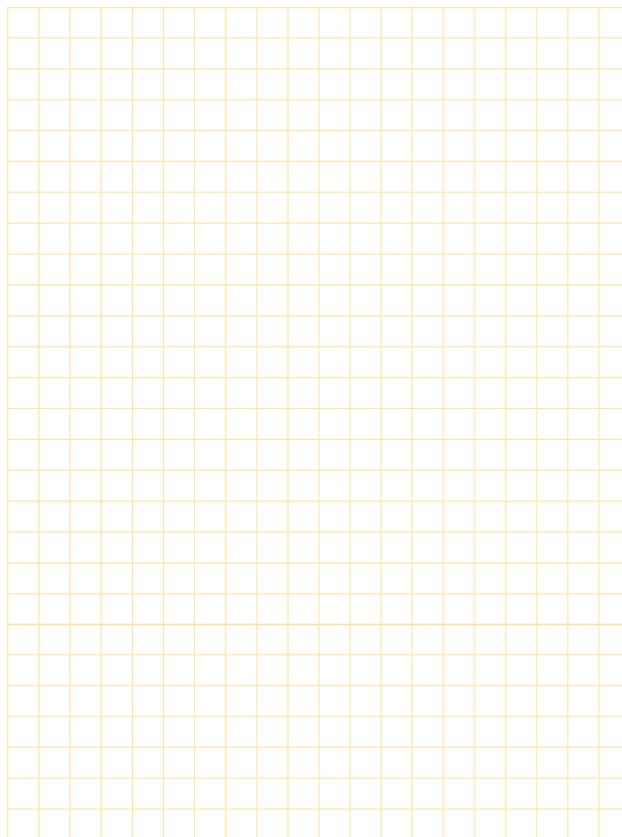
Use the calculation grid below to identify your needs and which components you require.

Then, list the items you require in the ordering table.

Product Code	Qty	Product Description/Colour
RP65.3SOE		Downpipe / White
RP80.3SOE		Downpipe / White
RWB.65.95		Socket Bend 95° / White
RWB.80.95		Socket Bend 95° / White
RWB.65.112		Socket Bend 112° / White
RWB.80.112		Socket Bend 112° / White
RWJ.65.95		Junction 95° / White
RWJ.80.95		Junction 95° / White
DPC.65		Pipe Clips / White
DPC.80		Pipe Clips / White
DPA.65.90		Downpipe to Stormwater® Adaptor / White
DPA.80.90		Downpipe to Stormwater® Adaptor / White
RWSOC.65		Downpipe Socket Joiner / White
RWSOC.80		Downpipe Socket Joiner / White
GP.80		Gutter Pop / White
RSC150		Downpipe Cement / White

CALCULATING YOUR NEEDS

Draw your roofline with scaled measurements, including ridge, hip and valley lines. Mark the positions of the downpipes, these will be at the low points of the spouting runs and may be determined by existing downpipes or Stormwater® outlets.



Note: For more information check the product technical page at www.iplex.co.nz or contact us on 0800 800 262.

Installation and MAINTENANCE



SPOUTING INSTALLATION INSTRUCTIONS

CONSIDERATIONS

On the fascia board, brackets can be installed anywhere along the fascia, at max 1.0m centres. On exposed rafters, brackets must be installed on the end of each exposed rafter. Running outlets or union brackets must be fixed on the end of the exposed rafter, or on solid support timber installed between the rafter ends.

NB. Iplex® recommends completing all cleaning or painting of the fascia or rafters before installing the spouting system.

1 / Low points

Begin by identifying the spouting low points. These will be the positions of the downpipe outlets. On existing buildings, the low points may be easily identified by observing the location of existing downpipes and stormwater outlets or connections.



2 / High points

Next, identify the high points. If possible, the high points should be located at the corners of the building. When a long run of spouting is required, Iplex® recommends setting the high point approximately halfway between the low points.



3 / String line or chalkline

Next, position and fix a fascia bracket near the high point, as high as possible under the roof overhang. Fix another fascia bracket near the low point and run a stringline between these fascia brackets. Iplex® recommends a fall of 1:500, (ie 2mm of fall per lineal metre of spouting) The absolute minimum fall is 1:2000 (ie 5mm per 10 lineal metres of gutter run). Ensure the stringline or chalkline remains tight and in position until all the fascia brackets have been fixed.



