

# Civil

## Plastic Pipelines Systems

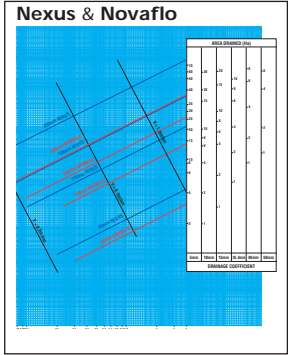
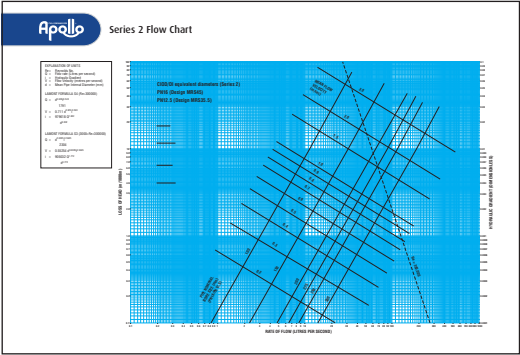
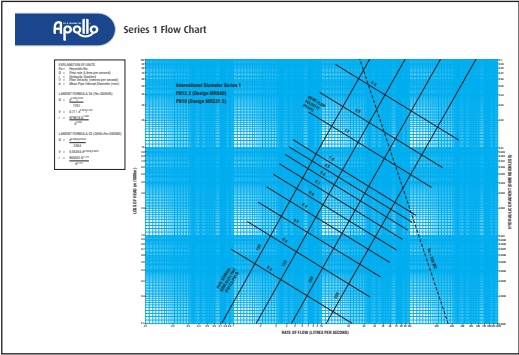


Lifelines to our Communities



**iPLEX**  
Pipelines

Other Iplex NZ Publications include...





## IPLEX - The Company

Iplex Pipelines is a major Australasian manufacturer and distributor of a wide range of plastics-based pipeline systems for the civil, mining, plumbing, irrigation, gas, telecommunications, and electrical cable conduit markets. One of the Fletcher Building Group of Companies, Iplex Pipelines is well placed for accessing the latest overseas products, technologies and service initiatives and has become a recognised leader in plastics pipes and associated fittings, together with related water engineering expertise.

## Manufacturing and Standards

Iplex Pipelines operates modern manufacturing facilities in New Zealand and every mainland Australian state. All factories operate under stringent requirements of local equivalents to International Standard ISO 9001. Where applicable Iplex products also have Standards Mark third party quality assurance accreditation. Sales and marketing teams are strongly supported by advanced technical, communication and distribution systems to ensure prompt and effective service.

## Products and Brands

Iplex products and brand names in New Zealand include APOLLO™ PVC-O pressure pipes, RHINO™ PVC-M pressure pipes, NOVAKEY™ PVC-U pressure pipes and fittings, BLUE BRUTE™ PVC-U pressure pipes, NOVAFUSE™ FUSIBLE PVC PIPES, NOVADRAIN™ DWV pipes and fittings, POLIPLEX™ polyethylene pressure pipes, RESTRAIN™ drillable PVC-U gravity sewer pipe, NEXUS™ subsoil drainage pipe and fittings and FARMTUFF™ culvert pipe.

Markets and applications for the Iplex product range in New Zealand include water reticulation and transmission mains, sewerage reticulation and carrier mains, stormwater drainage, trenchless pipe systems, chemical and process water circuits, slurry and tailings pipe systems, drain, waste and vent plumbing, domestic hot and cold water plumbing, subsoil drainage systems, turf watering, stock watering, horticultural irrigation systems and broad acre irrigation systems.

This product catalogue is designed to provide you with an introduction to the range of pipe that Iplex can supply to service the Civil market. You can obtain further product or technical information by contacting Iplex Pipelines directly – please refer to the back cover of this Catalogue for contact details.

If you require plastic pipe products that are not listed here, please contact Iplex Pipelines for further information.

Assembling a DN300 Restrain™ PVC-U restrained pipe joint for trenchless installation by static pipe bursting







Iplex Pipelines NZ Ltd manufacturing plant at Malden Street, Palmerston North

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## 1. APOLLO

APOLLO™ PVC-O PRESSURE  
PIPE SERIES 1 (WHITE)**Compliance:**

Manufactured in accordance with AS/NZS 4441 Orientated PVC (PVC-O) Pipes for pressure applications for Series 1 pipe. Iplex PVC-O pipes are independently certified in accordance with the test requirements of AS/NZS 4441. Standards Mark Licence number SMKP20682.

**Product Code:** 880 Series

**Benefits:**

APOLLO™ PVC-O pressure pipe is an exceptionally tough, high performance thermoplastic pipe with a considerably greater hydraulic capacity than PVC-U and PVC-M pipes of the same OD size and similar pressure class. APOLLO™ has greater fatigue resistance, higher impact strength, especially at low temperatures, higher ductility, and reduced weight compared with traditional PVC-U pressure pipe.

**Applications:**

- Major potable water supply trunk and reticulation mains
- Principal water mains
- Principal pressure sewer mains
- Industrial process lines
- Effluent pipelines for industrial and rural waste
- Irrigation and turf water systems

**Joining:**

Pipe is supplied with a rubber ring joint utilizing the BlueSeal joint system where the seal ring is factory fitted and locked in place inside the pipe socket.

**Fittings:**

Deep socket standard ductile iron fittings complying with AS/NZS 2280 "Ductile iron pipes and fittings". Many DI fittings are now designed to use metric OD transition seal rings with Series 1 pipe. Socket spacers may be required in some diameters, and in some fitting brands with Series 1 pipe, to centrally locate and support the pipe. Iplex recommend that you consult your fitting supplier for specific advice on the need for Socket spacers.

**Service Connections:**

Iplex recommends the use of PVC compatible, full circle supported tapping bands with APOLLO™ pipe. These include Milnes Gunmetal, Crevet Taptite or other tapping bands manufactured to AS/NZS 4793 "Mechanical Tapping Bands for Water Works Purposes". Either O or V type tapping band seals are suitable for use with APOLLO™.

**"Universal" tapping bands that use U-bolt support straps are prohibited.**

Tapping bands must be installed centrally positioned over the drilled service hole. This hole should be drilled using a fine-tooth hole saw. Twist Drills or flat bits MUST NOT BE USED on any PVC pipe.

**Mechanical Couplings:**

Iplex recommends the use of unrestrained mechanical couplings manufactured to AS/NZS 4998 – Bolted Unrestrained Mechanical Couplings for Water Works Purposes.

**Design & Installation:**

Installation methods for APOLLO™ pipes are generally the same as those used for Iplex PVC-U and PVC-M pipes.

Buried pipe installation should generally be in accordance with the following standards:

- **General Installation:**  
AS/NZS 2032, "Installation of PVC pipe systems".
- **Buried Structural Design:**  
AS/NZS 2566 Part 1 and Supplement Structural Design.
- **Detailed Installation and Site Pressure Testing:**  
AS/NZS 2566 Part 2 "Installation" On site test pressure should not exceed 1.25 x the pipe PN pressure class.

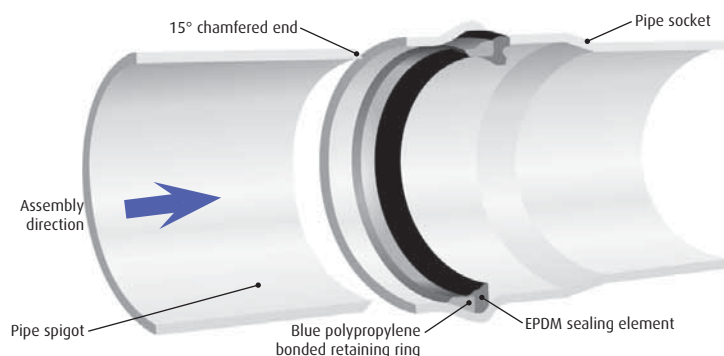
APOLLO™ PVC-O Metric Series 1 Pressure Pipe Dimensions

Class		PN10		PN12.5	
Pressure rating (MPa)		1.00 MPa		1.25 MPa	
Approx rating (m head)		100m head		125m head	
Design MRS MPa		31.5 MPa		40.0 MPa	
Nom. Dia (mm)	Mean O.D. (mm)	Mean I.D (mm)	Mean W.T. (mm)	Mean I.D (mm)	Mean W.T. (mm)
100	114.25	108.2	3.0	108.2	3.0
150	160.25	151.6	4.3	151.6	4.3
200	225.35	213.5	5.9	213.5	5.9
300	315.50	299.1	8.2	299.1	8.2

Minimum order quantities may apply.

**Length:**

6 metre effective length. Length of the witness mark is added to give the overall length.

**Limitations:**

APOLLO™ and APOLLO™ BLUE PVC-O pressure pipes should not be used:

- With aromatic and chlorinated hydrocarbons, ketones, esters and ethers
- At any service temperature above 50°C
- Where provision for temperature derating has not been made above 20°C
- With compressed air
- Without adequate support to the pipe both in above ground and below ground applications
- Without adequate thrust support
- Where depth of cover is less than:
  - 300mm where pipeline is not subject to vehicular loadings
  - 450mm where pipeline is subject to vehicular loadings not in roadways
  - 600mm where pipeline is subject to vehicular loading in sealed roadways
  - 750mm where pipeline is subject to vehicular loading in unsealed roadways
  - 750mm where pipeline is subject to construction equipment loadings
- Without provision for fatigue design to accommodate dynamic stresses where appropriate (in accordance with published PIPA guidelines)
- Where working pressure plus surge/cyclic pressure exceeds the nominated pressure performance rating of the pipe
- When exposed to direct sunlight above ground for applications or storage exceeding 24 months without protection.
- This protection may include pale coloured UV resistant paint systems, non-exposed location or physical shading
- Never tap service connections directly into the pipe wall. Always use a full encirclement tapping band, designed for PVC pipe.

Solvent Cement Joints have been used successfully between APOLLO™ PVC-O Series 1 pipe and conventional PVC-U Series 1 solvent weld joint fittings, utilising the Iplex NOVAKEY™ Brand pressure solvent Cement and cleaner primer system. However, as long term research testing by Iplex Pipelines, with solvent weld joints on APOLLO™ PVC-O, currently in progress, had not been completed at the date of publication of this manual, please contact the Technical Sales Service Team of Iplex Pipelines NZ Ltd for specific advice on any need to Solvent Weld joint APOLLO™ PVC-O.



## APOLLO™BLUE PVC-O PRESSURE PIPE SERIES 2 (BLUE)

### Compliance:

Manufactured in accordance with AS/NZ 4441 Orientated PVC (PVC-O) Pipes for pressure applications for Series 2 pipe. Iplex PVC-O pipes are independently certified in accordance with the test requirements of AS/NZS 4441. Standards Mark Licence number SMK20682.

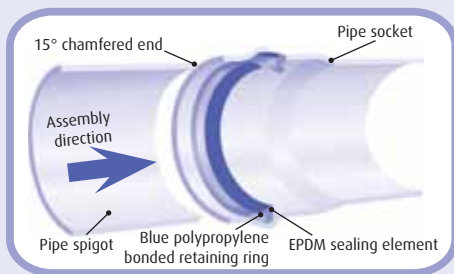
Product Code: 1880 Series

**Applications:**

- Major potable water supply trunk and reticulation mains
- Principal water mains
- Principal pressure sewer mains
- Industrial process lines
- Effluent pipelines for industrial and rural waste
- Irrigation and turf water systems

### Joining:

Pipe is supplied with a rubber ring joint utilizing the BlueSeal joint system where the seal ring is factory fitted and locked in place inside the pipe socket.



Solvent cement joints are not used with any Series 2 PVC Pipe including ApolloBlue.

### Fittings:

Deep socket standard ductile iron fittings complying with AS/NZS 2280 "Ductile iron pipes and fittings".

### Service & Connections:

Iplex recommends the use of PVC compatible, full circle supported tapping bands with APOLLO™BLUE pipe. These include Milnes Gunmetal, Crevet Taptite or other tapping bands manufactured to AS/NZS4793 "Mechanical Tapping Bands for Water Works Purposes". Either O or V type tapping band seals are suitable for use with APOLLO™BLUE.

**"Universal" tapping bands that use U-bolt support straps are prohibited.**

Tapping bands must be installed centrally positioned over the drilled service hole. This hole should be drilled using a fine-tooth hole saw. Twist Drills or flat bits MUST NOT BE USED on any PVC pipe.

