Vinidex
Systems & Solutions

Supermain® PVC-O

Molecular Oriented For Superior Strength & Performance

HIGH FLOW CAPACITY

HIGH IMPACT STRENGTH

HIGH TOUGHNESS

EXCELLENT DAMAGE TOLERANCE

LIGHT WEIGHT

CORROSION RESISTANT

MATERIAL AND ENERGY EFFICIENT

Vinidex
Systems & Solutions

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INTRODUCTION

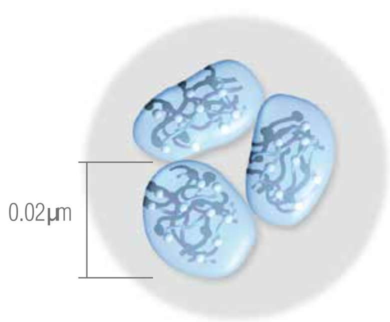
Vinidex Supermain® Oriented PVC pressure pipe is the most advanced PVC pipe available. Supermain® PVC-O is ideally suited for general water supply, rising mains and other pressure applications.

The benefits of PVC pressure pipes have been well established over their long service history. Molecular orientation further enhances the mechanical properties of PVC, allowing energy efficient production whilst conferring considerable performance advantages. These environmental and engineering advantages mean Supermain® is the high-performance, cost-effective pipe material choice for pressure applications.

Supermain® is manufactured in a two stage process that comprises the initial extrusion of a feedstock pipe followed by an expansion process that results in bi-axial molecular orientation of the material. The random long chain molecules of PVC become preferentially aligned in the expansion or hoop direction and a marked increase in strength is attained in this direction. For pipes, hoop strength is the primary factor determining resistance to internal pressure. The sketches below illustrate the general principle of orientation.

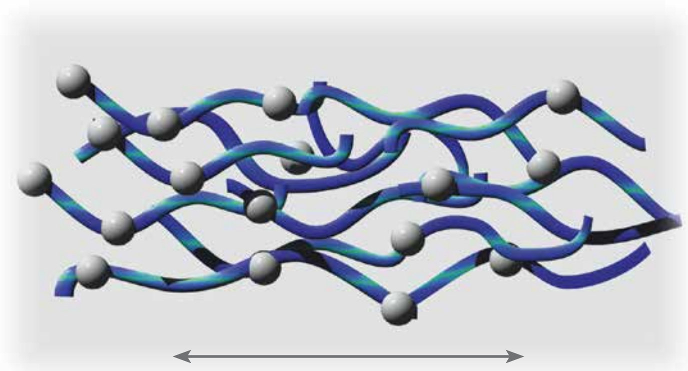
BENEFITS

- High flow capacity
- High impact strength
- High toughness
- Excellent damage tolerance
- Light weight
- Corrosion resistant
- No adverse effect on water quality
- Reduced Occupational Health and Safety risks
- Material and energy efficient - more environmentally sustainable



Clusters of PVC Molecules

Molecular Entanglements
Typical PVC Processing



Oriented PVC – Direction or Orientation

PRODUCT INFORMATION

Standards for PVC-O Pipe

Supermain® PVC-O pipes are manufactured in accordance with AS4441 (Int):2003 - Oriented PVC (PVC-O) pipes for pressure applications". This standard replicates the requirements of ISO/DIS 16422 "Pipes and joints made of oriented unplasticized poly vinyl chloride (PVC-O) for water transport specifications, with some additional requirements for Australia".

Material Classification

AS4441 (Int) covers a range of PVC-O pipe materials, classified by their Minimum Required Strength or MRS value which is specified in MPa. Supermain® pipes are manufactured to MRS classes from 355 to 500.

Material Class	MRS (MPa)
Supermain® 355	35.5
Supermain® 400	40.0
Supermain® 450	45.0
Supermain® 500	50.0

Pipe Classes

Supermain® pipes are classified in terms of their nominal working pressure at 20°C. Pressure classes are identified by their PN designation as shown in the table below.

Maximum working pressure	PN10	PN12.5	PN16	PN20
MPa	1.00	1.25	1.60	2.00
m head	102	127	163	204

Note: Other classes may be available for special projects. Contact Vinidex for further information Pipe Dimensions

Pipe Dimensions

Supermain® pipes are manufactured in two diameter series, International (ISO) Series dimensions and Series 2 (DICL compatable) dimensions. Supermain® pipes are supplied in standard 6m effective lengths.

Refer to the Supermain® Product List (page 12) for ordering codes.