4 / Measure and mark

Measure and mark the fascia bracket positions along the fascia, at maximum 1.0 metre centres* starting from the high point fascia bracket.

* Note: In areas susceptible to high snow fall, reduced fascia bracket spacing of 0.5 metres is recommended.



5 / Install fascia brackets first

Fix the fascia brackets to the fascia, carefully aligned to the stringline or chalkline at the marked bracket spacing positions. Use three self-tapping screws for each bracket. Leave space for union brackets or running outlets in place of fascia brackets where necessary. Do not install the union bracket at this time.



NB. Corrosion resistant screws must be used, such as stainless steel or epoxy coated, suitable for treated timber.

Iplex® recommends 40x8g length corrosion resistant square drive, self-tapping screws, installed with a 150mm length, self magnetic driver bit, for attaching the brackets. For metal fascia, use either screw fasteners or pop rivets that are compatible with the fascia material.

SPOUTING INSTALLATION INSTRUCTIONS

6 / Cut spouting

If a special length of spouting is needed, measure and mark the spouting length and cut accurately square with a fine-tooth saw. (eg hacksaw) Carefully remove all burrs from the cut edge to prevent damage the rubber seal.

NB. Iplex® recommends supporting the spouting, during cutting using a mitre box or internal supporting block to help achieve a square cut.



7 / Assemble spouting

Where possible, pre-assemble end fittings, such as stop ends, union brackets or running outlets, onto a spouting length before placing it up into the fascia brackets.

Ensure both spouting ends are positioned at the 'insert to here' line moulded inside each fitting, which allows for thermal expansion or contraction of the spouting in service.

(Apply RWL joint lubricant sparingly as a light smear to each seal gasket before jointing)



8 / Clip in the spouting back edge

Lift the spouting assembly up and roll it into the fascia brackets by the back edge first. Check the end position of the spouting to ensure it is correctly placed along the fascia board, then firmly engage the back edge of the spouting (the side nearest the fascia board) up under the retaining clip on each fascia bracket.



9 / Clip in the front edge

Apply firm downward pressure to the spouting front edge (the side nearest to the installer). Click the retaining clip over the top front edge of the spouting using both thumbs.



10/Connect the next length

Repeat this assembly method with the next lengths of spouting in the run. Before completion, ensure every fixing hole has the correct fixings installed.

Ensure both spouting ends are positioned at the 'insert to here' line.



FINAL CONSIDERATIONS

Union Brackets –After the spouting is fitted into the fascia brackets, fix each union bracket to the fascia with a single self-tapping screw.

Running Outlets –After the spouting is fitted into the fascia brackets, fix each running outlet to the fascia with two self-tapping screws.

Corners – For **Iplex Square™** and **Iplex Polyflow™** profiles, Corners are bi-positional, so the same fitting is used in either the internal or external position. These corners are supported by the spouting itself and by a fascia bracket fixed adjacent to both side of the corner. No screws are used on these corners.

Stop Ends –**Iplex Square™** and **Iplex Polyflow™** stop ends are bi-positional so the same fitting is used in either the left-hand (LH) or right-hand (RH) position.

DOWNPIPE INSTALLATION INSTRUCTIONS

1 / Outlet

For the **Iplex Square™** profile, use the square to round pipe adaptor to connect the outlet to the downpipe. **Iplex Polyflow™** outlets connect directly into the downpipe. Iplex recommend all downpipes are fixed to the outlet with either 2 small corrosion resistant screws or with Iplex PVC downpipe solvent cement. This will prevent any dropping of downpipes due to water flow or thermal expansion.



2 / Offsets

An offset is often required below the running or short end outlet to align with the building wall. Cut and dry assemble the downpipe and bends working from a top down sequence. Make allowance for the socket depth when cutting the downpipe to length (**apply a pencil mark to show the final insertion depth and alignment**). Also make allowance for the downpipe to be spaced off the wall by the downpipe support bracket.



Support the offset by installing a pipe bracket directly below the lower offset bend.