### Mechanical Couplings:

Iplex recommends the use of unrestrained mechanical couplings manufactured to AS/NZS 4998 – Bolted Unrestrained Mechanical Couplings for Water Works Purposes.

### Design & Installation:

Installation methods for APOLLO™BLUE pipes are generally the same as those used for Iplex PVC-U and PVC-M pipes. Buried pipe installation should generally be in accordance with the following standards:

- **General Installation:** AS/NZS 2032, "Installation of PVC pipe systems".
- **Buried Structural Design:** AS/NZS 2566 Part 1 and Supplement Structural Design.
- **Detailed Installation and Site Pressure Testing:** AS/NZS 2566 Part 2 "Installation" On site test pressure should not exceed 1.25 x the pipe PN pressure class.

### APOLLO™BLUE PVC-O Series 2 Pressure Pipe Dimensions

Class		PN12.5		PN16	
Pressure rating (MPa)		1.25 MPa		1.6 MPa	
Approx rating (m head)		125m head		160m head	
Design MRS MPa		35.5 MPa		45.0 MPa	
Nom. Dia (mm)	Mean O.D. (mm)	Mean I.D (mm)	Mean W.T. (mm)	Mean I.D (mm)	Mean W.T. (mm)
100	121.90	114.5	3.7	114.5	3.7
150	177.40	166.8	5.3	166.8	5.3
200	232.25	218.4	6.9	218.4	6.9
225	259.30	244.1	7.6	244.1	7.6
250	286.25	269.4	8.4	269.4	8.4
300	345.45	325.2	10.1	325.2	10.1

Minimum order quantities may apply.

### Length:

6 metre effective length. Length of the witness mark is added to give the overall length.



Manual site handling of light weight DN 150 S2 PN 16 APOLLO™BLUE

### Sustainability:

- Iplex Apollo™ PVC-O, is a sustainable infrastructure pressure pipeline asset.
- It has low Embodied Energy, can utilise reprocessible PVC from its manufacture, and is fully recyclable at the end of its service life.
- Apollo's light weight requires relatively less nonrenewable energy (eg; diesel) during transportation.
- Light weight also means significantly more length of pipes per tonne of raw material can be produced, compared with almost any other pressure pipe of similar diameter and pressure class.
- APOLLO™ has no additives containing toxic heavy metal compounds, such as lead based materials. This actively prevents more of these compounds entering the environment, and positively reduces industry demand for these compounds, upstream of the manufacturing process.
- APOLLO™ manufacture produces less greenhouse gases, than for traditional non-plastic pressure pipe manufacture. Recycled cooling water resources are used during production.
- APOLLO™ is chemically inert. There is no corrosion or chemical or gas emissions during its normal long service life as a public watermain or sewer.
- APOLLO™ is also extremely durable, meaning that the one-off energy consumption in manufacture to create the pipe asset, is only required to be used once, possibly up to every 100 years if installed and operated according to the relevant codes and standards.
- Refer also to the PIPA website [www.pipa.com.au/environment](http://www.pipa.com.au/environment).

## NOVAKEY™ PVC-U PRESSURE PIPES SERIES 1 (WHITE)

### Compliance:

Manufactured in accordance with AS/NZS 1477 PVC pipes & fittings for pressure applications for Series 1 pipe. Iplex PVC-U pipes are independently certified in accordance with the test requirements of AS/NZS 1477. Standards Mark Licence number SMK02569 and SMK020181.

**Product Code:** 800 Series

### Applications:

- Urban potable water supply
  - Pumped sewer rising mains
  - Agricultural irrigation and rural water supply
  - Industrial processing fluids
  - Industrial effluent disposal
  - Slurry lines
  - Acids, alkalies and aggressive chemicals\*
- \* Refer to 'A Guide to Chemical Resistance of Thermoplastic and Elastomeric Materials' - available from IPLEX Pipelines.

### Joining:

Solvent weld joints are available in DN 50 - DN 200mm sizes (always use cleaner primer prior to applying solvent cement). Rubber ring joints available in DN 50 to DN575 sizes.

### Fittings:

IPLEX Pipelines manufacture a large range of moulded PVC-U pressure fittings suitable for use with NOVAKEY™ PVC-U pressure pipe. Deep socket ductile iron fittings complying with AS/NZS 2280 "Ductile iron pipes and fittings" are also recommended. Many DI fittings are now designed to use metric OD transition seal rings with Series 1 pipe. Socket spacers may be required in some diameters, and in some fitting brands with Series 1 pipe, to centrally locate and support the pipe and avoid over deflection inside the socket housing. Iplex recommend you consult your fitting supplier for specific advice on the need for Socket spacers. These fittings are also suitable for use with 'White RHINO PVC-M Pressure pipe.' They include elbows, tees, reducers, flanges, etc.

### Service & Connections:

Iplex recommends the use of PVC compatible, full circle supported tapping bands with NOVAKEY™ pipe. These include Milnes Gunmetal, Crevet Taptite or other tapping bands manufactured to AS/NZS 4793

"Mechanical Tapping Bands for Water Works Purposes". Either O or V type tapping band seals are suitable for use with NOVAKEY.

**"Universal" tapping bands that use U-bolt support straps are prohibited.**

Tapping bands must be installed centrally positioned over the drilled service hole. This hole should be drilled using a fine-tooth hole saw. Twist Drills or flat bits MUST NOT BE USED on any PVC pipe.

### Mechanical Couplings:

Iplex recommends the use of unrestrained mechanical couplings manufactured to AS/NZS 4998 - Bolted Unrestrained Mechanical Couplings for Water Works Purposes.

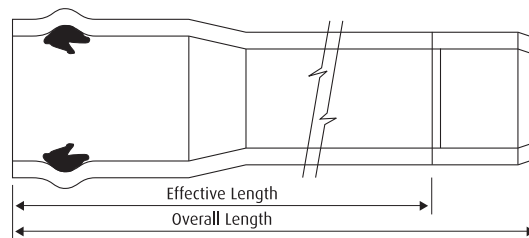
### Design & Installation:

NOVAKEY™ pipe should be installed in accordance with the following Standards:

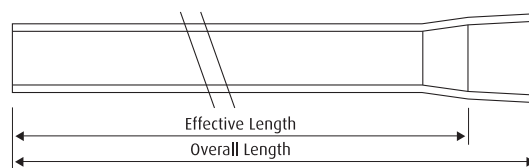
- **Buried Structural Design:**  
AS/NZS 2566 Part 1 and supplement 1. "Buried Flexible Pipelines - Structural Design"
- **General installation:**  
AS/NZS 2032 "Installation of PVC Pipe Systems"
- **Detailed installation and site pressure testing:**  
AS/NZS 2566 Part 2 "Installation"



Joint assembly on NOVAKEY™ DN 450 PN12 watermain under a sealed main highway.



Rubber Ring Joint



Solvent Cement Joint

### Length:

6 metre effective length. Length of the witness mark is added to give the overall length.

### Limitations:

NOVAKEY™ PVC-U pressure pipes should not be used:

- With aromatic and chlorinated hydrocarbons, ketones, esters and ethers
- At any service temperature above 50°C
- Where provision for temperature derating has not been made above 20°C
- With compressed air
- Without adequate support to the pipe both in above ground and below ground applications
- Without adequate thrust support
- Where depth of cover is less than:
  - 300mm where pipeline is not subject to vehicular loadings
  - 450mm where pipeline is subject to vehicular loadings not in roadways
  - 600mm where pipeline is subject to vehicular loading in sealed roadways
  - 750mm where pipeline is subject to vehicular loading in unsealed roadways
  - 750mm where pipeline is subject to construction equipment loadings
- Without provision for fatigue design, to accommodate dynamic stresses where appropriate (in accordance with published PIPA guidelines)
- Where working pressure plus surge/cyclic pressure exceeds the nominated pressure performance rating of the pipe
- When exposed to direct sunlight above ground for applications or storage exceeding 24 months without protection
- This protection may include pale coloured UV resistant paint systems, non-exposed location or physical shading
- Never tap service connections directly into the pipe wall. Always use a full encirclement tapping band, designed for PVC pipe.



## NOVAKEY™ PVC-U Metric Series Pressure Pipe Dimensions

Class Pressure rating (MPa) Approx rating (m head)		PN6 (0.6 MPa) 60m head		PN9 (0.9 MPa) 90m head		PN12 (1.2MPa) 120m head		PN15 (1.5 MPa) 150m head		PN18 (1.8MPa) 180m head	
Nom.Dia (mm)	Mean O.D. (mm)	Mean I.D. (mm)	Mean W.T. (mm)	Mean I.D. (mm)	Mean W.T. (mm)	Mean I.D. (mm)	Mean W.T. (mm)	Mean I.D. (mm)	Mean W.T. (mm)	Mean I.D. (mm)	Mean W.T. (mm)
50	60.3	56.7	1.8	55.1	2.6	53.5	3.4	52.1	4.1	50.5	4.9
65	75.4	71.0	2.2	68.8	3.3	67.0	4.2	65.0	5.2	63.2	6.1
80	88.9	83.7	2.6	81.3	3.8	78.9	5.0	76.7	6.1	74.5	7.2
100	114.3	107.7	3.3	104.5	4.9	101.7	6.3	98.7	7.8	95.9	9.2
125	140.2	132.2	4.0	128.4	5.9	124.8	7.7	121.2	9.5	117.8	11.2
150	160.2	151.2	4.5	146.8	6.7	142.6	8.8	138.6	10.8	-	-
175	200.2	190.0	5.1	185.0	7.6	180.4	9.9	175.8	12.2	-	-
200	225.3	213.7	5.8	208.5	8.4	203.1	11.1	197.9	13.7	-	-
225	250.3	237.7	6.3	231.7	9.3	225.7	12.3	-	-	-	-
250	280.4	266.2	7.1	259.4	10.5	253.0	13.7	-	-	-	-
300	315.4	299.4	8.0	292.0	11.7	284.4	15.5	-	-	-	-
375	400.5	380.3	10.1	370.7	14.9	361.3	19.6	352.1	24.2	343.1	28.7
450	500.5	475.3	12.6	463.3	18.6	451.5	24.5	440.1	30.2	-	-
500	560.5	532.3	14.1	518.9	20.8	-	-	-	-	-	-
575	630.5	598.9	15.8	583.5	23.5	-	-	-	-	-	-

Minimum order quantities may apply



Installation of NOVAKEY™ Series 1 PN 12 pipes, in a road berm, with laser assisted control of the trench depth and grade.

## BLUE BRUTE™, PVC-U PRESSURE PIPES SERIES 2 (BLUE)

### Compliance:

Manufactured in accordance with AS/NZS 1477 PVC pipes & fittings for pressure applications for Series 2 pipe C.I.O.D.\* (\*C.I.O.D. = cast iron outside diameter compatible). Iplex PVC-U pipes are independently certified in accordance with the test requirements of AS/NZS 1477. Standards Mark Licence number SMKP2569 and SMKP20181.

**Product Code:** 1800 Series

### Applications:

May be used for:

- Urban potable water supply
  - Replacement of, or extension to, existing A.C./C.I. pipelines
  - Agricultural irrigation and rural water supply
  - Industrial processing fluids
  - Slurry lines
  - Acids, alkalies and aggressive chemicals\*
- \* Refer to 'A Guide to Chemical Resistance of Thermoplastic and Elastomeric Materials' - available from IPLEX Pipelines

### Joining:

Rubber ring joints for all sizes.

### Fittings:

Deep socket standard ductile iron fittings complying with AS/NZS 2280 "Ductile iron pipes and fittings. They include elbows, tees, reducers, flanges, etc.

### Service & Connections:

Iplex recommends the use of PVC compatible, full circle supported tapping bands with BLUE BRUTE™ pipe. These include Milnes Gunmetal, Crevet Taptite or other tapping bands manufactured to AS/NZS 4793

"Mechanical Tapping Bands for Water Works Purposes". Either O or V type tapping band seals are suitable for use with BLUE BRUTE.

**"Universal" tapping bands that use U-bolt support straps are prohibited.**

Tapping bands must be installed centrally positioned over the drilled service hole. This hole should be drilled using a fine-tooth hole saw. Twist Drills or flat bits MUST NOT BE USED on any PVC pipe.

### Mechanical Couplings:

Iplex recommends the use of unrestrained mechanical couplings manufactured to AS/NZS 4998 – Bolted Unrestrained Mechanical Couplings for Water Works Purposes.