Supermain® PVC-O International Series Pipe

DIAMETER DESIGNATION	EQUIVALENT			MEAN OUTSIDE DIAMETER (MM)		WALL THICKNESS MIN E	INSIDE DIAMETER	APPROX MASS[3]
DN[1]	NB[2]	MRS	PN	Min	Max	(mm)	(mm)	(kg)
DN160	150	355	10	160	160.5	3.5	152.7	16
DN225	200	355	10	225	225.7	5.0	214.7	32
DN250	225	355	10	250	250.8	5.5	238.6	39
DN280	250	355	10	280	280.9	6.2	267.2	50
DN315	300	355	10	315	316.0	6.9	300.8	63
DN160	150	450	12.5	160	160.5	3.5	152.7	16
DN225	200	450	12.5	225	225.7	5.0	214.7	32
DN250	225	450	12.5	250	250.8	5.5	238.6	39
DN280	250	450	12.5	280	280.9	6.2	267.2	50
DN315	300	450	12.5	315	316.0	6.9	300.8	63

1. International Series pipes are designated by the pipe outside diameter in accordance with ISO standards convention.

2. The equivalent Series 1 nominal pipe diameter designations used in AS/NZS1477 PVC-U Pressure Pipe and AS/NZS4765 PVC-M pressure pipe are shown for information.

3. Approximate mass is kg per 6 m length.

Supermain® PVC-O Series 2 Pipe

DIAMETER DESIGNATION	EQUIVALENT			MEAN OUTSIDE DIAMETER (MM)		WALL THICKNESS MIN E	INSIDE DIAMETER	APPROX MASS[3]
DN[1]	NB[2]	MRS	PN	Min	Max	(mm)	(mm)	(kg)
DN100	100	400	12.5	121.7	122.1	3.0	115.4	10
DN150	150	400	12.5	177.1	177.7	4.4	167.9	22
DN200	200	400	12.5	231.9	232.6	5.7	220.1	38
DN225	225	400	12.5	258.9	259.7	6.4	245.6	47
DN250	250	400	12.5	285.8	286.7	7.0	271.4	57
DN300	300	400	12.5	344.9	346.0	8.5	327.4	84
DN100	100	450	16	121.7	122.1	3.4	114.5	12
DN150	150	450	16	177.1	177.7	4.9	166.9	25
DN200	200	450	16	231.9	232.6	6.4	218.6	42
DN100	100	500	16	121.7	122.1	3.0	115.4	10
DN150	150	500	16	177.1	177.7	4.4	167.9	22
DN200	200	500	16	231.9	232.6	5.7	220.1	38
DN225	225	500	16	258.9	259.7	6.4	245.6	47
DN250	250	500	16	285.8	286.7	7.0	271.4	57
DN300	300	500	16	344.9	346.0	8.5	327.4	84
DN200	200	500	20	231.9	232.6	7.1	217.1	47
DN225	225	500	20	258.9	259.7	8.0	242.3	59
DN250	250	500	20	285.8	286.7	8.8	267.6	72

1. International Series pipes are designated by the pipe outside diameter in accordance with ISO standards convention.
2. The equivalent Series 1 nominal pipe diameter designations used in AS/NZS1477 PVC-U Pressure Pipe and AS/NZS4765 PVC-M pressure pipe are shown for information.
3. Approximate mass is kg per 6 m length.

Jointing

Supermain® pipes are supplied with integral sockets for rubber ring jointing. The integral joints are capable of 1° deflection. Further deflection can be achieved using deflection couplings. Contact Vinidex for more information.

Solvent cements should not be used with Supermain® pipes.

Fittings

A complete range of pipeline fittings is available for Supermain® pipes to form a total pipeline system.

PERFORMANCE

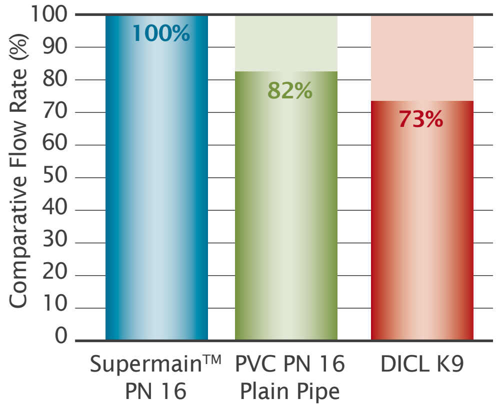
Tensile Strength

Tensile Strength

- The long term hydrostatic strength of PVC-O is up to twice that of ordinary PVC-U materials
- Taking advantage of this superior strength allows the same pressure class of pipe to be manufactured with a larger bore

