



DATA SHEET FOR SWITCHING TO HDPE/PP CIVILPIPE SN8/16 IN A PVC/CONCRETE STORM SYSTEM



This data sheet will explain how easy it is to use INFRAPIPE CIVILPIPE - a twinwall pipe 225-1000 SN8/SN16 - in parts of a stormwater system to save a lot of money. Installation is quicker, easier and safer too. **Basically, do all the fiddly stuff with 100 & 150 in PVC - once it gets to 225+ in the ground, switch to CIVILPIPE!** These are the easiest ways of switching over:

- ✓ Use a fitting with PVC inlets and a CIVILPIPE outlet (above)
- ✓ Go from PVC to a CIVILPIPE Mainway with a PVC2TW connector
- ✓ Bring CIVILPIPE out of the manhole with a Manhole Starter
- ✓ Bring CIVILPIPE straight out of the catchpit or sump

Getting length right is easy too. Pipes normally join spigot to socket but if needed:

- ✓ Use a Shearband to join two CIVILPIPES of the same size
- ✓ Use a CIVILPIPE slip coupler
- ✓ Use CIVILPIPE fittings (all female – double socket)
- ✓ Use the manhole, catchpit or sump to align and match lengths



COMPARATIVE WEIGHTS

DN	SN	PVC	CIVILPIPE	Concrete
225	8	54	17	413
300	8	83	28	568
375	8	144	45	703
450	8	224	70	1036
225	16	67	19	413
300	16	108	32	568
375	16	172	52	703
450	16	271	80	1036

CIVILPIPE is so much lighter that 2-person laying is a practicality. No need to stop the digger to lift a 144kg PVC 375 into place – two people can lift the 45kg CIVILPIPE equivalent!

When a product is that much lighter, everything becomes easier - unloading, laying pipe out, cutting, joining, connecting and dealing with the offcuts.

CIVILPIPE is approved nationwide (except for the two councils that are not processing any applications).



PVC2TW COUPLER JOINS CIVILPIPE TO PVC



Used to change the pipeline from PVC to CIVILPIPE.
The existing pipeline is terminated into the coupler.
Then CIVILPIPE is introduced into the coupler after the coupler is cleaned, lubricated and the CIVILPIPE rubber ring has been added. Once the witness mark is inside the coupler, the job is complete. Coupler default PVC connection is solvent cement; PVC rubber ring variant is available but must be indicated at time of order.

MANHOLE STARTER FOR CIVILPIPE



Used to bring a CIVILPIPE pipe out of a concrete manhole.
Install the gritted short as would be done for a PVC manhole starter (it is identical except the size of the socket).

Then CIVILPIPE is introduced into the coupler after the coupler is cleaned, lubricated and the CIVILPIPE rubber ring has been added. Once the witness mark is inside the coupler, the job is complete.

FITTINGS



This is used to convert to CIVILPIPE at a junction which is the natural location to do it, this avoids separate reducers or couplers. Either have the lateral joining a CIVILPIPE line or have both inlets PVC and the outlet CIVILPIPE, either way works. The example here is Inlet 300 PVC with a 225 PVC branch and a 300 CIVILPIPE outlet.

Fit the PVC as normal and then the CIVILPIPE as above. Available as reducing for one or both inlets, as TEE or WYE and with solvent cement or RRR for the PVC inlets.

SHEARBAND



Used to join two CIVILPIPE pipes where a cut length must be joined spigot to spigot.

Lay one pipe over/next to the other and mark off the first overlapping valley. Cut this straight then place both pipes in the correct location. Mark off the distance either side for the coupler then use the coupler as per the manufacturers instructions.

SLIP COUPLER



Used to join two CIVILPIPES spigot to spigot.

Put the rubber ring on one pipe and then slide the coupler over. Lay this pipe over/next to the other and mark off the first overlapping valley. Cut this straight then place both pipes in the correct location. Add the ring to the other pipe then slide the coupler back over so it is equally covering both pipes.



CONCRETE STRUCTURES

The corrugations on a CIVILPIPE make it easy to form concrete corbels if taking the pipe straight out of a catchpit or sump and for twin sump installation shorts are easy to make and install.