### Design & Installation:

BLUE BRUTE™ pipe should be designed and installed in accordance with the following Standards:

### Buried Structural Design:

AS/NZS 2566 Part 1 and supplement1. "Buried Flexible Pipelines - Structural Design"

### General installation:

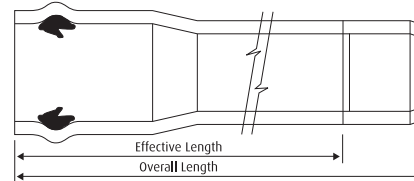
AS/NZS 2032 "Installation of PVC Pipe Systems"

### Detailed installation and site pressure testing:

AS/NZS 2566 Part 2 "Installation"

### Length:

6 metre effective length. Length of the witness mark is added to give the overall length.



Rubber Ring Joint

### Limitations:

BLUE BRUTE™ pressure pipes should not be used:

- With aromatic and chlorinated hydrocarbons, ketones, esters and ethers
- At any service temperature above 50°C
- Where provision for temperature derating has not been made above 20°C
- With compressed air
- Without adequate support to the pipe both in above ground and below ground applications
- Without adequate thrust support
- Where depth of cover is less than:
  - 300mm where pipeline is not subject to vehicular loadings
  - 450mm where pipeline is subject to vehicular loadings not in roadways
  - 600mm where pipeline is subject to vehicular loading in sealed roadways
  - 750mm where pipeline is subject to vehicular loading in unsealed roadways
  - 750mm where pipeline is subject to construction equipment loadings
- Without provision for fatigue design, to accommodate dynamic stresses where appropriate (in accordance with published PIPA guidelines)
- Where working pressure plus surge/cyclic pressure exceeds the nominated pressure performance rating of the pipe
- When exposed to direct sunlight above ground for applications or storage exceeding 24 months without protection.
- This protection may include pale coloured UV resistant paint systems, non-exposed location or physical shading
- Never tap service connections directly into the pipe wall.
- Always use a full encirclement tapping band, designed for PVC pipe.

### BLUE BRUTE™ Pipe Dimensions

Class Pressure rating (MPa) Approx rating (m head)		PN6 (0.6 MPa) 60m head		PN9 (0.9 MPa) 90m head		PN12 (1.2MPa) 120m head		PN16 (1.6MPa) 160m head		PN18 (1.8MPa) 180m head	
Nom.Dia (mm)	Mean O.D. (mm)	Mean I.D. (mm)	Mean W.T. (mm)	Mean I.D. (mm)	Mean W.T. (mm)	Mean I.D. (mm)	Mean W.T. (mm)	Mean I.D. (mm)	Mean W.T. (mm)	Mean I.D. (mm)	Mean W.T. (mm)
100	121.9	-	-	-	-	108.5	6.7	-	-	102.3	9.8
150	177.3	166.1	5.6	-	-	157.7	9.8	-	-	148.9	14.2
200	232.2	-	-	-	-	209.2	11.5	202.2	15.0	-	-
250	286.2	271.6	7.3	264.8	10.7	258.0	14.1	249.2	18.5	-	-
300	345.4	328.0	8.7	319.6	12.9	311.4	17.0	-	-	-	-
375	426.2	404.6	10.8	394.4	15.9	384.4	20.9	371.2	27.5	-	-
450	507.0	-	-	469.2	18.9	-	-	-	-	-	-
500	560.3	531.9	14.2	518.4	20.9	-	-	-	-	-	-

Minimum order quantities may apply



Installation of DN300 BLUE BRUTE PN12 watermain under main sealed road.

## 5. WHITE RHINO™

### WHITE RHINO™, PVC-M PRESSURE PIPES SERIES 1 (WHITE)

**Compliance:** Manufactured in accordance with AS/NZS 4765 Modified PVC (PVC-M) pipes for pressure applications for Series 1 pipe. Iplex PVC-M pipes are independently certified in accordance with the test requirements of AS/NZS 4765. Approval Mark Certificate No WM 74531.

**Product Code:** 850 Series

**Benefits:** WHITE RHINO™ is a tough, high strength PVC (PVC-M) pressure pipe. Modified PVC incorporates advanced technology which gives RHINO superior qualities over conventional PVC-U including; higher impact resistance, greater ductility, lighter weight and an increase in hydraulic capacity.

**Applications:** WHITE RHINO™ may be used for:

- Urban potable water supply
- Agricultural irrigation and rural water supply
- Industrial effluent disposal
- Acids, alkalies and aggressive chemicals.\*
- Pumped sewer rising mains
- Industrial processing fluids
- Slip lining
- Abrasive slurries in quarrying and mining

\* Refer to 'A Guide to Chemical Resistance of Thermoplastic and Elastomeric Materials' - available from IPLEX Pipelines.

**Joining:** Solvent cement joints are available in 100mm diameter (always use cleaner primer prior to applying solvent cement). Rubber ring joints are available in all sizes, 100mm - 575mm inclusive.

**Fittings:** Deep socket ductile iron fittings complying with AS/NZS 2280 "Ductile iron pipes and fittings" Many DI fittings are now designed to use metric OD transition seal rings with Series 1 pipe. Socket spacers may be required in some diameters and in some fitting brands with Series 1 pipe, to centrally locate and support the pipe. Iplex recommend you consult your fitting supplier for specific advice on the need for socket spacers.

#### Service & Connections:

Iplex recommends the use of PVC compatible, full circle supported tapping bands with WHITE RHINO™ pipe. These include Milnes Gunmetal, Crevet Taptite or other tapping bands manufactured by AS/NZS 4793 "Mechanical Tapping Bands for Water Works Purposes". Either O or V type tapping band seals are suitable for use with White Rhino. "Universal" tapping bands that use U-bolt support straps are prohibited.

Tapping bands must be installed centrally positioned over the drilled service hole. This hole should be drilled using a fine-tooth hole saw. Twist Drills or flat bits MUST NOT BE USED on any PVC pipe.

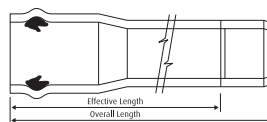
#### Mechanical Couplings:

Iplex recommends the use of unrestrained mechanical couplings manufactured to AS/NZS 4998 - Bolted Unrestrained Mechanical Couplings for Water Works Purposes.

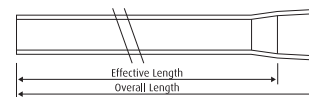
#### Design & Installation:

RHINO PVC-M pipe should be designed and installed in accordance with the following Standards:

- **Buried Structural Design:** AS/NZS 2566 Part 1 and supplement 1. "Buried Flexible Pipelines - Structural Design"
- **General installation:** AS/NZS 2032 "Installation of PVC Pipe Systems"
- **Detailed installation and site pressure testing:** AS/NZS 2566 Part 2 "Installation"



Rubber Ring Joint



Solvent Cement Joint

**Length:** 6m effective length. Length of witness mark added for overall length.

#### Limitations:

WHITE RHINO™ and BLUE RHINO™ PVC-M pressure pipes should not be used:

- With aromatic and chlorinated hydrocarbons, ketones, esters and ethers
- At any service temperature above 50°C
- Where provision for temperature derating has not been made above 20°C
- With compressed air
- Without adequate support to the pipe both in above ground and below ground applications
- Without adequate thrust support
- Where depth of cover is less than:
  - 300mm where pipeline is not subject to vehicular loadings
  - 450mm where pipeline is subject to vehicular loadings not in roadways
  - 600mm where pipeline is subject to vehicular loading in sealed roadways
  - 750mm where pipeline is subject to vehicular loading in unsealed roadways
  - 750mm where pipeline is subject to construction equipment loadings
- Without provision for fatigue design, to accommodate dynamic stresses where appropriate (in accordance with published PIPA guidelines)
- Where working pressure plus surge/cyclic pressure exceeds the nominated pressure performance rating of the pipe
- When exposed to direct sunlight above ground for applications or storage exceeding 24 months without protection.
- This protection may include pale coloured UV resistant paint systems, non-exposed location or physical shading
- Never tap service connections directly into the pipe wall. Always use a full encirclement tapping band, designed for PVC pipe.

#### WHITE RHINO™ PVC-M Metric Series Pressure Pipe Dimensions

Class Pressure rating (MPa) Approx rating (m head)		PN6 (0.6 MPa) 60m head		PN9 (0.9 MPa) 90m head		PN12 (1.2 MPa) 120m head		PN15 (1.5 MPa) 150m head	
Nom.Dia (mm)	Mean O.D. (mm)	Mean I.D. (mm)	Mean W.T. (mm)	Mean I.D. (mm)	Mean W.T. (mm)	Mean I.D. (mm)	Mean W.T. (mm)	Mean I.D. (mm)	Mean W.T. (mm)
100	114.3	108.3	3.0	107.5	3.4	105.5	4.4	103.5	5.4
125	140.2	133.3	3.5	131.8	4.2	129.4	5.4	127.2	6.5
150	160.3	152.3	4.0	150.9	4.7	148.3	6.0	145.5	7.4
175	200.3	190.5	4.9	188.7	5.8	185.3	7.5	181.9	9.2
200	225.3	214.3	5.5	212.5	6.4	208.5	8.4	204.7	10.3
225	250.4	238.2	6.1	236.2	7.1	232.0	9.2	226.6	11.9
250	280.4	-	-	264.6	7.9	259.8	10.3	-	-
300	315.5	300.5	7.5	297.9	8.8	292.3	11.6	286.9	14.3
375	400.5	381.5	9.5	378.1	11.2	371.3	14.6	364.3	18.1
450	500.5	476.9	11.8	472.9	13.8	464.3	18.1	455.3	22.6
500	560.5	-	-	529.5	15.5	519.9	20.3	-	-
575	630.5	-	-	596.1	17.2	584.9	22.8	-	-

Minimum order quantities may apply



Installation of DN575 (630mm OD) PN9 WHITE RHINO™ watermain under sealed road.  
NB: normally, trench shields would be required at trench depths greater than 1.5m.



## 6. BLUE RHINO™

### BLUE RHINO™, PVC-M PRESSURE PIPE SERIES 2 (BLUE)

#### Compliance:

Manufactured in accordance with AS/NZS4765 Modified PVC (PVC-M) pipes for pressure applications for Series 2 pipe C.I.O.D. (Cast Iron Outside Diameter Compatible). Iplex PVC-M pipes are independently certified in accordance with the test requirements of AS/NZS 4765. Approval Mark Certificate Number WM 74531.

**Product Code:** 1850 Series

#### Benefits:

BLUE RHINO™ is a tough, high strength PVC (PVC-M) pressure pipe suitable for a wide variety of applications. Modified PVC incorporates advanced technology which gives BLUE RHINO™ pipe superior qualities over conventional PVC-U pipe including: higher impact resistance, greater ductility, lighter weight and an increase in hydraulic capacity.

#### Applications:

BLUE RHINO™ may be used for:

- Urban potable water supply
- Agricultural irrigation, and rural water supply
- Industrial processing fluids
- Abrasive slurries in quarrying and mining
- Acids, alkalies and aggressive chemicals \*

\* Refer to 'A Guide to Chemical Resistance of Thermoplastic and Elastomeric Materials' - available from IPLEX Pipelines.

#### Joining:

Rubber ring joints are available in all sizes, DN100 to DN525 inclusive.

#### Fittings:

Deep socket ductile iron fittings complying with AS/NZS 2280 "Ductile iron pipes and fittings"

#### Service & Connections:

Iplex recommends the use of PVC compatible, full circle supported tapping bands with BLUE RHINO™ pipe. These include Milnes Gunmetal, Crevet Taprite or other tapping bands manufactured to AS/NZS 4793

"Mechanical Tapping Bands for Water Works Purposes". Either O or V type tapping band seals are suitable for use with BLUE RHINO™.

**"Universal" tapping bands that use U-bolt support straps are prohibited.**

Tapping bands must be installed centrally positioned over the drilled service hole. This hole should be drilled using a fine-tooth hole saw. Twist Drills or flat bits MUST NOT BE USED on any PVC pipe.

#### Mechanical Couplings:

Iplex recommends the use of unrestrained mechanical couplings manufactured to AS/NZS 4998 - Bolted Unrestrained Mechanical Couplings for Water Works Purposes.