3 / Join downpipe & fittings

When the downpipe assembly is sitting in the correct position, Use Iplex® PVC solvent cement to join all the downpipe and fittings together, carefully noting the pencil marks.



4 / Downpipe support clips

Fit support clips on vertical downpipes with a maximum spacing of 2.5m between clips. Mark the support clip positions with a builders' level. Use 2 corrosion resistant self-tapping screws on each clip.

NB. On graded downpipes (where a downpipe runs horizontally along a wall), fit support clips no more than 1.2m apart.



5 / Connect to stormwater pipe

Iplex® 65mm downpipe may be connected with solvent cement joints to underground 90mm or 100mm Iplex® PVC stormwater pipe, using Iplex® downpipe adaptors.



Note: Iplex® recommend the installation of a PVC DWV access junction with sealed removable access cap, - positioned near to ground level, in "charged" inverted syphon pipes connected to rainwater tanks, to aid periodic flushing of the charged pipe.



MAINTENANCE INSTRUCTIONS

The external brackets used in all of Iplex Rainwater™ systems allow for easier cleaning of debris. Some cleaning options are shown below.

1 / Avoid damage

Avoid placing a ladder directly against the spouting, as this can be both a safety hazard and can damage the spouting and brackets.



2 / Clear debris

Regularly check and clear debris from the inside of your spouting and downpipes. Iplex® recommend **working safely from the ground**, using a gutter broom or power blower with a spouting cleaning attachment.



3 / Clean Annually

Iplex® recommends washing the Iplex Rainwater™ System annually, using a soft bristled brush or garden hose. Iplex® recommends working safely from the ground while undertaking cleaning.



REPAIR INSTRUCTIONS

1 / Unclip & Remove

Unclip and remove the damaged spouting section and replace any damaged support brackets.



2 / Measure and mark

Measure the length of replacement spouting required. This will be the distance between the "insert to here" lines marked inside the fittings at each end of the replacement spouting section. If the replacement section is less than a full gutter length, accurately and squarely cut a replacement section to the correct length.



3 / Fit the spouting section

Fit the replacement spouting section into the fascia brackets or union brackets and clip into place.

Ensure both spouting ends are positioned at the 'insert to here' line moulded inside each fitting, which allows for thermal expansion or contraction of the spouting in service.



DESIGN AND SELECTION

SPOUTING SYSTEM SELECTION AND SIZING

The aim of designing a rainwater system is normally to achieve a balance between the cost of the system and the frequency and consequence of possible flooding, whilst always achieving compliance with the relevant parts of the New Zealand Building Code. The capacity of the spouting should be designed to provide adequate disposal of the peak rainfall intensity predicted in each New Zealand Region.

A simple methodology for roof drainage design is shown below but for further information regarding roof drainage refer to BRANZ Bulletin Issue 509 - Sizing gutters and downpipes. (The Iplex® methodology may deliver a slightly more conservative result compared with BRANZ Bulletin 509).

CALCULATE THE EFFECTIVE ROOF AREA (ERA)



To calculate the effective roof area, use the following equation:

$$\text{E.R.A (m}^2\text{)} = \left(\frac{H}{2} + W\right) \times L$$

Where:

H = Height of pitch roof

W = Width of pitch roof

L = Length of roof

Where the pitch angle of the roof is less than 10%, the effective roof area is simply taken as the plan area of the roof i.e. length (L) x width (W).

DESIGN AND SELECTION

DETERMINE SPOUTING LAYOUT AND PROFILE

To determine the profile of spouting (gutter) required it is now necessary to define three criteria:

1 / How many outlets are on the spouting?

2 / What positions these outlets are in?

The number and position of spouting outlets is usually determined by the position and number of inlets to the receiving stormwater management system, or to storage tanks for rainwater harvesting.

3 / What fall is the spouting to be installed at?

The total fall of a spouting run may be limited by the depth of the fascia and by the visual effect of the spouting installed to a fall.

Iplex® recommends a fall of 1:500 (ie 2mm of fall per lineal metre of spouting).

4 / The absolute minimum fall is 1:2000 (ie 5mm per 10 lineal metres of gutter run).

