

WaterPex PN20 Pe-Xa Piping System

System Design and Application Classifications



WaterPex PEX-a pipe is a high quality PEX-a cross linked polyethylene pipe. Polyethylene in its normal state is not capable of handling high pressure or temperature loads. However once subjected to the cross-linking process, its ability to handle these conditions is increased substantially. WaterPex PEX-a pipe consists of an inner section of PEX-a material encased in an outer layer of tough HDPE.

The pipe is available in the following sizes: DN16, DN20, DN25, in either coil form or straight lengths.

WaterPex PEX-a pipe is colour coded in the following to assist the installer in avoiding cross connection-

Colour	Application
Black	Hot & Cold Potable Water
Red	Hot Water
Green	Rain Water
Lilac	Recycled Water (non - potable)

WaterPex PEX-a pipe is to be used in conjunction with Sleeve fittings. The sleeve system more commonly known as a compression system involves drawing a sleeve along the pipe over a barbed fitting to form a perfect seal every time.

System Design and Application Classifications

Pipe Material	Applications	Service Temperatures	Maximum Working Pressure
Inner layer – PEX-a Outer layer - Coloured HDPE	Hot & cold potable water supply, rainwater, recycled water (non-potable)	-50°C - +95°C	16mm – PN20 20mm – PN20 25mm – PN20 32mm – PN20

System Design and Application Classifications

SDR values are commonly referred to for single layer pex piping systems for water. The SDR values of WaterPex single layer Pex-a piping is shown in the following table.

DN Size	Min Outside Diameter (mm)	Max Outside Diameter (mm)	Min Wall Thickness (mm)	Max Wall Thickness (mm)	SDR Value
16mm	16.0	16.3	2.20	2.6	7.4
20mm	20.0	20.3	2.80	3.2	7.4
25mm	25.0	25.3	3.50	4.0	7.4
32mm	32.0	32.3	4.4	5.0	7.4

Installation Procedure for WaterPex PN20 Pe-Xa System

System Design and Application Classifications

Recommended Spacing of Brackets and Clips for WaterPex system

Piping for Water Supply	Max. recommended spacing of Brackets and Clips (m)	
	Horizontal or grades pipes	Vertical Pipes
Size		
16mm	0.60	1.20
20mm	0.70	1.40
25mm	0.75	1.50
32mm	0.85	1.70

Drawing on AS3500.5:2012 Table 2.14.4 for cold and heated water:

Chlorination capacity and test results

WaterPex Pex-a Non-barrier pipes can be used for chlorinated potable water subject to the following conditions:

- > The pH of the water is 6.5 - 8.5
- > The concentration of free chlorine is 4.0 parts per million (ppm) or lower
- > Water temperature is 140°F (60°C) or lower
- > Water pressure is 80 psi (550 kPa) or lower

Description	Max applicable density	Max applicable time	Applicable Temperature
Cl ₂	0.3mg/l	4 months	60°C
Ca(OCl) ₂	0.3mg/l	4 months	60°C
ClO ₂	0.2mg/l	4 months	60°C

Characteristic	Requirement	Test parameters	Test Method	WaterPex Pex-A
Hydrostatic strength table 3	No failure when tested to 1000h	20°C Stress: 8.3 Mpa	ISO 1167 or AS 1462.6 Type A end caps Water-in-water	✓
	No failure when tested to 165h	95°C Stress: 4.6 Mpa		
	No failure when tested to 1000h	95°C Stress: 4.4 Mpa		
	No failure when tested to 1h	95°C Stress: 4.8 Mpa		
Elongation at break	≥ 350%		ISO 6259-1, ISO 6259-3	✓
Slow crack growth	No failure when tested to 5000h	80°C Pressure: 8.0 Bar	ISO 13479	✓

***Please See AS/NZ2492 for full information**

WaterPex PN20 Pe-Xa Piping System

Water Flow Rate

1) Working media; working temperature/pressure

Application	Cold water, hot water, gas and compressed air
Working Temperature	-20°C ~ 95°C

Structure Drawing and Main Components	Material
	<ol style="list-style-type: none"> 1. Main body: DZR Brass 2. Sleeve: brass alloy

2) The torque resistance of thread

Thread Size	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"
Torque /N-m	75	100	125	160	200	250	300

3) Fitting stress corrosion resistance

Sampling

Three test specimens selected at random shall be conditioned to standard laboratory conditions prior to testing.