#### Design & Installation:

BLUE RHINO™ pipe should be designed and installed in accordance with the following Standards

#### • Buried Structural Design:

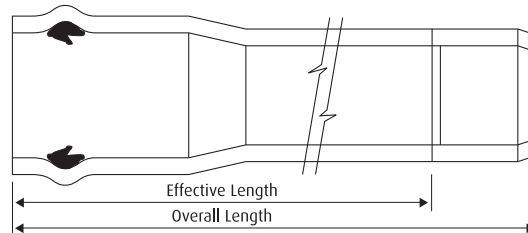
AS/NZS 2566 Part 1 and supplement 1. "Buried Flexible Pipelines - Structural Design"

#### • General installation:

AS/NZS 2032 "Installation of PVC Pipe Systems"

#### • Detailed installation and site pressure testing:

AS/NZS 2566 Part 2 "Installation"



Rubber Ring Joint

#### Length:

6 metre effective length. Length of the witness mark is added to give the overall length.

#### Limitations:

WHITE RHINO™ and BLUE RHINO™ PVC-M pressure pipes should not be used:

- With aromatic and chlorinated hydrocarbons, ketones, esters and ethers
- At any service temperature above 50°C
- Where provision for temperature derating has not been made above 20°C
- With compressed air
- Without adequate support to the pipe both in above ground and below ground applications
- Without adequate thrust support
- Where depth of cover is less than:
  - 300mm where pipeline is not subject to vehicular loadings
  - 450mm where pipeline is subject to vehicular loadings not in roadways
  - 600mm where pipeline is subject to vehicular loading in sealed roadways
  - 750mm where pipeline is subject to vehicular loading in unsealed roadways
  - 750mm where pipeline is subject to construction equipment loadings
- Without provision for fatigue design, to accommodate dynamic stresses where appropriate (in accordance with published PIPA guidelines)
- Where working pressure plus surge/cyclic pressure exceeds the nominated pressure performance rating of the pipe
- When exposed to direct sunlight above ground for applications or storage exceeding 24 months without protection.
- This protection may include pale coloured UV resistant paint systems, non-exposed location or physical shading
- Never tap service connections directly into the pipe wall. Always use a full encirclement tapping band, designed for PVC pipe.

BLUE RHINO™ PVC-M Dimensions (for Series 2 pipe)

Class Pressure rating MPa Approx rating (m head)		PN9 (0.9 MPa) 90m head		PN12 (1.2 MPa) 120m head		PN16 (1.6 MPa) 160m head		PN20 (2.0 MPa) 200m head	
Nom.Dia (mm)	Mean O.D. (mm)	Mean I.D. (mm)	Mean W.T. (mm)	Mean I.D. (mm)	Mean W.T. (mm)	Mean I.D. (mm)	Mean W.T. (mm)	Mean I.D. (mm)	Mean W.T. (mm)
100	121.9	-	-	112.5	4.7	109.7	6.1	107.3	7.3
150	177.3	-	-	164.1	6.6	159.9	8.7	156.7	10.3
200	232.2	-	-	215.0	8.6	209.6	11.3	205.6	13.3
250	286.3	270.3	8.0	265.3	10.5	258.9	13.7	253.5	16.4
300	345.4	326.0	9.7	320.0	12.7	312.4	16.5	-	-
375	426.2	-	-	395.0	15.6	386.4	19.9	-	-
450	507.0	-	-	470.2	18.4	-	-	-	-
500	560.3	529.3	15.5	519.7	20.3	-	-	-	-

Minimum order quantities may apply



DN525 PN12 BLUE RHINO™ in trench ready for backfilling

## NOVADRAIN™ DRAIN WASTE AND VENT PIPES FOR GRAVITY SEWER & DRAIN (NON-PRESSURE APPLICATIONS ONLY)

### NOVADRAIN™

#### Compliance:

NOVADRAIN™ pipes are manufactured in accordance with AS/NZS 1260, PVC-U pipes and fittings for drain, waste and vent applications. Iplex PVC-U gravity pipes are independently certified in accordance with the test requirements of AS/NZS 1260. Standards Mark Licence number SMK20184 and SMK20185. (Note: DWV pipes and fittings are coloured light grey as specified in AS/NZS 1260). SN stiffness class represents values in N/m/m eg SN6 pipe has a stiffness of 6000 N/m/m. SN16 pipe has a stiffness of 16000 N/m/m.

**Product code:** 100 Series – plain solid wall pipe, or sandwich construction (SC) solid wall pipe

#### Description:

NOVADRAIN™ is a solid wall PVC-U pipe. NOVADRAIN™ may be manufactured either as plain solid wall pipe or sandwich construction (SC) solid wall pipe. SC solid wall pipe technology is able to effectively utilise recycled PVC-U as permitted by the AS/NZS 1260 standard and including 'post-consumer' PVC-U recyclate material with associated extra sustainability benefits.

#### Joining:

Solvent cement joints available in size DN100 SN6 and DN150 SN4.

Rubber ring joints available in all sizes DN100 to DN600 inclusive.

#### Applications:

- Above ground waste and vent applications
  - Domestic house drains
  - Urban gravity sewer mains
  - Industrial gravity discharge lines
  - Thrusted gravity sewer main applications
  - abrasive slurries in quarrying and mining
  - acids, alkalies and aggressive chemicals.\*
- \* Refer to 'A Guide to Chemical Resistance of Thermoplastic and Elastomeric Materials' - available from IPLEX Pipelines.



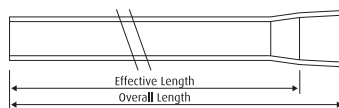
Installing DN100 NOVADRAIN™ pipe with coupling and inspection pipe fitting

NOVADRAIN™ Pipe Dimensions						
	Stiffness Classes	SN4	SN6	SN8	SN10	SN16
Nominal Size DN	Mean O.D. mm	Mean I.D. mm (min)	Mean I.D. mm (min)	Mean I.D. mm (min)	Mean I.D. mm (min)	Mean I.D. mm (min)
100*	110.2	-	103.8	-	103.0	101.6
150*	160.3	152.1	-	150.5	-	147.9
175	200.3	190.4	-	187.9	-	184.9
225	250.4	237.9	-	235.1	-	231.3
300	315.4	299.7	-	296.8	-	290.8
375	400.5	380.7	-	375.9	-	370.1
475	500.5	475.9	-	468.8	-	460.7
500*	560.3	530.0	-	524.8	-	-
600	630.5	-	-	591.1	-	-

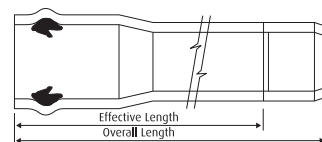
Minimum order quantities may apply

\*These pipe sizes may be manufactured as either plain solid wall pipe or sandwich construction (SC) solid wall pipe

\*This size not included in AS/NZS 1260 but is fully mechanically compliant with AS/NZS 1260



Solvent Cement Joint



Rubber Ring Joint

#### Length:

6 metre effective length. The overall length of each pipe is 6 metres plus the witness mark length.

#### Fittings:

- DWV Fittings (PVC-U)
- Solvent Weld Joint (Coded '100' Series) Injection Moulded fittings DN 100 - DN 150\* Suitable for SN16 application
- Rubber Ring Joint (Coded '1500' Series) Injection Moulded fittings DN 100 - DN 150\* Suitable for SN16 application

#### Design & Installation:

NOVAKEY™ pipe should be installed in accordance with the following Standards:

- **Buried Structural Design:** AS/NZS 2566 Part 1 and supplement 1. "Buried Flexible Pipelines - Structural Design"
- **General installation:** AS/NZS 2032 "Installation of PVC Pipe Systems"
- **Detailed installation and site pressure testing:** AS/NZS 2566 Part 2 "Installation"



Deep installation of NOVADRAIN™ DN300 SN4 at 4.8m cover under main road.

#### Limitations:

PVC Drain, Waste & Vent should not be used:

- With aromatic and chlorinated hydrocarbons, ketones, esters and ethers
- For pumped pressure applications
- At continuous service temperatures above 60°C or for intermittent discharges of liquid above 75°C
- Without adequate support to the pipe both in above ground and below ground applications
- Without adequate thrust support
- In below ground applications where depth of cover is less than:
  - 300mm where pipeline is not subject to vehicular loading
  - 450mm where pipeline is subject to vehicular loading not in roadway
  - 600mm where pipeline is subject to vehicular loading in sealed roadways
  - 750mm where pipeline is subject to vehicular loading in unsealed roadways
  - 750mm where pipeline is subject to construction equipment loadings
- When exposed to direct sunlight above ground for applications or storage exceeding 24 months without protection. This protection may include pale coloured UV resistant paint systems, non-exposed location or physical shading

## 8. FUSIBLE PVC™

### NOVAFUSE™ FUSIBLE PVC™ PRESSURE PIPE

#### Compliance:

Manufactured in accordance with AS/NZS1477 PVC Pipes & Fittings for pressure applications for Series 1 and Series 2 pipe, or AS/NZS1260 for gravity sewer applications. Iplex F-PVC pressure pipes are independently certified in accordance with the test requirements of AS/NZS 1477. Standards Mark Licence number SMK02569.

#### Applications:

- NOVAFUSE™ FUSIBLE PVC™ Pressure Pipe may be used for:
- Drinking water mains
  - Raw water and industrial process water
  - Pressure sewer rising mains
  - Gravity sewer mains
  - Seismically active locations/unstable/moving ground
  - Hydrocarbon contaminated ground
  - Industrial wastewater/dairy/fishing/meat processing/food processing wastewater
  - Recycled water
  - Stormwater
  - Electrical/telecommunications duct

#### Installation Methods:

- Horizontal directional drilling (HDD)
- Sliplining
- Static pipe bursting
- Conventional “open-cut”

#### Joining:

Butt fusion joining system. NOVAFUSE™ pipe is also fully OD compatible with conventional rubber ring joint PVC pressure so can be directly connected to pipe of the same Series class and nominal diameter.

#### Fittings:

Deep socket ductile iron fittings complying with AS/NZS 2280 “Ductile iron pipes and fittings”, including elbows, tees, reducers and flanges etc. Many DI fittings are now designed to use metric OD transition seal rings with Series 1 pipe. Socket spacers may be required in some diameters and in some fitting brands with series 1 pipe to centrally locate and support the pipe and avoid over deflection inside the socket housing. Iplex recommend you consult your fittings supplier for specific advice on DI fittings for Series 1 and Series 2 pipe.

#### Service and Connections:

Iplex recommends the use of PVC compatible, full circle supported tapping bands with NOVAFUSE™ pipe. These include Milnes Gunmetal, Crevet Taptite or other tapping bands manufactured to AS/NZS 4793 Mechanical tapping bands for waterworks purposes. Either O or V type tapping band seal rings are suitable for use with Novafuse.

**“Universal” tapping bands that use U-bolt support straps are prohibited.**

Tapping bands must be installed centrally positioned over the drilled service hole. This hole should be drilled using a fine-tooth hole saw. Twist drills or flat bits MUST NOT BE USED on any PVC pipe.

#### Mechanical Couplings:

Iplex recommends the use of unrestrained mechanical couplings manufactured to AS/NZS 4998 – Bolted unrestrained mechanical couplings for waterworks purposes.

#### Design and Installation:

NOVAFUSE™ pipe should be designed and installed in accordance with the following Standards:

- Buried Structural design  
AS/NZS2566 Part 1 and Supplement 1. “Buried flexible pipelines – structural design”.
- General Installation:  
AS/NZS 2032 “Installation of PVC pipe systems”.
- Detailed Installation and Site Pressure Testing  
AS/NZS 2566 Part 2. “Installation”.

#### Limitations:

NOVAFUSE™ FUSIBLE PVC™ pipe should not be used:

- With aromatic and chlorinated hydrocarbons, ketones, esters and ethers
- At any service temperature above 50°C
- Where provision for temperature derating has not been made above 20°C
- With compressed air
- Without adequate support to the pipe both in above ground and below ground applications
- Without adequate thrust support
- Where depth of cover is less than:
  - 300mm where pipeline is not subject to vehicular loadings
  - 450mm where pipeline is subject to vehicular loadings not in roadways
  - 600mm where pipeline is subject to vehicular loading in sealed roadways
  - 750mm where pipeline is subject to vehicular loading in unsealed roadways
  - 750mm where pipeline is subject to construction equipment loadings
- Without provision for fatigue design, to accommodate dynamic stresses where appropriate (in accordance with published PIPA guidelines)
- Where working pressure plus surge/cyclic pressure exceeds the nominated pressure performance rating of the pipe
- When exposed to direct sunlight above ground for applications or storage exceeding 24 months without protection
- This protection may include pale coloured UV resistant paint systems, non-exposed location or physical shading
- Never tap service connections directly into the pipe wall. Always use a full encirclement tapping band, designed for PVC pipe.