4 / What Effective Roof Area (ERA) and flow capacity (FC) the spouting systems must accommodate.

Once the above criteria have been satisfied the size and / or profile of spouting to be used can be selected.

Iplex® Pipelines NZ strongly recommend that Designers, Installers and Users of Iplex® PVC Rainwater Systems consult BRANZ Bulletin 509 - Sizing Gutters and Downpipes, for factors to be considered during rainwater system design, sizing and selection, including:

- Rainfall intensity
- Actual contributing roof area (roof plane area)
- Flow capacity
- Spouting falls
- Location of spouting corners relative to the outlet positions
- Location of spouting outlets
- Spouting cross sectional area
- Number of spouting outlets
- Roof slope - steeper slopes have faster run-off

DESIGN & SYSTEM SELECTION

The choice of your Iplex Rainwater™ system may be influenced by decisions on either domestic or commercial application, and the desired visual aesthetics.

Applications

Iplex Square™ and Iplex Polyflow™ systems may be used on residential houses, garages, carports, light commercial buildings, and farm buildings such as hay barns, covered stock yards, pack houses, dairy sheds and wool sheds.

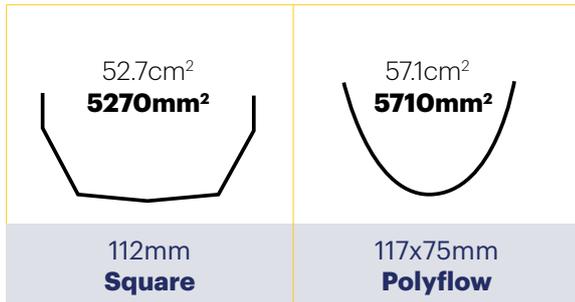
DESIGN AND SELECTION

DETERMINING REQUIRED CROSS SECTIONAL AREA OF SPOUTING

BRANZ Bulletin 509 and New Zealand Building Code Acceptable Solution E1/AS1 refer to a minimum rainfall intensity of 100mm/hour .

Other rainfall intensities may apply, (refer E1/ AS1 or NIWA).

The internal cross-sectional area (GA) of each Iplex Rainwater™ System profile is shown below.



Owing to the wide regional variation and frequency of rainfall events in New Zealand, the actual rainfall intensity should be identified for the area where the spouting system is installed. BRANZ Bulletin 509 and New Zealand Building Code Acceptable Solution E1/AS1 refer to a minimum rainfall intensity of 100mm/hour . Other rainfall intensities may apply, (refer E1/ AS1 or NIWA).

Calculation

To determine the minimum cross-sectional area of spouting (**GA**) required, for a rainfall intensity of 100mm/hour:

(note: 100mm/hour is only an example)

1. Choose the Flow Load factor for a rainfall intensity of 100mm/ hour, (**1.67**) from Table 1.
2. Determine the flow capacity (**FC**) required to accommodate the Effective Roof Area (**ERA**)

$$FC = ERA \times 1.67 \text{ (litres /minute)}$$

3. Determine the minimum required cross sectional area of the spouting (**GA**) in mm² to accommodate the flow capacity

$$GA = (FC/0.0016)^{0.8}$$

(0.0016 and ^{0.8} are both constants and no matter what the flow capacity is, these numbers will always be used in calculation)

GA will indicate which profile is best suited, e.g., if your required **GA** = 5500mm², then Iplex Polyflow™ would be the best suited profile as it has a **GA** of 5710mm².

Table 1. Flow load Factors for given rainfall intensities

Rainfall intensity (mm/hour)	Flow load factor l/m
50	0.83
75	1.25
100	1.67
125	2.08
150	2.50
175	2.92
200	3.33