Flow Capacity

- Supermain® pipes have excellent hydraulic performance. Their flow capacity exceeds that of any other commonly used pressure pipe in water and sewer applications
- A comparison of the relative hydraulic capacity of Supermain®, Series 2 PVC-U and DICL pipe is shown below. The information given in the flow comparisons and flow charts is based on the Colebrook-White formula with water at 20°C and the following roughness coefficients: For PVC-O and PVC-U, k=0.003, for DICL, k=0.03. For information on varying these parameters, refer to Vinidex Friction Loss in Uniform Fluid Flow (FLUFF) software



How Full is the Tank at a Given Time?
DN 150 Gravity Main

For Gravity Flow Situations

Comparing the discharge Q in Litres/second from a 100m length of pipe at a constant hydraulic gradient (H/L) of 1m/100m . DN100 Supermain® pipe delivers 12.1 litres per second compared to 9.2 and 7.5 for PVC-U and DICL respectively.

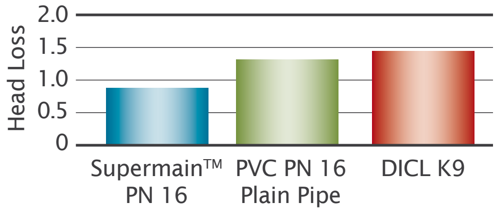
For Pumping Mains

Nom. Diameter	Supermain® PN16	PVC-U PN16	DICL K9	Increase over PVC-U	Increase over DICL
DN100	12.1 L/s	9.2 L/s	7.5 L/s	31%	61%
DN150	32.6 L/s	25.0 L/s	24.4 L/s	30%	34%
DN200	68.4 L/s	53.4 L/s	52.2 L/s	28%	31%

Comparing the head loss for a given discharge (pumping costs are related to friction losses).

Impact Strength

		Supermain® PN16	PVC-U PN16	DICL K9
DN100	Q=10L/s	0.72	1.17	1.72
DN150	Q=30L/s	0.86	1.39	1.47
DN200	Q=40L/s	0.39	0.59	0.61



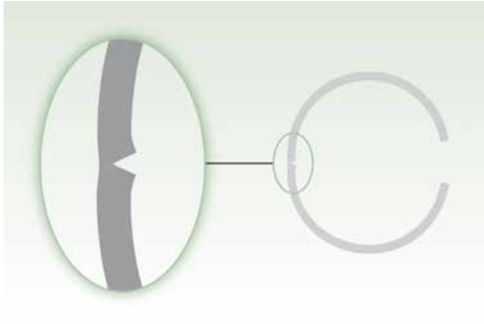
What Pumping Power is Required?
DN 150 Rising Main

- Supermain® exhibits extraordinary resistance to impact. Tests on Supermain® show impact rupture energies up to 10 times that of standard PVC-U
- Standard impact tests are carried out at 0°C because the mass required to test the pipe at 20°C is impracticable for normal test equipment. DN 375 pipes are tested using a 16kg ball dropped from a height of 2 metres above the sample
- The unorthodox “field test” on pressurised pipe (below) illustrates the superior impact resistance of Supermain® pipe

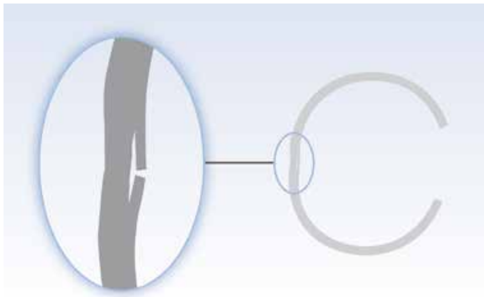
Toughness and Notch Sensitivity

- Toughness is a material's ability to resist brittle crack propagation
- Marshal (1989)[1] investigated this property. He demonstrated the failure mode for Supermain® was not radial through the wall section as it is with standard PVC-U pipe. The illustrations (left) depict the two failure modes
- Marshall also found that a notch in the pipe wall has the effect of only reducing the cross sectional area