Testing

Test specimens shall be tested according to ASTM B858 "Standard Test Method for Ammonia Vapour Test for Determining Susceptibility to Stress Corrosion Cracking in Copper Alloys"- Ammonia test for stress corrosion resistance" in a test solution of PH 9.5

Requirements

There shall be no evidence of cracking when viewed with a microscope with a minimum magnification of 10X. Failure of one of the three specimens tested is cause for retest of three additional specimens. Failure of one specimen in the retest shall constitute failure in the test

WaterPex PN20 Pe-Xa Piping System

Pressure Loss Table



Cold Water at 25°C						
Class	PN20		PN20		PN20	
Peak Flow Rate Qs (l/s)	16 X 2.2		20 X 2.8		25 X 3.5	
	OD(mm)=16.00		OD(mm)=20.00		OD(mm)=25.00	
	ID(mm)=11.60		ID(mm)=14.40		ID(mm)=18.00	
	Head Loss	Velocity	Head Loss	Velocity	Head Loss	Velocity
	(Kpa/m)	(m/s)	(Kpa/m)	(m/s)	(Kpa/m)	(m/s)
0.01	0.0227	0.095	0.0081	0.061	0.0029	0.039
0.02	0.0722	0.189	0.0262	0.123	0.0092	0.079
0.03	0.1443	0.284	0.0519	0.184	0.0182	0.118
0.04	0.2358	0.378	0.0851	0.246	0.0296	0.157
0.05	0.3475	0.473	0.1246	0.307	0.0432	0.196
0.06	0.4776	0.568	0.1703	0.368	0.0594	0.236
0.07	0.6241	0.662	0.2231	0.430	0.0773	0.275
0.08	0.7894	0.757	0.2811	0.491	0.0971	0.314
0.09	0.9718	0.852	0.3459	0.553	0.1196	0.354
0.10	1.1688	0.946	0.4153	0.614	0.1434	0.393
0.11	1.3840	1.041	0.4904	0.675	0.1692	0.432
0.12	1.6136	1.135	0.5724	0.737	0.1974	0.472
0.13	1.8611	1.230	0.6584	0.798	0.2269	0.511
0.14	2.1241	1.325	0.7514	0.860	0.2580	0.550
0.15	2.4006	1.419	0.8482	0.921	0.2910	0.589
0.16	2.6953	1.514	0.9502	0.982	0.3266	0.629
0.17	3.0051	1.609	1.0592	1.044	0.3631	0.668
0.18	3.3277	1.703	1.1718	1.105	0.4012	0.707
0.19	3.6675	1.798	1.2909	1.167	0.4422	0.747
0.20	4.0194	1.892	1.4137	1.228	0.4837	0.786
0.21	4.3900	1.987	1.5415	1.289	0.5271	0.825
0.22	4.7756	2.082	1.6762	1.351	0.5732	0.865
0.23	5.1737	2.176	1.8144	1.412	0.6199	0.904
0.24	5.5887	2.271	1.9591	1.474	0.6681	0.943
0.25	6.0178	2.366	2.1066	1.535	0.7179	0.982
0.26	6.4585	2.460	2.2597	1.596	0.7709	1.022
0.27	6.9191	2.555	2.4196	1.658	0.8239	1.061
0.28	7.3862	2.649	2.5814	1.719	0.8785	1.100
0.29	7.8768	2.744	2.7523	1.781	0.9364	1.140
0.30	8.3795	2.839	2.9240	1.842	0.9942	1.179
0.31	8.8917	2.933	3.1008	1.903	1.0537	1.218
0.32	9.4256	3.028	3.2860	1.965	1.1166	1.258
0.33	9.9717	3.123	3.4718	2.026	1.1794	1.297
0.34	10.5275	3.217	3.6664	2.088	1.2435	1.336
0.35	11.1017	3.312	3.8629	2.149	1.3092	1.375
0.36	11.6858	3.406	4.0633	2.210	1.3782	1.415
0.37	12.2887	3.501	4.2711	2.272	1.4470	1.454

WaterPex PN20 Pe-Xa Piping System

Pressure Loss Table



Cold Water at 25°C						
Class	PN20		PN20		PN20	
Peak Flow Rate Qs (l/s)	16 X 2.2		20 X 2.8		25 X 3.5	
	OD(mm)=16.00		OD(mm)=20.00		OD(mm)=25.00	
	ID(mm)=11.60		ID(mm)=14.40		ID(mm)=18.00	
	Head Loss	Velocity	Head Loss	Velocity	Head Loss	Velocity
	(Kpa/m)	(m/s)	(Kpa/m)	(m/s)	(Kpa/m)	(m/s)
0.38	12.9089	3.596	4.4828	2.333	1.5176	1.493
0.39	13.5339	3.690	4.7003	2.395	1.5915	1.533
0.38	12.9089	3.596	4.4828	2.333	1.5176	1.493
0.39	13.5339	3.690	4.7003	2.395	1.5915	1.533
0.40	14.1780	3.785	4.9197	2.456	1.6653	1.572
0.41	14.8402	3.880	5.1452	2.517	1.7403	1.611
0.42	15.5067	3.974	5.3764	2.579	1.8165	1.650
0.43	16.1999	4.069	5.6119	2.640	1.8969	1.690
0.44			5.8533	2.702	1.9763	1.729
0.45			6.0967	2.763	2.0578	1.768
0.46			6.3487	2.825	2.1420	1.808
0.47			6.5995	2.886	2.2259	1.847
0.48			6.8573	2.947	2.3120	1.886
0.49			7.1238	3.009	2.4008	1.926
0.50			7.3893	3.070	2.4905	1.965
0.51			7.6636	3.132	2.5803	2.004
0.52			7.9402	3.193	2.6712	2.043
0.53			8.2208	3.254	2.7672	2.083
0.54			8.5065	3.316	2.8618	2.122
0.55			8.7986	3.377	2.9576	2.161
0.56			9.0959	3.439	3.0573	2.201
0.57			9.3959	3.500	3.1569	2.240
0.58			9.6954	3.561	3.2576	2.279
0.59			10.0086	3.623	3.3625	2.319
0.60			10.3202	3.684	3.4658	2.358
0.61			10.6413	3.746	3.5702	2.397
0.62			10.9655	3.807	3.6775	2.436
0.63			11.2886	3.868	3.7873	2.476
0.64			11.6266	3.930	3.8970	2.515
0.65			11.9571	3.991	4.0079	2.554
0.66			12.3029	4.053	4.1232	2.594
0.67					4.2366	2.633
0.68					4.3511	2.672
0.69					4.4701	2.712