GA = Minimum required cross-sectional area of spouting

FC = Flow capacity of the spouting

ERA = Effective Roof Area

DESIGN AND SELECTION

EXAMPLE CALCULATION

Assume Effective Roof Area (**ERA**) = 60m²

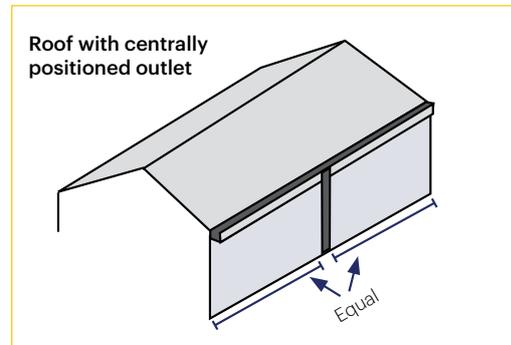
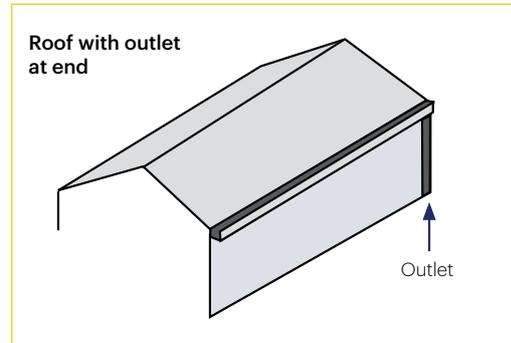
- **FC** = ERA x 1.67 (litres /minute)
= 100.2 litres per minute
- Required **GA** = (FC/0.0016)^{0.8}
= (100.2/0.0016)^{0.8}
= 6876mm²

However, The outlet locations influence the required GA of the spouting. For example a centrally located downpipe would halve the ERA.

For example, using a centrally located outlet, the spouting on either side of the outlet is sized to cater for half the ERA, or 30m².

- **FC** = 30 x 1.67 (litres /minute)
= 50.1 litres per minute
- Required **GA** = (FC/0.0016)^{0.8}
= (50.1/0.0016)^{0.8}
= 3950mm²

So when a centrally located downpipe is added, Iplex Square™ (**GA** = 5270mm²), or Iplex Polyflow™ (**GA** = 5710mm²), can be used.



DETERMINE DOWNPIPE SIZE AND QUANTITY

Downpipes should be sized for the specific area of roof catchment, and roof pitch angle.

For example:

Effective Roof Area (**ERA**) = 120m²

Assume roof pitch angle = 22.5 Degrees

From Table 2, either 1 x 100mm downpipe, centrally located, or 2 x 65mm downpipe (one at each end of the

roof or one centrally located and one at the roof end) is required.

If a spouting angle is introduced into the rainwater spouting run, the effective spouting capacity will be affected and an adjustment must be made to the maximum ERA which each rainwater system is capable of draining (see BRANZ Bulletin 509 for further details).

Table 2. Downpipe sizes for given roof pitch and roof plane area (BRANZ Bulletin Issue 509)

Nominal PVC-u downpipe size (mm)	Downpipe size (mm) ¹	Roof pitch			
		0-25°	25-35°	35-45°	45-55°
	Minimum internal size				
		Roof plane area served by the downpipe (m ²)			
65	63mm diameter	60	50	40	35
80	74mm diameter	85	70	60	50
100	100mm diameter	155	130	110	90
150	150mm diameter	350	290	250	200

Note (1) This table increases the conservatism of the design by incorporating the slope factor and therefore the run-off rate when roof plane area is used.

Note (2) PVC-U DWV pipe to AS / NZS 1260 and PVC-U Stormwater pipe to AS / NZS 1254 is permitted to be used as downpipe under NZBC E1 (Surface Water).

ABOUT IPLEX®

IPLEX® BUSINESS QUALITY MANAGEMENT SYSTEMS

Quality Assurance

Creating products of consistently high quality is at the forefront of the Iplex® manufacturing process, and central to the customer promise that Iplex® product quality meets or exceeds standards claimed.

All Iplex® manufacturing plants operate under a strict ISO 9001 Quality Management System (QMS). External certifying bodies carry out regular audits to provide third-party certification of the Company's QMS. Continued third-party product certification of Iplex® plastic pipeline products to relevant Australian & New Zealand standards, is also provided by these bodies.

The Iplex® mechanical testing laboratory in Palmerston North is an IANZ accredited facility, providing added assurance that any measurement and testing is carried out professionally and in a technically reliable manner in accordance with international standards.