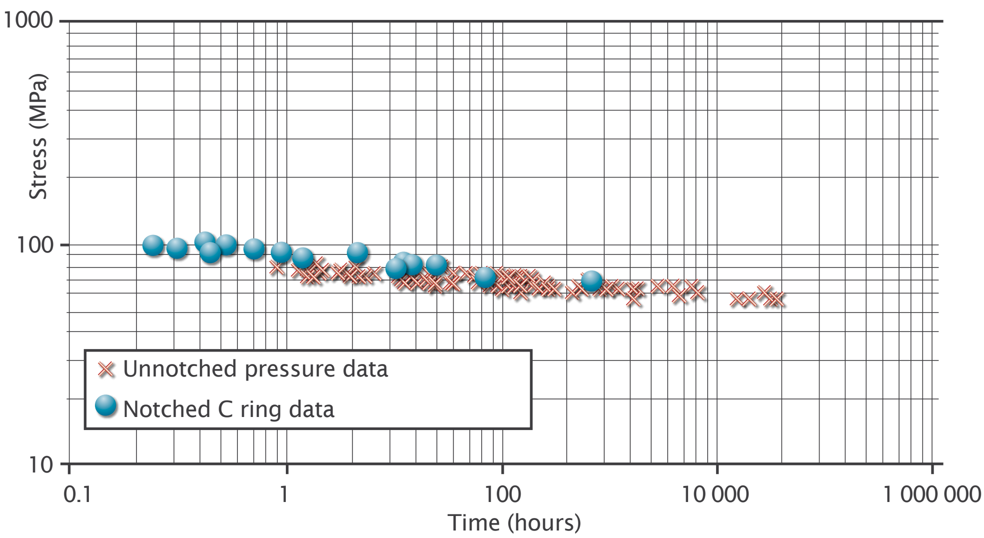
The graph (below) shows that notched and un-notched test data follow the same relationship when the reduced wall thickness of notched specimens is taken into consideration.



PVC-U Pipe



Supermain® Pipe



Marshall G P, "Report on Evaluation of Toughness Criteria for HSPVC" (Report prepared for Water Research, UK), 1989.

Notched and Unnotched Test

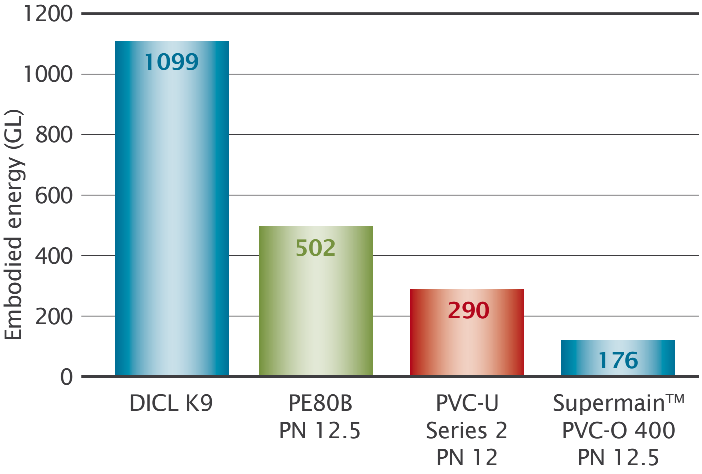
[1] Marshall G.P. Report on Evaluation of Toughness Criteria for HSPVC (Report prepared for Water Research, UK), 1989.

EMBODIED ENERGY

Embodied energy is defined as: "the quantity of energy required by all of the activities associated with a production process, including the relative proportions consumed in all activities upstream to the acquisition of natural resources and the share of energy used in making equipment and in other supporting functions i.e. direct energy plus indirect energy".

A recent study by CSIRO[2] demonstrated the considerable reduction in embodied energy for PVC-O pipes when compared with alternative pipe materials based on equal hydraulic performance.

The example below illustrates the benefit obtained by using Supermain® pipes.



Embodied Energy for 1000m of Pipe to Achieve Equal Hydraulic Performance

Flow rate, Q=10.4L/s, Head Loss, H=7.84m

[2] M.D. Ambrose, G.D. Salomonsson and S. Burn, CSIRO, Australia, "Piping Systems - Embodied Energy Analysis".

SUPERMAIN® DESIGN AND INSTALLATION

General

With some minor exceptions, the recommended procedures for design and installation of Supermain® pipes are the same as for standard PVC-U pipes. These are covered by AS 2032 - “Installation of PVC pipe systems”. However, there are some aspects of design and installation for which either a different approach is required or a different response obtained from Supermain®. These differences are highlighted below. For detailed information on the design and installation of all PVC pipes, including Supermain®, refer to the Vinidex Water Supply Manual.

Temperature Considerations

Supermain® pipes are de-rated for temperature according to the International practice for PVC based pipe materials as shown in the below table. Supermain® pipes can be used for continuous service at temperatures up to 45°C[3]. Higher temperatures should be avoided as Supermain® will experience ‘reversion’ of the oriented structure at elevated temperatures, and may undergo significant dimensional distortion above 50°C.

The operating temperature above refers to the average across the wall. Short term exposure on one surface to temperatures in excess of the maximum operating temperature, such as may occur during storage can be tolerated. If extreme conditions are encountered for extended periods during pipe storage, some ovality may develop in the pipe or socket. This is of no consequence in the performance of the product and for jointing, Supermain® pipes are readily re-rounded in making the joint.

If prolonged storage is expected, consideration should be given to shading the pipe with a material such as shadecloth or hessian, which does not concentrate the heat, placed so as to not restrict the circulation of air in the pipes, as this has a cooling effect.