Fusion joining of DN450 PN12 NOVAFUSE™ pipe



FUSIBLE PVC™ about to enter the drill hole during HDD pull back





Assembled strings of DN450 PN12 NOVAFUSE™



HDD pull head attached to DN450 PN12 NOVAFUSE™



DN450 PN12 NOVAFUSE™ about to enter the drill hole during HDD pull back

**Table 1: Iplex NOVAFUSE™ – Metric Series 1 – Pressure Pipe Ratings Weight, Dimensions and safe pull force (Minimum order quantities apply)**

PN9						PN12				PN15				PN18			
Nom dia	Mean OD (mm)	Mean ID (mm)	Mean WT (mm)	Weight (Kg/m)	Safe Pull Stress (KN)	Mean ID (mm)	Mean WT (mm)	Weight (Kg/m)	Safe Pull Stress (KN)	Mean ID (mm)	Mean WT (mm)	Weight (Kg/m)	Safe Pull Stress (KN)	Mean ID (mm)	Mean WT (mm)	Weight (Kg/m)	Safe Pull Stress (KN)
100.0	114.3	104.5	4.9	2.4	32.0	101.7	6.3	3.1	40.6	98.7	7.8	3.8	49.6	-	-	-	-
150.0	160.2	146.8	6.7	4.7	61.4	142.6	8.8	6.3	79.5	138.6	10.8	7.5	96.3	-	-	-	-
200.0	225.3	208.5	8.4	8.7	108.8	203.1	11.1	11	141.9	197.9	13.7	13.4	173.0	-	-	-	-
225.0	250.3	231.7	9.3	10.8	133.8	225.7	12.3	13.7	174.7	-	-	-	-	-	-	-	-
300.0	315.4	292.0	11.7	17	212.1	284.4	15.5	21.5	277.5	-	-	-	-	-	-	-	-
375.0	400.5	370.7	14.9	27.4	342.9	361.3	19.6	34.7	445.6	352.1	24.2	43.7	543.6	343.1	28.7	49.3	636.9
450.0	500.5	463.3	18.6	43	535.0	451.5	24.5	54.2	696.1	440.1	30.2	67.2	847.8	-	-	-	-
500.0	560.5	518.9	20.8	50.47	670.1	505.7	27.4	66	871.9	-	-	-	-	-	-	-	-
575.0	630.5	583.5	23.5	65	851.5	-	-	-	-	-	-	-	-	-	-	-	-

**Table 2: Iplex NOVAFUSE™ – CIOD Series 2 – Pressure Pipe Ratings, Weight, Dimensions and safe pull force (Minimum order quantities apply)**

PN9						PN12				PN16				PN18			
Nom dia	Mean OD (mm)	Mean ID (mm)	Mean WT (mm)	Weight (Kg/m)	Safe Pull Stress (KN)	Mean ID (mm)	Mean WT (mm)	Weight (Kg/m)	Safe Pull Stress (KN)	Mean ID (mm)	Mean WT (mm)	Weight (Kg/m)	Safe Pull Stress (KN)	Mean ID (mm)	Mean WT (mm)	Weight (Kg/m)	Safe Pull Stress (KN)
100.0	121.9	-	-	-	-	108.5	6.7	3.5	46.1	-	-	-	-	102.3	9.8	5.04	65.6
150.0	177.3	-	-	-	-	157.5	9.8	7.7	98.0	-	-	-	-	148.9	14.2	10.8	138.2
200.0	232.2	-	-	-	-	209.2	11.5	11.6	151.5	202.2	15.0	14.9	194.5	-	-	-	-
250.0	286.3	264.9	10.7	14	176.0	258.1	14.1	17.6	229.1	249.3	18.5	22.8	295.7	-	-	-	-
300.0	345.4	319.6	12.9	20.3	256.0	311.4	17.0	26.4	333.2	-	-	-	-	-	-	-	-
375.0	426.2	394.4	15.9	30.1	389.4	384.4	20.9	38.0	505.6	371.2	27.5	52	654.5	-	-	-	-
450.0	507.0	469.2	18.9	45.3	550.6	-	-	-	-	-	-	-	-	-	-	-	-
525.0	560.3	518.5	20.9	55.8	672.9	-	-	-	-	-	-	-	-	-	-	-	-

**Table 3: Iplex NOVAFUSE™ Gravity Sewer Pipe Ratings, Weight, Dimensions and safe pull force**

Stiffness Class (SN16)				
Nominal Size DN	Mean OD mm	Mean ID min (mm)	Weight (Kg/m)	Safe Pull Stress (KN)
100	110.2	101.6	2.1	27.2
150	160.3	147.9	4.6	57.0
175	200.3	184.9	7.1	88.5
225	250.4	231.3	11.1	137.3
300	315.4	290.8	18.1	222.5
375	400.5	370.1	28.6	349.6
475	500.5	462.3	45.1	548.8

Minimum order quantities apply

## RESTRAIN™ - RESTRAINED JOINT PVC-U PIPE FOR TRENCHLESS INSTALLATION (NON-PRESSURE APPLICATIONS ONLY)

### Compliance:

RESTRAIN™ pipes are manufactured in accordance with AS/NZS 1260, PVC-U pipes and fittings for drain, waste and vent applications. Iplex PVC-U DWV pipes are independently certified in accordance with the test requirements of AS/NZ 1260. Standards Mark Licence number SMK20184.

SN stiffness class represents values in N/m/m. For example, SN16 pipe has a stiffness of 16000 N/m/m.

**Product Code:** RESTRAIN™ Series

### Description:

RESTRAIN™ is a plain wall SN16 pipe manufactured with threaded socket and spigot rubber ring joint

### Applications:

- Gravity sewer applications installed by trenchless methodology
- Domestic house drains
- Urban gravity sewer mains
- Industrial gravity discharge mains

### Installation Methods:

- Horizontal directional drilling
- Auger boring
- Guided boring
- Micro tunneling
- Pipe bursting / cracking
- Slip Lining On-line replacement (pipe reaming)

### Joining:

Threaded socket and spigot with rubber seal ring conforming fully to the elastomeric seal joint requirements of AS/NZ 1260.

### Fittings:

Compatible with PVC sewer fittings conforming to AS/NZS 1260

### DWV Fittings (PVC-U)

- Solvent Weld Joint (Coded '100' Series) Injection Moulded fittings DN 100 - DN 150\*
- Rubber Ring Joint (Coded '1500' Series) Injection Moulded fittings DN 100 - DN 150\*

### Design & Installation:

RESTRAIN™ pipe should be installed in accordance with the following Standards:

- **Buried Structural Design:**  
AS/NZS 2566 Part 1 and supplement 1. "Buried Flexible Pipelines - Structural Design"
- **General installation:**  
AS/NZS 2032 "Installation of PVC Pipe Systems"  
RESTRAIN™ Installation Guide available from Iplex Pipelines Technical Centre on request.
- **Detailed installation and site pressure testing:**  
AS/NZS 2566 Part 2 "Installation"

### Limitations:

RESTRAIN™ PVC pipe should not be used:

- With aromatic and chlorinated hydrocarbons ketones, esters and ethers
- For pumped or pressure applications
- At continuous service temperatures above 60°C, or for intermittent discharges of liquid above 75°C
- Without adequate support to the pipe in both above ground and below ground applications
- With pneumatic or concussive pipe bursting equipment

### RESTRAIN™ Installation Load Capacity

Pipe Size	Pipe O.D./mm	Pipe & Rubber Ring Joint Specification	Maximum Tensile load during installation	Maximum Compression load during installation
DN100	110	AS/NZS 1260 SN16	1,800kg	1,800kg
DN150	160	AS/NZS 1260 SN16	3,500kg	3,000kg
DN225	250	AS/NZS 1260 SN16	9,500kg	9,500kg
DN300	315	AS/NZS 1260 SN16	12,000kg	12,000kg

### RESTRAIN™ Pipe Dimensions

Nominal Size DN	Mean O.D. mm	Mean I.D. (mm)	Max O.D. at socket
100	110.2	101.6	115.0
150	160.3	147.9	167.5
225	250.3	231.2	262
300	315.4	290.8	328

Minimum order quantities may apply



Assembly and installation of DN150 RESTRAIN™ gravity sewer, replacing an old EW sewer by pipe reaming with a horizontal directional drill.



Microtunnelling installation of DN 225 (250mm OD) RESTRAIN™

## 10. SUPERSTORM™

### SUPERSTORM™ PVC-U STORMWATER PIPE (NON-PRESSURE APPLICATIONS ONLY)

#### Compliance:

Manufactured in accordance with AS/NZS 1254 PVC pipes and fittings for stormwater and surface water applications. Iplex PVC-U stormwater pipes are independently certified in accordance with the test requirements of AS/NZ 1254 Standards Mark Licence number SMK20126 and SMK20180.

**Product Code:** 700 series

**Applications:**

- Stormwater laterals
- Stormwater mains
- Stormwater culverts
- Rainwater downpipes
- Decorative building columns

#### Joining:

SUPERSTORM™ pipes are supplied socketed one end, suitable for solvent weld (DN 90 - DN 225) or rubber ring joints (DN 150 - DN 475).

#### Design & Installation:

SUPERSTORM™ pipe should be designed and installed in accordance with the following Standards:

- **Buried Structural Design:**  
AS/NZS 2566 Part 1 and supplement 1. "Buried Flexible Pipelines - Structural Design"
- **General installation:**  
AS/NZS 2032 "Installation of PVC Pipe Systems"
- **Detailed installation and site pressure testing:**  
AS/NZS 2566 Part 2 "Installation"



DN600 PVC-U stormwater pipe, showing a deep installation with correct mechanical side compaction of bedding and surround materials in layers.

#### SUPERSTORM™ Pipe Dimensions

Nominal Size DN	Stiffness Class	SN4	
		Mean Wall (mm)	Mean I.D.
90	90.1	2.4	85.3
100	110.2	3.0	104.2
150	160.3	4.3	151.7
175	200.3	5.0	190.3
225	250.4	6.5	237.4
300	315.4	8.2	299.0
375	400.5	10.3	379.9
475	500.5	12.7	475.1
500*	560.3	-	524.6
600#	630.5	-	591.1

Minimum order quantities may apply

\*This size not included in AS/NZS 1254 but is fully mechanically compliant with AS/NZS 2514

#This size is SN8

#### Limitations:

PVC Stormwater pipes should not be used:

- With aromatic and chlorinated hydrocarbons, ketones, esters and ethers
- For pumped pressure applications
- At continuous service temperatures above 60°C or for intermittent discharges of liquid above 75°C
- Without adequate support to the pipe both in above ground and below ground applications
- Without adequate thrust support



Installation of 3 metre lengths DN600 PVC-U stormwater pipe in trench shields, showing correct lifting with a nylon strop.



## POLIPEX™ POLYETHYLENE PRESSURE

**Compliance:**

Manufactured in accordance with AS/NZS 4130 'PE Pipes for Pressure Applications' using pre-compounded materials conforming to AS/NZS 4131 'PE Compounds for Pressure Pipes and Fittings'. Iplex PE pressure pipes are independently certified in accordance with the test requirements of AS/NZS 4130. Standards Mark License number SMK20400.

**Product Codes:**

POLIPEX™ 80 PE Pressure Pipes (AS/NZS 4130 Series 1)  
2600 Series - PE 80 Medium Density Polyethylene (MDPE) pipes,  
HDS\* = 6.3 MPa  
Colour Options - Blue with Black Stripes (BUTS), Black with Blue Stripes (BTS), Black with no Stripes (B)

POLIPEX™B 100 PE Pressure Pipe (AS/NZS 4130 Series 1)  
3500 Series - PE 100 High Performance Polyethylene (HPPE) pipes  
HDS\* = 8 MPa  
Colour Options - Royal Blue, Black (B)

POLIGAS™ PE Gas Pipe (AS/NZS 4130 Series 2) (Nominal OD Series)  
230 Series - PE 80 Gas Pipes, SDR 11 (4.2 Bar maximum working pressure for Natural Gas applications)  
Colour Options - Yellow, Black with Yellow Stripes

POLIGAS™ PE Gas Pipe (AS/NZS 4130 Series 3) (Nominal ID Series)  
200 Series - PE 80 Gas Pipes (4.2 Bar maximum working pressure for Natural Gas applications)  
Colour Options - Yellow

\* HDS:- Hydrostatic Design Strength

**Applications:**

- Water distribution for town, rural and irrigation purposes
  - Sewer rising mains
  - Submarine pipelines for ocean outfalls
  - Estuary and river crossings
  - Above ground temporary and unrestrained pipelines
  - Above ground fixed (restrained) pipe system
  - Pipeline renovation liners
  - Sleeve pipes for corrosion or mechanical protection
  - Chemical process pipe work
  - Compressed air
  - Sub-soil drainage (when slotted)
  - Dredge discharge lines
  - Mine tailings disposal
  - Trenchless installations, including directional boring
  - Natural gas reticulation
  - LPG reticulation
  - Landfill gas extraction
  - Acids, alkalis and aggressive chemicals\*
- \* Refer to 'A Guide to Chemical Resistance of Thermoplastic and Elastomeric Materials'  
- available from IPLEX Pipelines

**Joining:**

• **Butt Fusion.** The pipe ends are heated to melting point, then brought together in a Buttfusion machine to form a homogeneous weld. The resulting joint is end load resistant and should perform under pressure similarly to the un-welded pipe.