APPLICABLE STANDARD	LICENCE TYPE	LICENCE NUMBER	CONFORMITY ASSESSMENT BODY
ISO 9001:2015	QMS Accreditation	QEC4169	SAI Global
ISO/IEC 17025:2017	IANZ Accreditation	ACCREDITATION NUMBER 61	IANZ
BEST ENVIRONMENTAL PRACTICE-PVC	BEP-PVC	BEP-PVC-0067	ApprovalMark International
AS/NZS 1254:2010	StandardsMark™	SMKP20126 & SMKP20180	SAI Global
AS/NZS 1260:2017	StandardsMark™	SMKP20184, SMKP20185 & SMK1305	SAI Global
AS/NZS 1260:2017	WaterMark	WM 74530	ApprovalMark International
AS/NZS 1477:2017	StandardsMark™	SMK02569 & SMKP20181	SAI Global
AS/NZS 1477:2017	WaterMark	WM 74868	ApprovalMark International
AS/NZS 4130:2018	StandardsMark™	SMKP20400	SAI Global
AS/NZS 4130:2018	ISO Type 5	AMI 74891	ApprovalMark International
AS/NZS 4441:2017	StandardsMark™	SMKP20682	SAI Global
AS/NZS 4765:2017	StandardsMark™	SMK02570	SAI Global
AS/NZS 61386.21:2015	S-Mark	LIC 2901 & LIC 2910	Bureau Veritas

ABOUT IPLEX®

IPLEX® PIPELINES NZ THE COMPANY

Iplex® is one of New Zealand's leading manufacturers and suppliers of plastic pipeline systems. Iplex® provides products and services throughout New Zealand and to export markets around the Pacific and other international markets. Iplex® has manufacturing operations in Palmerston North, Christchurch and Ashburton, as well as access to the Iplex® Australia network.

Iplex® have been manufacturing plastic pipelines since 1938 and with over 80 years of industry service and technical experience, throughout Australasia.

Plumbing: The Iplex® plumbing sector covers pipes and fittings used within the property boundary. This includes reticulation of potable and non-potable water, sanitary plumbing, wastewater, drainage and gas reticulation. Iplex® have the capabilities of supplying drain, waste and vent pipes and fittings, rainwater systems, traps and accessories.

Civil: Iplex® provides a wide range of solutions for wastewater, drainage and potable water pipeline projects. Manufacturing both PE (Polyethylene) & PVC (Polyvinylchloride) for both pressure and non-pressure (gravity fed) pipeline systems including civil infrastructure, drainage systems and roading systems.

Iplex® also services the following industry sectors:

Energy and Communications: an important sector for Iplex® NZ and there is a wide range of conduits, ducts and fittings available for new development and maintenance projects. The range covers electrical, communication and gas.

Rural: Iplex® also service the rural market providing pipes and fittings for rural use. Iplex® provide systems for irrigation, stock water, land drainage, culverts and farm dairy effluent.



Iplex Pipelines manufacturing plant and distribution hub in Palmerston North, New Zealand.

RAINWATER SYSTEMS SPECIFICATION AND INSTALLATION GUIDE, SEPTEMBER 2022

LIMITATIONS

The information contained in this document is current as at September 2022 and is based on data available to Iplex® Pipelines NZ Ltd at the time of going to print.

All photographic images are intended to provide a general impression only and should not be relied upon as an accurate example of Iplex® Pipelines NZ Ltd products installed in accordance with this document or the referenced compliance documents..

This publication replaces all previous Iplex® Pipelines NZ design information and literature relating to Iplex® Pipelines NZ Ltd Rainwater Systems products. Iplex® Pipelines NZ Ltd reserves the right to change the information contained in this document without prior notice. It is your responsibility to ensure that you have the most up to date information available. You can call toll free on 0800 800 262 or visit www.iplex.co.nz to obtain current information.

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IPLEX® PIPELINES NZ LIMITED

0800 800 262

AUCKLAND: 810 GREAT SOUTH ROAD, PENROSE

PALMERSTON NORTH: 67 MALDEN STREET, ROSLYN

CHRISTCHURCH: 22 BRAEBURN DRIVE, SOCKBURN

ASHBURTON: 13 ASHFORD AVENUE, NEWLANDS

www.iplex.co.nz