Fatigue Design

Where a pipeline is to be subjected to a large number of cyclic or repetitive loads, fatigue

		Maximum allowable pressure (MPa)			
Pipe Material Temperature	Re-rating Factor	PN 10	PN 12.5	PN 16	PN 20
20	1.00	1.00	1.25	1.60	2.00
25	0.94	0.94	1.18	1.50	1.88
30	0.87	0.87	1.09	1.39	1.74
35	0.79	0.79	0.99	1.26	1.58
40	0.70	0.70	0.88	1.12	1.40
45	0.64	0.64	0.80	1.02	1.28

[3] Water Authorities generally require temperatures of water supplies to be kept below 40°C to prevent growth of bacteria.

design must be considered. For Supermain® pipes, de¬rating may be required if the total number of cycles in the pipe lifetime exceeds 30 000.

The fatigue design procedure is fairly straightforward. Three important factors must be considered. These are the loading frequency or number of cycles per day, the cyclic pressure range and the required service life of the pipe. For a given number of cycles, a fatigue cycle factor is referenced maximum cyclic pressure range (MCPR) for a particular pipe material and pressure class.

The pressure range is simply the maximum pressure minus the minimum pressure, including all transients, experienced by the system during normal operations as illustrated in the diagram below. The effect of accidental conditions such as power failure may be excluded. Note that for fatigue loading situations, the maximum pressure reached in the repetitive cycle should not exceed the static pressure rating of the pipe.

The diagram also illustrates the definition of a cycle as a repetitive event. In some cases, the cycle pattern will be complex and it may be necessary to also consider the contribution of secondary cycles. For a more detailed discussion of fatigue design for plastics pipes, including examples and a full list of references, please refer to Vinidex Technical Notes.

To select the appropriate pipe class for fatigue loading, the following procedure should be adopted:

Estimate the likely pressure range, ΔP, i.e., the maximum pressure minus the minimum pressure.

Estimate the frequency or the number of cycles per day, which are expected to occur.

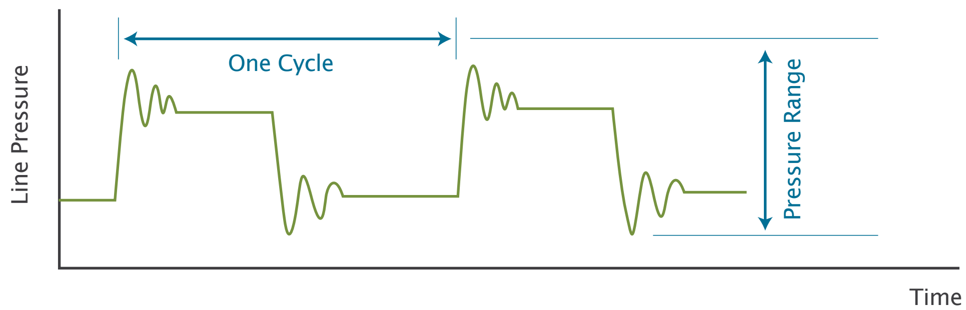
Determine the required service life and calculate the total number of cycles which occur in the pipe lifetime.

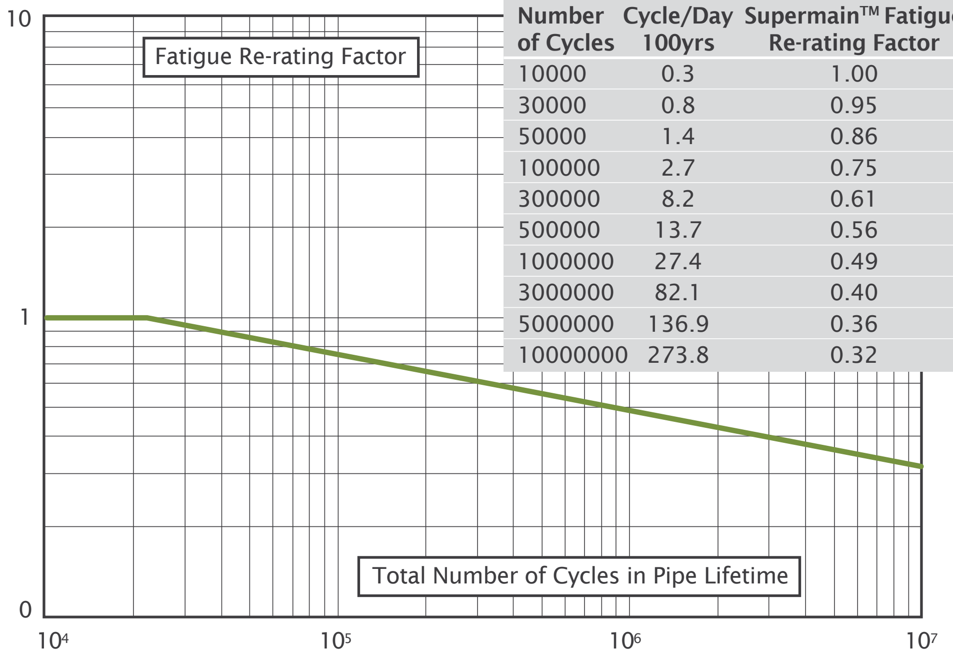
Using the table, determine the fatigue cycle factor to be applied.