• **Electrofusion fittings.** These employ an electrical heating coil, incorporated inside a moulded socket. When energised from an electrofusion control box, the coil melts the adjacent material, causing the pipe and socket to fuse together.

• **Butt Fusion / Flange combination.**

• Iplex recommends the use of fittings complying with AS/NZS 4129 – Fittings for polyethylene (PE) pipes for pressure applications.

**Fusion Welding Procedure:**

Refer to the PIPA Guidelines for butt fusion and electrofusion welding procedures – [www.pipa.com.au](http://www.pipa.com.au).

**Fusion Weld Testing:**

Tensile testing of fusion welds to be in accordance with ISO/DIS 13953.

**Length:**

12 metre lengths are standard.

**Design & Installation:**

POLIPEX pipe should be designed and installed in accordance with the following Standards.

• **Buried Structural Design:**

AS/NZS 2566 Part 1 and supplement 1. "Buried Flexible Pipelines - Structural Design"

• **Detailed installation and site pressure testing:**

AS/NZS 2566 Part 2 "Installation"

AS/NZS 2033 Installation of polyethylene pipe systems



PE100 pressure pipes coloured black with blue stripes or black with a blue jacket identifying them as pressure water mains in accordance with AS/NZS 4130.

**Limitations:**

Polyethylene pipes are not suitable for use in the following applications:

- As a conductor for earthing electrical appliances
- All fire rated applications
- Exposure to direct sunlight in service (except black pipe)
- Pressure pipes in continuous services up to 60°C internal or external temperature, where provision for pressure derating has not been made
- Without adequate support to the pipe in above ground and below ground applications
- Where working pressure and surge pressure exceeds the nominated pressure rating of the pipe
- Where incorrect depth of cover is applied.
- Without adequate support to the pipe both in above ground and below ground applications
- Without adequate thrust support
- Where depth of cover is less than:
  - 300mm where pipeline is not subject to vehicular loadings
  - 450mm where pipeline is subject to vehicular loadings not in roadways
  - 600mm where pipeline is subject to vehicular loading in sealed roadways
  - 750mm where pipeline is subject to vehicular loading in unsealed roadways
  - 750mm where pipeline is subject to construction equipment loadings
- Without provision for fatigue design, to accommodate dynamic stresses where appropriate (in accordance with published PIPA guidelines)
- Where working pressure plus surge/cyclic pressure exceeds the nominated pressure performance rating of the pipe

POLIPLEX™ Polythene pipe Dimensions to AS 4130 Series 1 (mm)

			SDR41		SDR33		SDR26		SDR21		SDR17		SDR13.6		SDR11		SDR9		SDR7.4	
PN for PE80			3.2		4				6.3		8		10		12.5		16		20	
PN for PE100			4				6.3		8		10		12.5		16		20		25	
DN	Min O.D. (mm)	Max O.D. (mm)	Mean Wall	Mean I.D.	Mean Wall	Mean I.D.	Mean Wall	Mean I.D.	Mean Wall	Mean I.D.	Mean Wall	Mean I.D.	Mean Wall	Mean I.D.	Mean Wall	Mean I.D.	Mean Wall	Mean I.D.	Mean Wall	Mean I.D.
75	75.0	75.7	-	-	2.5	70.4	3.1	69.2	3.9	67.6	4.8	65.8	5.9	63.7	7.2	61.0	8.9	57.6	10.9	53.6
90	90.0	90.9	-	-	3.0	84.5	3.7	83.0	4.6	81.3	5.7	79.0	7.0	76.5	8.7	73.1	10.7	69.1	13.0	64.5
110	110.0	111.0	2.9	104.7	3.6	103.2	4.6	101.3	5.6	99.2	7.0	96.5	8.6	93.3	10.5	89.4	13.0	84.5	16.0	78.5
125	125.0	126.2	3.3	118.9	4.1	117.3	5.1	115.4	6.3	112.9	7.8	109.9	9.7	106.1	12.0	101.5	14.8	96.0	18.1	89.4
140	140.0	141.3	3.8	133.1	4.6	131.4	5.8	129.1	7.1	126.4	8.8	123.1	10.9	118.8	13.4	113.9	16.6	107.6	20.2	100.3
160	160.0	161.5	4.2	152.3	5.2	150.4	6.6	147.6	8.1	144.5	10.0	140.7	12.4	135.9	15.4	130.0	18.9	123.1	23.1	114.6
180	180.0	181.7	4.7	171.5	5.9	169.2	7.3	166.3	9.1	162.7	11.3	158.3	14.0	152.8	17.3	146.3	21.2	138.5	25.9	129.1
200	200.0	201.8	5.2	190.5	6.6	187.7	8.1	184.6	10.1	180.6	12.5	175.8	15.5	169.9	19.2	162.5	23.6	153.7	28.8	143.3
225	225.0	227.1	5.8	214.4	7.3	211.5	9.1	207.9	11.4	203.3	14.1	197.8	17.5	191.1	21.6	182.9	26.5	173.1	32.4	161.3
250	250.0	252.3	6.6	238.0	8.1	234.9	10.1	230.9	12.5	226.1	15.6	220.0	19.4	212.4	23.9	203.4	29.4	192.4	36.0	179.2
280	280.0	282.6	7.3	266.7	9.1	263.1	11.3	258.7	14.1	253.0	17.5	246.3	21.7	237.9	26.7	227.8	33.0	215.3	40.3	200.7
315	315.0	317.9	8.1	300.2	10.2	296.0	12.8	290.9	15.8	284.9	19.7	277.1	24.4	267.6	30.1	256.3	37.1	242.3	45.2	226.1
355	355.0	358.2	9.2	338.2	11.5	333.6	14.3	327.9	17.8	321.0	22.2	311.1	27.5	301.6	33.9	288.8	41.7	273.2	51.0	254.6
400	400.0	403.6	10.3	380.0	13.0	375.8	16.1	369.5	20.1	361.5	24.9	351.9	30.9	339.9	38.2	325.4	47.0	307.8	57.4	287.0
450	450.0	454.1	11.6	428.9	14.5	423.0	18.1	415.8	22.6	406.8	28.1	395.9	34.8	382.4	43.0	366.1	52.8	346.5	64.7	322.7
500	500.0	504.5	13.0	476.3	16.1	470.0	20.1	462.0	25.1	452.0	31.1	440.0	38.7	424.9	47.7	406.8	58.7	384.9	71.7	358.9
560	560.0	565.0	14.4	533.7	18.1	526.3	22.5	517.5	28.1	506.4	34.9	492.7	43.3	475.9	53.4	455.8	66.1	430.3	89.4	383.7
630	630.0	635.7	16.2	600.4	20.3	592.2	25.4	582.1	31.5	569.8	39.2	554.4	48.7	535.5	60.1	512.6	74.4	484.1	64.7	322.7
710	710.0	716.4	18.3	676.5	22.9	667.3	28.6	655.9	35.6	641.9	44.3	624.6	54.9	603.4	68.5	576.2	82.9	547.4	71.7	358.9
800	800.0	807.2	20.6	762.3	25.8	752.0	32.2	739.2	40.1	723.4	49.8	703.9	61.8	680.0	76.4	650.8	93.4	616.8	-	-
900	900.0	908.1	23.2	857.8	29.1	846.0	36.2	831.7	45.1	813.9	56.3	791.7	68.5	764.9	86.0	732.2	105.1	694.0	-	-
1000	1000.0	1009.0	25.8	952.9	32.2	940.1	40.2	924.1	50.2	904.1	62.4	879.7	77.3	852.3	95.5	813.5	116.7	771.1	-	-
1200	1200.0	1210.0	31.0	1143.1	38.6	1127.8	48.3	1108.4	60.2	1084.6	74.9	1062.3	92.8	1019.6	114.6	975.8	-	-	-	-
1400	1400.0	1410.0	36.2	1332.6	45.1	1314.8	56.0	1293.0	70.6	1264.8	87.1	1231.8	108.9	1188.8	134.7	1135.6	-	-	-	-
1600	1600.0	1610.0	41.2	1522.3	51.5	1502.0	64.7	1476.1	80.1	1444.8	98.9	1407.2	123.6	1357.8	-	-	-	-	-	-
1800	1800.0	1816.2	46.1	1712.7	58.3	1688.4	72.8	1662.8	90.1	1628.0	111.3	1585.6	139.1	1527.0	-	-	-	-	-	-
2000	2000.0	2018.0	51.3	1906.4	64.7	1879.4	80.8	1847.4	100.1	1808.9	123.6	1761.9	154.5	1696.1	-	-	-	-	-	-

MINIMUM ORDER QUANTITIES MAY APPLY



DN710,PN12.5, PE100 sewer rising main being prepared for installation by horizontal directional drilling. Pipe is black with a cream coloured jacket, identifying it visually as a pressure sewer in accordance with AS/NZS 4130.

POLIGAS™ Gas Pipe Dimensions for AS 4130 Series 3 (Nominal ID Series)

DN	Mean Outside Diameter (mm)	SDR11	SDR9
		Mean Wall (mm)	Mean Wall (mm)
10	16.1*	-	1.7*
15	21.6	-	2.6
20	26.8	2.5	-
25	33.5	3.2	-
32	42.2	4.0	-
50	60.5	5.7	-
80	89.0	8.5	-
100	114.4	10.9	-

\*IPLEX Pipelines Specifications

## BLUELINE MEDIUM DENSITY POLYETHYLENE PRESSURE PIPE

### Compliance:

Manufactured in accordance with AS/NZS 4130 "PE Pipes for Pressure Applications" using pre-compounded materials conforming to AS/NZS 4131 "PE Compounds for Pressure Pipes and Fittings". BlueLine PE pressure pipes are independently certified in accordance with the test requirements of AS/NZS 4130. Standards Mark License number SMK20400.

### Product Code:

2500 Series

### Description:

Metric series PN12.5 polyethylene pressure pipe in the size range 20mm – 63mm OD, manufactured from PE80 Medium density polyethylene (MDPE). Pipe is coloured blue with black tri-stripes and is available in coils of 25, 50 and 100 metres.

**Applications:**

- Water distribution for town, rural and irrigation projects
- Rider mains for urban water supply
- Cold water plumbing reticulation
- Household water connections from the main supply
- Compressed air lines

### Joining:

BlueLine can be joined using mechanical compression fittings complying with AS/NZS 4129 such as the Plasson brand. BlueLine can also be joined by butt fusion welding or electrofusion couplings.

### Fusion Welding Procedure:

Refer to the PIPA Guidelines for butt fusion and electrofusion welding procedures – [www.pipa.com.au](http://www.pipa.com.au).

### Fusion Weld Testing:

Tensile testing of fusion welds to be in accordance with ISO/DIS 13953.

### Design and Installation:

BlueLine pipes should be designed and installed in accordance with the following Standards:

- **Buried Structural Design**  
AS/NZS 2566 Part 1 and Supplement "Buried Flexible Pipelines – Structural Design"
- **Detailed Installation and Site Pressure Testing**  
AS/NZS 2566 Part 2 "Installation"  
AS/NZS 2033 Installation of polyethylene pipe systems



BlueLine pipe and Plasson compression fittings used for a water service connection to a residential property.

Pressure Class			PN12.5 SDR11	
DN	Min. O.D. (mm)	Max. O.D. (mm)	Mean Wall (mm)	Mean ID (mm)
20	20.0	20.3	2.0	16.1
25	25.0	25.3	2.5	20.1
32	32.0	32.3	3.1	25.9
40	40.0	40.4	3.9	32.4
50	50.0	50.5	4.9	40.4
63	63.0	63.6	6.1	51.1



Coil of BlueLine polyethylene pipe on site.