FITTINGS

CIVILPIPE fittings can combine CIVILPIPE and PVC connections. Fittings are made in exactly the same way as fittings for PVC pipe, except a larger mandrel is used to bell out the socket (see below) so laterals are easily incorporated. This makes it easy to minimise the fittings needed and maximise the cost savings from switching from PVC to CIVILPIPE once the fiddly stuff is done. PVC IN CIVILPIPE OUT saves money.



CULVERTS, HEADWALLS AND OUTFALLS

Installation into a headwall or wingwall is easy as the pipe is easily cut to length and the concrete corbel forms well around the corrugations.

CIVILPIPE is commonly used in culverts as it is quick and easy to lay minimising site time and traffic management costs.





SOUNDS GOOD, HOW DO I DO IT?

For the first few jobs, send INFRAPIPE the plans, we will do a take-off and supply a parts list of pipes, rings, fittings and (if necessary) shearbands, or use the [Take-off sheet template located here](#).

FAQS

Can the product be welded together?

For situations where a steep grade or the potential of landslip requires, SN8 & SN16 CIVILPIPE can be extrusion welded once laid to ensure the pipe line will remain intact in adverse conditions.

What are the stock levels?

Pipe, couplers, rubber rings and manhole starters are in stock in Auckland, Palmerston North & Christchurch 225-450. TEEs and WYEs are held part-fabricated ready for the exact inlet fittings.

What about PVC Rubber Ring Joints for fittings?

These are available and need to be indicated when quoting.

What about reducers/expanders?

Reducers/expanders 150>225, 225>300, 300>375, 375>450 are standard items and are supplied eccentric (concentric on request). The easiest way to do this though is to specify an inlet into a junction as a reducer.

What about buoyancy?

Even with a minimum cover of 450 and the Ground Water Level at the surface, the pipe is less buoyant than the weight of the soils above it - so no problem! It is only the larger sizes of INFRAPIPE (DN1000+) where it needs to be considered

What about expansion and contraction?

Pipe or fitting socket lengths are 170-270mm (225-450). A 6m HDPE pipe could expand/contract by 12mm for a 10 degree change in temperature – but the corrugations provide enough friction to prevent that. No problem.

What about substituting for concrete in the bigger sizes?

In CIVILPIPE or KRAH profile pipe, INFRAPIPE makes up to 3.2m in diameter so there is no need to continue laying concrete, either. Ask for more details to save money on pipes, time and installation equipment.

What about shorter lengths?

INFRAPIPE is currently trialling shorter lengths (2700mm) for use in trenches or for the final pipe where needed. Pricing and a modified take-off sheet will be available once trialling is complete. Available later this year.



CAPACITY & EFFECTIVE LENGTHS

Except for 450 instead of PVC 475, all pipes have the same nominal diameters (PVC 475 = ID 460) and there is a variation between the different materials in the Inner Diameter of 2%. [Mannings tables are available here](#).

This table shows the min effective lengths of pipe and fittings:

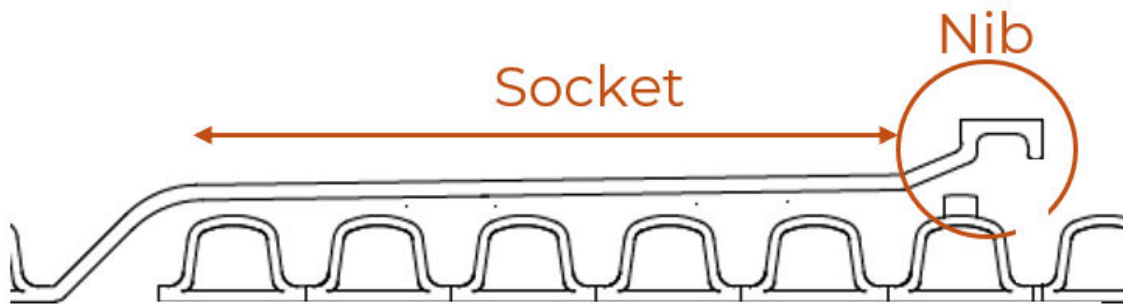
DN	Pipe	PVC2TW Coupler	TEE	WYE	Reducing WYE	Reducer	PVC2TW RRJ Coupler
225	6250	96	370	472	366	131	127
300	6140	101	406	568	475	141	129
375	6130	105	559	710	589	158	173
450	6060	113	645	819	715	172	180



WHAT IS DIFFERENT ABOUT INFRAPIPE CIVILPIPE TO OTHER TWINWALL PIPES?