Calculate the maximum cyclic pressure range from the following equation:

$$MCPR = \frac{PN}{10} \times f$$

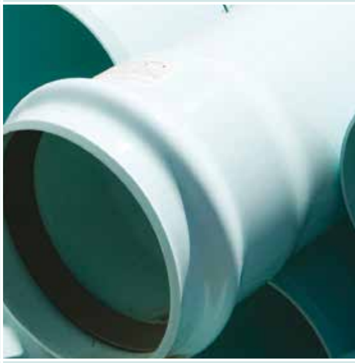
Compare MCPR with ΔP, if MCPR is less than ΔP; try a higher pressure class in the equation.





Number of Cycles	Cycle/Day 100yrs	Supermain™ Fatigue Re-rating Factor
10000	0.3	1.00
30000	0.8	0.95
50000	1.4	0.86
100000	2.7	0.75
300000	8.2	0.61
500000	13.7	0.56
1000000	27.4	0.49
3000000	82.1	0.40
5000000	136.9	0.36
10000000	273.8	0.32

Supermain® Fatigue Design



Chemical Resistance

PVC-O is expected to have the same inherent chemical resistance as PVC-U, as the chemical nature of the two materials is identical. However, since the information presented in chemical resistance tables has been determined for standard PVC-U and the effect of chemical attack on the different molecular structure of PVC-O has not been extensively investigated, the use of Supermain® pipes in chemical environments or for the transportation of chemicals is not recommended.

Lateral Loadings and Negative Pressures

The stiffness (lateral load for a given diametral deflection) is related to material modulus and the cube of the thickness. For PVC-O materials, the modulus is somewhat higher than that for standard PVC-U. However, the wall thickness is the overriding factor in determining the stiffness. Supermain® pipes have a significantly lower stiffness than standard PVC-U pipes of the same pressure class. This is important in determining the response to lateral loading, due to soil and traffic, and negative pressures due to vacuum, ground water etc.

In general water supply works with buried pipes at normal covers, lateral stiffness will not be a limiting design factor and will not require special consideration. For abnormal conditions, design should be conducted in accordance with AS/NZS 2566. Vinidex recommends the following values be used for the ring bending modulus for Supermain® pipes:

Short term ring bending modulus at 20°C E_b	4000 MPa
Long term ring bending modulus at 20°C E_{bL}	1800 MPa

Buckling may result if the pipe is subjected to internal vacuum, as a result of water hammer or siphonage. Other special cases include pump suction lines (with or without submersion) and concrete encasement.

Example: For a Supermain® pipe buried with 1m cover height in sandy-clay native soil with sand used as the embedment material, the following supported buckling pressures Pb kPa are calculated in accordance with AS/NZS 2566.1 using an effective combined soil modulus, E', of 6.3 MPa and short term loading at 20°C.

Clearly, in this example, Supermain® pipe has an adequate factor of safety for a full vacuum. It should be noted that to obtain support from the soil, the embedment material must be properly placed and compacted, and stable against long term washout or leaching.

For the case where a pipe has no lateral support from the soil, the unsupported critical buckling pressure must be considered. This may occur in above ground lines, or where an underground line emerges into a pit (unsupported length greater than 5 diameters). Buried pipes having cover less than two diameters or 500 mm should also be considered unsupported.

A table comparing the unsupported collapse pressures of Supermain® pipe with PVC-U is given below. This comparison is made using the short-term modulus at 20°C and would be applicable to a negative pressure associated with water hammer. Water hammer can normally be readily controlled with air valves and other devices to prevent negative surges, but under some circumstances this is not possible. Under these conditions, it can be seen that, despite having a much lower collapse pressure, the Supermain® pipe can still support a full vacuum with a safety factor of 1.5. Designers should also evaluate resistance to buckling for applications with significant long term negative pressures eg. the presence of groundwater.