### Limitations:

Polyethylene pipes are not suitable for use in the following applications:

- As a conductor for earthing electrical appliances
- All fire rated applications
- Exposure to direct sunlight in service (except black pipe)
- Pressure pipes in continuous services up to 60°C internal or external temperature, where provision for pressure derating has not been made
- Without adequate support to the pipe in above ground and below ground applications
- Where working pressure and surge pressure exceeds the nominated pressure rating of the pipe
- Where incorrect depth of cover is applied.
- Without adequate support to the pipe both in above ground and below ground applications
- Without adequate thrust support
- Where depth of cover is less than:
  - 300mm where pipeline is not subject to vehicular loadings
  - 450mm where pipeline is subject to vehicular loadings not in roadways
  - 600mm where pipeline is subject to vehicular loading in sealed roadways
  - 750mm where pipeline is subject to vehicular loading in unsealed roadways
  - 750mm where pipeline is subject to construction equipment loadings
- Without provision for fatigue design, to accommodate dynamic stresses where appropriate (in accordance with published PIPA guidelines)
- Where working pressure plus surge/cyclic pressure exceeds the nominated pressure performance rating of the pipe



## BLACKLINE PE100 HIGH PRESSURE POLYETHYLENE PIPE

### Compliance:

Manufactured in accordance with AS/NZS 4130 "PE Pipes for Pressure Applications" using pre-compounded materials conforming to AS/NZS 4131 "PE Compounds for Pressure Pipes and Fittings". Blackline PE pressure pipes are independently certified in accordance with the test requirements of AS/NZS 4130. Standards Mark License number SMK20400.

### Product Code:

3500 Series

PN16 (16 bar), PN20 (20 bar) and PN25 (25 bar) options

### Description:

Metric series polyethylene pressure pipe from 25mm – 110mm OD, manufactured from PE100 High Performance Polyethylene for high pressure applications.

Pipe is coloured black and is available in coils including 25, 50 and 100 metres.

**Applications:**

- High-pressure applications including;
- Water distribution for town, rural and irrigation projects
- Rider mains for urban water supply
- Household water connections from the main supply
- Compressed air lines

### Joining:

PN16 Blackline pipe can be joined using Plasson mechanical compression fittings complying with AS/NZS 4129. It can also be joined by butt fusion welding or electrofusion couplings although these methods are not often used in small diameter pipes.

PN20 and PN25 Blackline can be joined using Blackline Ductile Iron fittings. Butt fusion welding may also be used.

### Fusion Welding Procedure:

Refer to the PIPA Guidelines for butt fusion and electrofusion welding procedures – [www.pipa.com.au](http://www.pipa.com.au).

### Fusion Weld Testing:

Tensile testing of fusion welds to be in accordance with ISO/DIS 13953.

### Design and Installation:

Blackline pipes should be designed and installed in accordance with the following Standards:

- **Buried Structural Design**  
AS/NZS 2566 Part 1 and Supplement "Buried Flexible Pipelines – Structural Design"
- **Detailed Installation and Site Pressure Testing**  
AS/NZS 2566 Part 2 "Installation"  
AS/NZS 2033 Installation of polyethylene pipe systems



Installation of Blackline™ pipe by mole plough

Pressure Class			PN16		PN20		PN25	
			SDR 11		SDR 9		SDR 7.4	
DN	Min O.D. (mm)	Max O.D. (mm)	Mean Wall (mm)	Mean I.D. (mm)	Mean Wall (mm)	Mean I.D. (mm)	Mean Wall (mm)	Mean I.D. (mm)
25	25.0	25.3	2.5	20.1				
32	32.0	32.3	3.1	25.9				
40	40.0	40.4	3.9	32.4				
50	50.0	50.5	4.9	40.4				
63	63.0	63.6	6.1	51.1	7.5	48.3	9.1	45.1
75	75.0	75.7	7.2	60.9				
90	90.0	90.9	8.7	73.5	10.7	69.0	13.0	64.4
110	110.0	111.0	10.5	89.5	13.0	84.5	15.9	78.7

### Blackline HP Ductile Iron Fittings

Designed specifically for use with Blackline PN20 and PN25 polyethylene pipe

#### Ductile iron coupling – PN25

63mm  
90mm  
110mm



#### Stainless steel male threaded adaptor – PN25

63mm x 50mm BSP  
90mm x 80mm BSP  
110mm x 100mm BSP



#### Ductile iron transition coupling – PN25

63mm  
90mm  
110mm



#### Ductile iron universal flanged adaptor – PN25

63mm x 50mm flange –  
120 – 125mm PCD  
90mm x 80mm flange –  
150 – 160mm PCD  
110mm x 100mm flange –  
175 – 191mm PCD



### Limitations:

Polyethylene pipes are not suitable for use in the following applications:

- As a conductor for earthing electrical appliances
- All fire rated applications
- Exposure to direct sunlight in service (except black pipe)
- Pressure pipes in continuous services up to 60°C internal or external temperature, where provision for pressure derating has not been made
- Without adequate support to the pipe in above ground and below ground applications
- Where working pressure and surge pressure exceeds the nominated pressure rating of the pipe
- Where incorrect depth of cover is applied.
- Without adequate support to the pipe both in above ground and below ground applications
- Without adequate thrust support
- Where depth of cover is less than:
  - 300mm where pipeline is not subject to vehicular loadings
  - 450mm where pipeline is subject to vehicular loadings not in roadways
  - 600mm where pipeline is subject to vehicular loading in sealed roadways
  - 750mm where pipeline is subject to vehicular loading in unsealed roadways
  - 750mm where pipeline is subject to construction equipment loadings
- Without provision for fatigue design, to accommodate dynamic stresses where appropriate (in accordance with published PIPA guidelines)
- Where working pressure plus surge/cyclic pressure exceeds the nominated pressure performance rating of the pipe

## SUPERSTORM™ PVC-U ROADING PIPE FOR STORMWATER AND ROAD CULVERTS (NON-PRESSURE APPLICATIONS ONLY)

### Compliance:

Manufactured in accordance with AS/NZS 1254 PVC pipes and fittings for stormwater and surface water applications. Complies with NZTA (TRANSIT NZ) Specification TNZ F/3: 2010 "Specification for pipe culvert construction".

Iplex PVC-U stormwater pipes are independently certified in accordance with the test requirements of AS/NZ 1254 Standards Mark Licence number SMKP20126 and SMK20180.

**Product Code:** 700 series

**Applications:**

- Stormwater culverts used in roads including connections to intakes and outlet structures, aprons, head-walls and wing-walls
- Stormwater laterals
- Stormwater mains
- Stormwater access culverts used adjacent to the road carriageway under access ways

### Joining:

SUPERSTORM™ pipes are supplied socketed one end, suitable for solvent weld (DN 225) or rubber ring joints (DN 225 - DN 600).

### Design & Installation:

SUPERSTORM™ pipe for roading should be designed and installed in accordance with the following Standards:

- **Buried Structural Design:**  
AS/NZS 2566 Part 1 and supplement 1. "Buried Flexible Pipelines - Structural Design"
- **General installation:**  
NZTA (TRANSIT NZ) Specification TNZ F/3: 2010  
AS/NZS 2032 "Installation of PVC Pipe Systems"
- **Detailed installation and site pressure testing:**  
AS/NZS 2566 Part 2 "Installation"



DN300 PVC-U stormwater pipe used as a road access culvert. (Left) Immediately after installation and (right) 4 years later, showing the effectiveness of well placed and thoroughly compacted bedding and surround aggregate material.



DN300 SN4 SUPERSTORM™ road sump lead pipe, and discharge pipe to wing wall.

### SUPERSTORM™ Pipe Dimensions

Nominal Size DN	Stiffness Class	SN4	
	Mean O.D. mm	Mean Wall (mm)	Mean I.D.
225	250.4	6.5	237.4
300	315.4	8.2	299.0
375	400.5	10.3	379.9
475	500.5	12.7	475.1
500*	560.3	-	524.6
600#	630.5	-	591.4

Minimum order quantities may apply

\*This size not included in AS/NZS 1254 but is fully compliant mechanically with AS/NZS 1254

#This size is SN8



DN600 PVC-U stormwater pipe, showing a deep installation with correct mechanical side compaction of bedding and surround materials in layers.



DN600 PVC-U stormwater pipe, showing correct lifting with nylon strop and dunnage protection under pipes on the road.

### Limitations:

PVC Stormwater pipes should not be used:

- With aromatic and chlorinated hydrocarbons, ketones, esters and ethers
- For pumped pressure applications
- At continuous service temperatures above 60°C or for intermittent discharges of liquid above 75°C
- Without adequate support to the pipe both in above ground and below ground applications
- Without adequate thrust support



## 15. NEXUS™ SUBSOIL ROAD DRAINAGE

### NEXUS™ HI-WAY HEAVY DUTY SUBSOIL ROAD DRAINAGE SYSTEM (RED STRIPE)

#### Compliance:

NEXUS™ HI-WAY complies with NZTA Specification TNZ F/2: 2000  
NEXUS™ HI-WAY with Filter Sock complies with NZTA Specification TNZ F/2: 2000

**Product Code:**

- NEXUSHD – NEXUS™ HI-WAY Heavy duty road subsoil drainage pipe system
- NEXUSHDFS - NEXUS™ HI-WAY Heavy duty road subsoil drainage pipe system with pre-fitted filter sock

### NEXUS™ FLO SUBSOIL ROAD DRAINAGE SYSTEM (BLUE STRIPE)

#### Compliance:

NEXUS™ FLO pipe complies with NZTA (TRANSIT NZ) Specification TNZ F/5: 2000

**Product Code:**

- NEXUSFS – Standard NEXUS™ FLO subsoil drainage pipe with pre-fitted filter sock

#### Benefits of NEXUS™ HI-WAY and NEXUS™ FLO:

NEXUS™ pipe is a double wall polyethylene pipe combining a smooth inner wall with a corrugated outer wall. The two walls are welded together during manufacture resulting in a high stiffness wall section with smooth-bore hydraulic performance.

NEXUS™ HI-WAY has an unpunched invert as specified in NZTA TNZ F/2. A permanent visible red stripe appears approximately opposite this unpunched invert. This red stripe is for visual identification as NEXUS™ HI-WAY, but DOES NOT indicate the top of the installed pipe. NEXUS™ FLO is punched around the full circumference.

Coils supplied complete with filter sock come wrapped in a protective plastic sheet that prevents damage to the filter sock material during transport and site storage.

**Applications:**

- (NEXUS™ HI-WAY) Subsoil drains under roads, constructed in accordance with NZTA Specification TNZ F/2
- (NEXUS™ FLO) light duty sub soil drains in accordance with NZTA specification TNZ F/5
- Construction work-site drainage
- Subsoil drainage under carriage ways or driveways
- Drainage or rubbish tips and public landfills.

#### Joining:

Pipe supplied with a factory fitted, pullout-resistant coupler for easy, reliable joining.

#### Installation:

NEXUS™ HI-WAY products should be installed in accordance with NZTA specification TNZ F/2.

NEXUS™ FLO products should be installed in accordance with NZTA specification TNZ F/5.



NEXUS™ FLO interceptor drain installation in a lightly loaded section of the highway environment, adjacent to the main wheel loaded zone

#### NEXUS™ Pipe Data: Available Lengths (m)

Nominal O.D. mm	NEXUSFS (NEXUS™ FLO)	NEXUSHD (NEXUS™ HI-WAY)	NEXUSHDFS (NEXUS™ HI-WAY with filter sock)
110	100m	5m & 100m	100m
160	45m	5m & 45m	45m
200	29m	5m	-



NEXUS™ HI-WAY pipe coil showing the pull-out resistant coupling and red stripe for visual identification



NEXUS™ HI-WAY pipe coil showing the pipe fitted with filter sock



NEXUS™ HI-WAY with factory-fitted filter sock being installed in preparation for the road base



NEXUS™ FLO interceptor drain installation in a lightly loaded section of the highway environment



## Flowtite™ GRP Pipe

### Compliance:

Flowtite™ GRP (Glass Reinforced Plastic) pipe is manufactured in accordance with AS 3571. Other international manufacturing Standards also apply including; ISO 10467, ISO 10639, ANSI/AWWA C950, DIN16868, BS 5480.

### Benefits:

Flowtite™ GRP pipe is constructed of polymer resin, glass fibre and silica sand producing a high strength, corrosion resistant pipe with excellent engineering properties. Flowtite™ GRP pipe has a smooth internal bore for improved hydraulic performance, is lightweight and easy to handle and is available in a wide range of sizes and pressure ratings up to 32 bar. Flowtite™ GRP is suitable for above ground and buried applications.