CIVILPIPE is a next generation twinwall product. The most important advancement is the development of a **protective Nib for the socket** to prevent damage during transit or installation. Additionally, the socket is flared before the nib by 3mm (225) to 5mm (450) to make insertion easier. As per the diagram and picture below, after the full length of the socket, the ID and OD of the pipe increase again before terminating in a rigid box section type design.

When inspecting CIVILPIPE, damage or compression to the Nib is acceptable as its purpose is purely to protect the socket.



- ✓ **Nib prevents damage**
- ✓ Makes installation easier
- ✓ The taper allows for a very secure seal
- ✓ Longer socket makes life easier



The nib protects the socket on site!



LATERALS

Use Fernco saddles or Storm Tees to add laterals without fittings if required (see pic above right).



INSTALLATION

- CIVILPIPE is delivered crated in the quantities shown on Page 1 using scalloped timber as shown here.
- [Infrapipe has a detailed document on Loading, Handling & Storing these products.](#)
- Infrapipe has a detailed document on [Inspection on Delivery.](#)
- For details on how to care for INFRAPIPE CIVILPIPE read [Infrapipes Guide to Maintaining your warranty.](#)
- INSTALLATION is in accordance with this [installation guide.](#)
- CIVILPIPE Is joined using the integrated socket and spigot with the matching rubber ring (supplied separately).
- Trench design is covered in this [installation guide.](#)
- Minimum cover Heights in mm using engineered fill are as per the table below:



Loading condition	mm	Loading condition	mm
Not subject to vehicles	300	Vehicle load no carriageway	450
Land zoned for agricultural use	600	Vehicle load unsealed carriageway	750
In embankments or construction eqpt loads	750	Vehicle load sealed carriageway	600

For situations outside the above or depths of 6m+, contact INFRAPIPE for an engineered solution

SUBSTITUTION PRODUCER STATEMENT

The statement below can be used by project engineers to confirm replacement of PVC or concrete with CIVILPIPE or replace the legacy design with INFRAPIPE on the drawings and the DN from the table below.

INFRAPIPE CIVILPIPE is authorised as a substitute for this project:

1. Installation is permissible at the designed Invert Levels with the designed cover levels
2. Hydraulic performance is sufficient under Building Code E2
3. Fittings will integrate with the design and other pipelines
4. Product life is 100 years
5. The product is certified under AS/NZS 5065:2005
6. Local body approval has been granted

[Mannings tables for hydraulic performance can be found here.](#)

STANDARDS

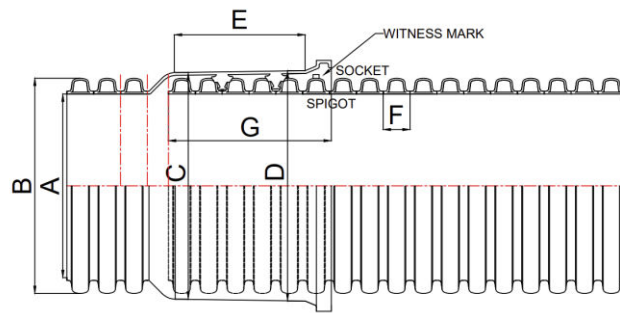
1. Certified to AS/NZS 5065:2005 licence no. AMI 74961
2. Pipes are tested by Infrapipe to AS/NZS5065:2005 in their test lab in accordance with ISO 9969:2016 *Thermoplastic pipes – Determination of Ring Stiffness*
3. The rubber rings are certified to EN681-1
4. INFRAPIPE Ltd is certified to ISO 9001:2015 licence no. AMI 78044

CIVILPIPE is approved nationwide (except for the two councils that are not processing any applications).