Pipe Type	Unsupported Critical Buckling Pressure, Pc (kPa) Short Term Loading at 20°C
PVC-U less than DN150 PN16	2930
PVC-U greater than DN150 PN 16	2100
Supermain® 500 PN 16	160

	Supermain® 355	Supermain® 400	Supermain® 500	Supermain® 500
	PN 10	PN 12.5	PN 16	PN 20
Buckling pressure	540	590	590	740

Jointing to Ductile Iron Fittings

Supermain® pipes may be jointed to ductile iron push fit and compression gasketed fittings. As with standard PVC-U, factory witness marks are not applicable when jointing to ductile iron fittings, and the spigots should be fully inserted to the stop.
It is advisable before jointing to mark a witness line on the spigot at the appropriate length for the particular fitting so that full insertion can be observed.

The depth of sockets on pipes and fittings must be sufficient to accommodate the axial movements due to the combined effect of a number of factors, such as thermal contraction and Poisson[4] contraction which occurs when a pipe is pressurised. The Poisson effect is more significant for PVC-O pipes because of their higher operating stress. Vinidex Superlink Ductile Iron Fittings have socket lengths adequate for all situations and are recommended for use with Supermain® pipe. Fittings sockets from other suppliers may be shorter and there may be risk of pull out depending on operating parameters. If necessary, short lengths or special anchorage may be used to compensate for short-socket fittings.

Service Connections

Service connections to Supermain® pipes are made using a suitable tapping band complying with AS/NZS 4793 (Int) - Mechanical tapping bands for waterworks purposes and the following considerations:

- Holes should be drilled using a hole saw
- Tapping bands having full circle support, an “O” or “V” seal, and positive stop against over-tightening are recommended for PVC-O pipes

Installation

Installation techniques for Supermain® pipes are similar to that used for standard PVC-U pipes. The lower wall thickness and stiffness of PVC-O pipes compared to PVC-U pipes makes it essential that recommended practices for installation are adhered to and the pipe is fully supported.

Quality non cohesive material should be used for pipe bedding, side support and overlay. The pipe side support material should be placed evenly on both sides of the pipeline to two thirds the height of the pipe diameter and compacted by hand tamping. Side fill material should be worked under the sides of the pipe to eliminate all voids and provide maximum pipe haunching. The pipe overlay material should be levelled and compacted in layers to a minimum height of 150mm above the crown of the pipe or as specified.

The field testing procedures specified in AS2032 and the Vinidex PVC Technical Manual should also be followed for Supermain® pipelines.

[4] Change in dimensions in the direction perpendicular to the direction of stress. Pipes contract in length when pressurised.

ORDERING INFORMATION

Supermain PVC-O International Series Pipe

International Series pipes are designated by Outside Diameter (OD) in accordance with ISO convention. These pipes have the characters "iso" printed after the pipe diameter in the product description. The equivalent Nominal Bore (Series 1) dimension is shown in the table below for reference only.

Vinidex Code	Nominal Size DN (mm)	Pressure Class PN	Product Description	Nominal Bore (mm)	Approx. Weight kg/length
17535	160	10	160iso PN10 SUPERMAIN355W 6M	150	16
17534	225	10	225iso PN10 SUPERMAIN355W 6M	200	32
17533	250	10	250iso PN10 SUPERMAIN355W 6M	225	39
17532	280	10	280iso PN10 SUPERMAIN355W 6M	250	50
17531	315	10	315iso PN10 SUPERMAIN355W 6M	300	63
17528	160	12.5	160iso PN12.5 SUPERMAIN450W 6M	150	16
17529	225	12.5	225iso PN12.5 SUPERMAIN450W 6M	200	32
17530	250	12.5	250iso PN12.5 SUPERMAIN450W 6M	225	39
17527	280	12.5	280iso PN12.5 SUPERMAIN450W 6M	250	50
17526	315	12.5	315iso PN12.5 SUPERMAIN450W 6M	300	63

Supermain Rubber Rings to suit Supermain International Series Pipe

Vinidex Code	Nominal Size DN (mm)	Product Description	Comment
83311	160	160iso/150S1 SUPERi DH RR SBR	dual hardness
83312	225	225iso/200S1 SUPERi DH RR SBR	dual hardness
83313	250	250iso/225S1 SUPERi DH RR SBR	dual hardness
83314	280	280iso/250S1 SUPERi DH RR SBR	dual hardness
83315	315	315iso/300S1 SUPERi DH RR SBR	dual hardness