### Applications:

May be used to convey:

- Urban potable and raw water
- Gravity and pumped sewer mains
- Agricultural irrigation and rural water supply
- Industrial processing fluids
- Industrial effluent disposal
- Slip lining
- Submarine pipelines
- Hydro-electric power station penstocks
- Desalination plants



DN750 PN10 Flowtite™ irrigation main being installed

### Joining:

Pipe is supplied with a Flowtite™ GRP coupling system utilizing a high performance rubber ring seal in all pipe sizes.

### Fittings:

An extensive range of Flowtite™ GRP fittings are available across the full pressure range to PN32. Custom design fittings can also be manufactured on request. Conventional socketed ductile iron fittings complying with AS/NZS 2280 in sizes to DN750 are suitable. Fabricated steel and stainless steel fittings may be used.

### Pipe Length:

Flowtite™ GRP pipe is available in 6 and 12 metre lengths. Other lengths may be available on request dependant on volume and ability to transport.

### Buried Structural Design and Installation:

Flowtite™ GRP pipelines should be designed and installed in accordance with the following Standards.

- Buried Structural Design: AS/NZS 2566 Part 1 and supplement 1. "Buried Flexible Pipelines – Structural Design"
- Detailed installation and site pressure testing: AS/NZS 2566 Part 2 "Installation"

### Limitations:

Flowtite™ GRP pipes should not be used;

- For continuous applications above 35° C and/or outside the pH range 3 to 9

Note: For applications outside this range please contact Iplex Pipelines Technical Team for more information

- If stored in the open without the coupling seal rings being covered or protected from U.V
- Without adequate support to the pipe in above ground and/or below ground applications
- Without adequate thrust support

Product Data Flowtite™ GRP SN5,000 Pipe Dimensions

DN	Spigot OD (mm)	PN1		PN6		PN10		PN16		PN20		PN25	
		W.T (mm)	ID (mm)	W.T (mm)	ID (mm)	W.T (mm)	ID (mm)	W.T (mm)	ID (mm)	W.T (mm)	ID (mm)	W.T (mm)	ID (mm)
375	426	6.9	412	6.9	412	6.6	413	6.2	414	6.2	414	6.1	414
450	507	8.3	490	8.3	490	7.8	491	7.3	492	7.2	493	7.1	493
525	587	9.5	568	9.5	568	8.9	569	8.3	570	8.1	571	8.1	571
600	667	10.7	646	10.7	646	10	647	9.3	648	9.1	649	9.1	649
675	747	11.9	723	11.9	723	11.1	725	10.3	726	10.1	727	10	727
750	826	13.1	800	13.1	800	12.2	802	11.3	803	11.1	804	11	804
900	923	14.5	894	14.5	894	13.6	896	12.5	898	12.3	898	12.1	899
1000	1025	16.0	993	16.0	993	15	995	13.8	997	13.5	998	13.4	998
1200	1229	19.0	1191	19.0	1191	17.9	1193	16.3	1196	16	1197	15.8	1197
1400	1433	22.1	1389	22.1	1389	20.7	1392	18.9	1395	18.5	1396	18.3	1396
1600	1637	25.2	1587	25.2	1587	23.5	1590	21.4	1594				
1800	1841	28.2	1785	28.2	1785	26.3	1788	24	1793				
2000	2045	31.2	1983	31.2	1983	29.2	1987	26.5	1992				
2200	2249	34.3	2180	34.3	2180	32	2185						
2400	2453	37.2	2379	37.2	2379	34.8	2383						
3000	3065	46.3	2972	46.3	2972								

Product Data GRP SN10,000 Pipe Dimensions

DN	Spigot OD (mm)	PN1		PN6		PN10		PN16		PN20		PN25		PN32	
		W.T (mm)	ID (mm)	W.T (mm)	ID (mm)	W.T (mm)	ID (mm)	W.T (mm)	ID (mm)	W.T (mm)	ID (mm)	W.T (mm)	ID (mm)	W.T (mm)	ID (mm)
375	426	8.3	409	8.3	409	8.3	409	7.9	410	7.7	411	7.5	411	7.5	411
450	507	10	487	10	487	10	487	9.2	489	9	489	8.8	489	8.7	490
525	587	11.5	564	11.5	564	11.5	564	10.6	566	10.2	567	10	567	9.9	567
600	667	13.1	641	13.1	641	13.1	641	11.9	643	11.5	644	11.3	644	11.1	645
675	747	14.7	718	14.7	718	14.7	718	13.2	721	12.8	721	12.5	722	12.3	722
750	826	16.2	794	16.2	794	16.2	794	14.5	797	14	798	13.7	799	13.5	799
900	923	17.9	887	17.9	887	17.9	887	16.2	891	15.6	892	15.2	893	15	893
1000	1025	19.9	985	19.9	985	19.9	985	17.8	989	17.2	991	16.8	991	16.5	992
1200	1229	23.8	1181	23.8	1181	23.8	1181	21.2	1187	20.4	1188	19.9	1189	19.6	1190
1400	1433	27.6	1378	27.6	1378	27.6	1378	24.6	1384	23.7	1386	23.1	1387	22.7	1388
1600	1637	31.4	1574	31.4	1574	31.4	1574	27.9	1581						
1800	1841	35.2	1771	35.2	1771	35.2	1771	31.3	1778						
2000	2045	38.9	1967	38.9	1967	38.9	1967	34.7	1976						
2200	2249	42.7	2164	42.7	2164	42.7	2164								
2400	2453	46.5	2360	46.5	2360	46.5	2360								
3000	3065	57.9	2949	57.9	2949										



DN750 PN10 Flowtite™ irrigation main, showing correct side compaction of bedding



DN1000 PN25 hydroelectric penstock in access tunnel showing support piers



DN1200, PN25 Flowtite™ Trunk Water Main Pipe being transported to the installation site



DN750 PN20 Flowtite™ bend, showing factory fitted coupling

## AQUACELL™ STORMWATER MANAGEMENT SYSTEM

**Product Code:**  
AQUA Series

**Description:**

Aquacell™ is a stormwater management cell designed for use in infiltration, attenuation or storage / reuse applications. Individual cells are assembled together to form an underground structure for use in commercial, industrial or residential sites.

**Applications:**

Aquacells are suitable for a number of stormwater management applications including;

- Infiltration or soak away
- Attenuation
- Storage and reuse
- Conveyance

**Assembly:**

Aquacells are pre-assembled during manufacture and no further assembly of the individual cells is required on site. Aquacells are clipped together horizontally using a purpose made plastic clip and vertically using a purpose made plastic shear rod. This combination provides a strong but flexible structure that is easy to assemble whilst providing versatility for structural shape.

Aquacells are wrapped in geotextile cloth for infiltration systems or seam welded geomembrane for attenuation and storage applications.

**Design and Installation:**

Local Authority Codes of Practice should be consulted for guidance on stormwater design criteria. Alternatively contact the Iplex Technical Services Team on free-phone 0800-800-262 for more information.

**Pipe Connections:**

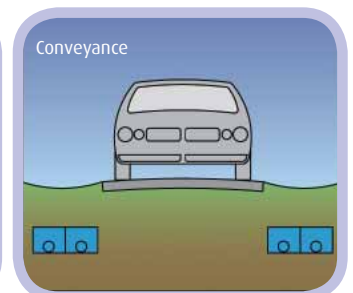
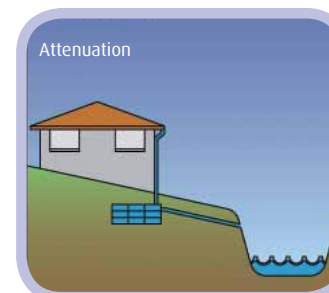
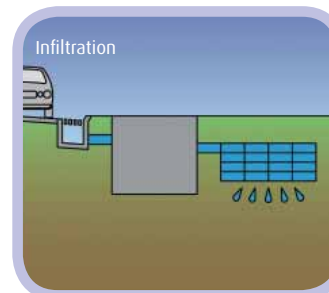
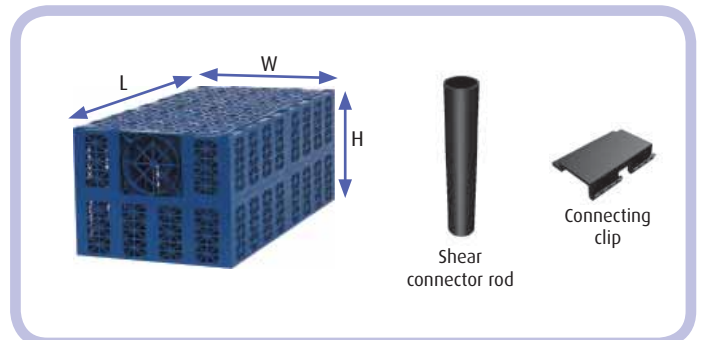
Each Aquacell™ has a molded “knockout” in each end to assist the connection of inlet or outlet pipe work as required.

**Limitations**

Aquacells should not be used without;

- Appropriate pre-treatment to remove gross pollutants and silts
- Appropriate structural design
- Appropriate hydraulic design
- Suitable structural support

Aquacell™ Dimensions	
External Dimensions	1000mm long x 500mm wide x 400mm deep
Mass	9 kilograms
Void space (Porosity)	95%
Internal storage capacity	190 litres
Open perforations	43% to allow use in infiltration
Ultimate compressive strength at yield – vertical face	560 kN/m <sup>2</sup>
Ultimate compressive strength at yield – horizontal face	77.5 kN/m <sup>2</sup>



Aquacell™ shallow conveyance and infiltration gallery under construction.



Wrapping an Aquacell™ infiltration gallery in geotextile fabric prior to backfilling.



[www.iplex.co.nz](http://www.iplex.co.nz)  
[www.iplex.com.au](http://www.iplex.com.au)  
[www.pipa.com.au](http://www.pipa.com.au)  
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Iplex Pipelines New Zealand  
 Iplex Pipelines Australia  
 Plastics Industry Pipe Association of Australia  
 Plastics New Zealand (Plastics Industry Pipe Association of New Zealand)  
 Uni-Bell PVC Pipe Association - USA  
 Vinyl Council Australia  
 Australasian Society of Trenchless Technology

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#### Important Disclaimer

The information, opinions, advice and recommendations contained in this publication are put forward with the main object of providing a better understanding of technical matters associated with pipeline design using Iplex Pipelines. Whilst all reasonable care has been made in ensuring that the information contained in this publication is accurate, this publication should not be used as the only source of information by the reader. Reference should also be made to established textbooks and other published material, and readers should not rely on the information contained in this publication without taking appropriate professional advice for their particular circumstances. Pipes and fittings have been shown as typical configurations, however, in some cases product dimensions may vary or be changed without notice. In all instances, the reader should contact Iplex Pipelines for clarification that the specific product is appropriate for their circumstances.

## Other Products from



**NOVADRAIN™**  
PVC DRAIN WASTE & VENT SYSTEMS

**RESTRAIN™**  
DRILLABLE PVC GRAVITY SEWER PIPE

**SUPERSTORM™ & STORMFIT**  
PVC STORMWATER DUCT SYSTEM

**SUPERSTORM™ PVC**  
ROAD DRAINAGE PIPE

**NEXUS™ HI-WAY**  
ROAD DRAINAGE SYSTEM

**NOVAKEY™ & BLUE BRUTE™**  
PVC-U PRESSURE SYSTEMS

**WHITE & BLUE RHINO™**  
HIGH IMPACT PVC-M PRESSURE PIPE

**APOLLO™ & APOLLO™BLUE**  
PVC-O PRESSURE PIPE

**NOVAFUSE™**  
FUSIBLE PVC PIPE

**BLUELINE & POLIPLEX™**  
MEDIUM DENSITY POLYETHYLENE PIPE

**ALKATHENE**  
LOW DENSITY POLYETHYLENE PIPE

**NOVATUBE**  
HORTICULTURAL LATERAL TUBE

**GREENLINE, REDLINE™, RURAL BLACK & BLACKLINE**  
POLYETHYLENE PRESSURE PIPE

**PLASSON**  
METRIC COMPRESSION FITTINGS

**NEXUS™FLO, NEXUS™COIL, NOVAFLO™ & NOVACOIL™**  
LAND DRAINAGE SYSTEMS

**IPEX EFFLUENT PIPE**  
MEDIUM DENSITY POLYETHYLENE PIPE

**FARMTUFF™ & NEXUS™ CULVERT**  
CULVERT PIPE

**POLIGAS™**  
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