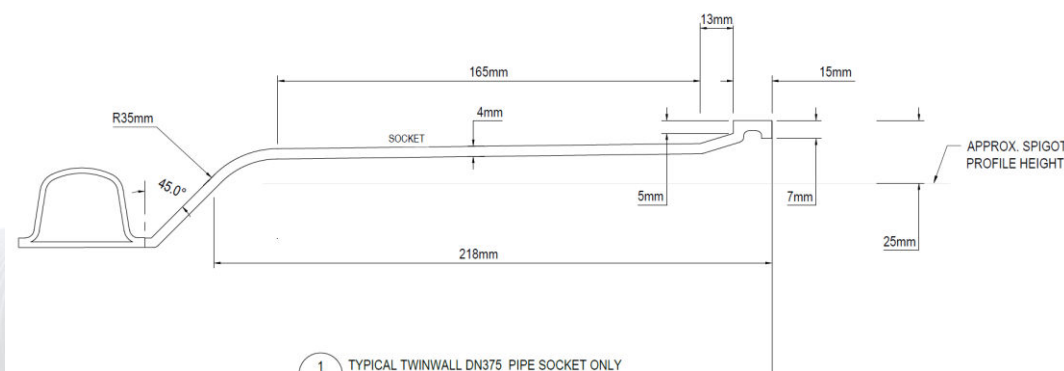


DATA & DRAWINGS

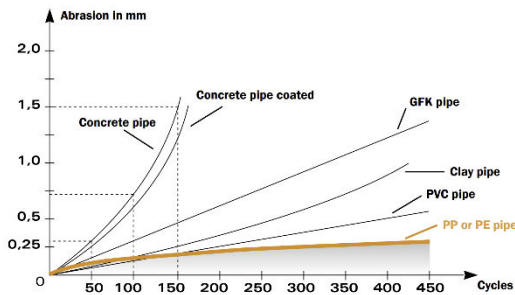
DN	ID (A) mm	Crate Quantity	Cross Section Area mm	Effective Length mm	Overall Length mm	SN8 HDPE Weight (KG)	SN16 PP Weight (KG)
225	218	6	37,306	6283	6429	17	19
300	295	6	68,315	6188	6389	28	32
375	375	2	110,391	6183	6391	45	52
450	450	2	158,963	6123	6340	70	80
525	525	2	216,366	6041	6317	95	109
600	600	1	282,600	5920	6273	115	132
800	800	1	502,400	5936	6272	195	224
1000	1000	1	785,000	5892	6283	324	372



DN	B OD	C Socket ID	D Socket OD	E Spigot Length	F Pitch	G Socket Length
225	254	260/263	265/268	170	28.73	146
300	345	352/357	359/363	235	43.1	201
375	437	444/448	452/456	245	49.26	218
450	523	530/535	540/545	274	57.47	230
525	611	618/623	629/634	276	68.96	276
600	702	709/715	722/728	426	86.2	353
800	936	913/919	928/934	435	114.93	336
1000	1166	1137/1143	1154/1160	443	114.93	391



1 TYPICAL TWINWALL DN375 PIPE SOCKET ONLY



Abrasion curve of various pipe materials according to the Darmstadt procedure.

Darmstadt procedure show the following abrasion in mm:

Thousand (k) cycles	CIVILPIPE	Concrete	PVC	FRP/GRP
50	0.1	0.3	0.05	0.15
100	0.15	0.7	0.1	0.3
150	0.2	1.5	0.2	0.5
300	0.25	-	0.35	0.9
450	0.3	-	0.55	1.3

More detail can be found in AS/NZS 2566.1:1998 Buried Flexible Pipelines: Structural design and AS/NZS 2566.2:2002 Buried flexible pipelines – Installation.

SUSTAINABILITY

PVC is rarely recycled, is brittle and decays with exposure to UV. HDPE/PP is the best material for the planet:

- ✓ Polyethylene/polypropylene has been repeatedly proven to have a 100yr+ life.
- ✓ Minimal erosion equates to minimal fugitive particles.
- ✓ Alternatives which are attacked by the environment will pollute the soil heavily.
- ✓ Alternatives which are susceptible to biological attack will decay and pollute.
- ✓ INFRAPIPE is completely recyclable. The asset owner has no end-of life disposal liability.
- ✓ All production waste is recycled.
- ✓ Lighter products require less freight, less cranes and less diggers.
- ✓ Lighter products use less global resources in their manufacture