Supermain PVC-O Series 2 Pipe

Vinidex Code	Nominal Size DN (mm)	Pressure Class PN	Product Description	Application	Colour	Stiffness
17220	100	12.5	100 PN12.5 SUPERMAIN400B 6M	Potable water	Blue	
17225	150	12.5	150 PN12.5 SUPERMAIN400B 6M	Potable water	Blue	
17230	200	12.5	200 PN12.5 SUPERMAIN400B 6M	Potable water	Blue	
17240	225	12.5	225 PN12.5 SUPERMAIN400B 6M	Potable water	Blue	
17450	250	12.5	250 PN12.5 SUPERMAIN400B 6M	Potable water	Blue	
17460	300	12.5	300 PN12.5 SUPERMAIN400B 6M	Potable water	Blue	
17221	100	16	100 PN16 SUPERMAIN500B 6M	Potable water	Blue	
17491	100	16	100 PN16 SUPERMAIN450B 6M	Potable water	Blue	SN10
17226	150	16	150 PN16 SUPERMAIN500B 6M	Potable water	Blue	
17492	150	16	150 PN16 SUPERMAIN450B 6M	Potable water	Blue	SN10
17231	200	16	200 PN16 SUPERMAIN500B 6M	Potable water	Blue	
17241	225	16	225 PN16 SUPERMAIN500B 6M	Potable water	Blue	
17455	250	16	250 PN16 SUPERMAIN500B 6M	Potable water	Blue	
17464	300	16	300 PN16 SUPERMAIN500B 6M	Potable water	Blue	
17493	200	20	200 PN20 SUPERMAIN500B 6M	Potable water	Blue	SN11
17494	225	20	225 PN20 SUPERMAIN500B 6M	Potable water	Blue	SN11
17456	250	20	250 PN20 SUPERMAIN500B 6M	Potable water	Blue	SN11
17497	100	12.5	100 PN12.5 SUPERMAIN400C 6M	Pressure sewer	Cream	
17496	100	16	100 PN16 SUPERMAIN500C 6M	Pressure sewer	Cream	
17495	100	16	100 PN16 SUPERMAIN450C 6M	Pressure sewer	Cream	SN10
17498	150	16	150 PN16 SUPERMAIN500C 6M	Pressure sewer	Cream	
17252	200	16	200 PN16 SUPERMAIN500C 6M	Pressure sewer	Cream	
17253	225	16	225 PN16 SUPERMAIN500C 6M	Pressure sewer	Cream	
17474	250	16	250 PN16 SUPERMAIN500C 6M	Pressure sewer	Cream	
17468	300	16	300 PN16 Supermain500C 3m	Pressure sewer	Cream	
17490	200	20	200 PN20 SUPERMAIN500C 6M	Pressure sewer	Cream	SN11
17229	150	12.5	150 PN12.5 SUPERMAIN400P 6M	Recycled water	Purple	
17401	200	12.5	200 PN12.5 SUPERMAIN400P 6M	Recycled water	Purple	
17472	300	12.5	300 PN12.5 SUPERMAIN400P 6M	Recycled water	Purple	
17222	100	16	100 PN16 SUPERMAIN500P 6M	Recycled water	Purple	
17227	150	16	150 PN16 SUPERMAIN500P 6M	Recycled water	Purple	

Supermain PVC-O Series 2 Pipe *(continued)*

Vinidex Code	Nominal Size DN (mm)	Pressure Class PN	Product Description	Application	Colour	Stiffness
17489	150	16	150 PN16 SUPERMAIN450P 6M	Recycled water	Purple	SN10
17232	200	16	200 PN16 SUPERMAIN500P 6M	Recycled water	Purple	
17245	225	16	225 PN16 SUPERMAIN500P 6M	Recycled water	Purple	
17473	250	16	250 PN16 SUPERMAIN500P 6M	Recycled water	Purple	
17466	300	16	300 PN16 SUPERMAIN500P 6M	Recycled water	Purple	
17228	150	12.5	150 PN12.5 SUPERMAIN400G 6M		Grey	
17251	225	12.5	225 PN12.5 SUPERMAIN400G 6M		Grey	
17236	100	16	100 PN16 SUPERMAIN500G 6M		Grey	
17246	150	16	150 PN16 SUPERMAIN500G 6M		Grey	
17456	250	16	250 PN16 SUPERMAIN500G 6M		Grey	
17467	300	16	300 PN16 SUPERMAIN500G 6M		Grey	

Vinyl Iron Rubber Rings to suit Supermain Series 2 Pipe

Vinidex Code	Nominal Size DN (mm)	Product Description	Comments
83291	100	100 VINYL IRON S2 DH RR SBR	dual hardness
83296	150	150 VINYL IRON S2 DH RR SBR	dual hardness
83300	200	200 VINYL IRON S2 RR SBR	
83303	225	225 VINYL IRON S2 RR SBR	
83305	250	250 VINYL IRON S2 RR SBR	
83308	300	300 VINYL IRON S2 RR SBR	

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