WaterPex PN20 Pe-Xa Piping System

Pressure Loss Table



Cold Water at 25°C						
Class	PN20		PN20		PN20	
Peak Flow Rate Qs (l/s)	16 X 2.2		20 X 2.8		25 X 3.5	
	OD(mm)=16.00		OD(mm)=20.00		OD(mm)=25.00	
	ID(mm)=11.60		ID(mm)=14.40		ID(mm)=18.00	
	Head Loss	Velocity	Head Loss	Velocity	Head Loss	Velocity
	(Kpa/m)	(m/s)	(Kpa/m)	(m/s)	(Kpa/m)	(m/s)
0.70					4.5891	2.751
0.71					4.7093	2.790
0.72					4.8286	2.829
0.73					4.9547	2.869
0.74					5.0785	2.908
0.75					5.2036	2.947
0.76					5.3334	2.987
0.77					5.4609	3.026
0.78					5.5921	3.065
0.79					5.7257	3.105
0.80					5.8594	3.144
0.81					5.9916	3.183
0.82					6.1278	3.222
0.83					6.2691	3.262
0.84					6.4048	3.301
0.85					6.5446	3.340
0.86					6.6896	3.380
0.87					6.8319	3.419
0.88					6.9753	3.458
0.89					7.1234	3.497
0.90					7.2733	3.537
0.91					7.4204	3.576
0.92					7.5686	3.615
0.93					7.7259	3.655
0.94					7.8765	3.694
0.95					8.0321	3.733
0.96					8.1893	3.773
0.97					8.3474	3.812
0.98					8.5067	3.851
0.99					8.6631	3.890
1.00					8.8293	3.930

WaterPex PN20 Pe-Xa Piping System

Pressure Loss Table



Hot Water at 60°C						
Class	PN20		PN20		PN20	
Peak Flow Rate Qs (l/s)	16 X 2.2		20 X 2.8		25 X 3.5	
	OD(mm)=16.00		OD(mm)=20.00		OD(mm)=25.00	
	ID(mm)=11.60		ID(mm)=14.40		ID(mm)=18.00	
	Head Loss	Velocity	Head Loss	Velocity	Head Loss	Velocity
	(Kpa/m)	(m/s)	(Kpa/m)	(m/s)	(Kpa/m)	(m/s)
0.01	0.0184	0.095	0.0066	0.061	0.0023	0.039
0.02	0.0595	0.189	0.0215	0.123	0.0075	0.079
0.03	0.1205	0.284	0.0430	0.184	0.0150	0.118
0.04	0.1986	0.378	0.0711	0.246	0.0245	0.157
0.05	0.2947	0.473	0.1048	0.307	0.0360	0.196
0.06	0.4073	0.568	0.1440	0.368	0.0498	0.236
0.07	0.5347	0.662	0.1894	0.430	0.0651	0.275
0.08	0.6790	0.757	0.2396	0.491	0.0821	0.314
0.09	0.8391	0.852	0.2958	0.553	0.1015	0.354
0.10	1.0125	0.946	0.3563	0.614	0.1220	0.393
0.11	1.2027	1.041	0.4219	0.675	0.1442	0.432
0.12	1.4059	1.135	0.4935	0.737	0.1687	0.472
0.13	1.6257	1.230	0.5691	0.798	0.1943	0.511
0.14	1.8608	1.325	0.6510	0.860	0.2214	0.550
0.15	2.1073	1.419	0.7363	0.921	0.2501	0.589
0.16	2.3712	1.514	0.8267	0.982	0.2813	0.629
0.17	2.6502	1.609	0.9230	1.044	0.3132	0.668
0.18	2.9389	1.703	1.0230	1.105	0.3468	0.707
0.19	3.2467	1.798	1.1292	1.167	0.3827	0.747
0.20	3.5642	1.892	1.2383	1.228	0.4194	0.786
0.21	3.9005	1.987	1.3523	1.289	0.4575	0.825
0.22	4.2506	2.082	1.4728	1.351	0.4982	0.865
0.23	4.6015	2.176	1.5963	1.412	0.5393	0.904
0.24	4.9885	2.271	1.7260	1.474	0.5822	0.943
0.25	5.3808	2.366	1.8588	1.535	0.6262	0.982
0.26	5.7829	2.460	1.9962	1.596	0.6731	1.022
0.27	6.2016	2.555	2.1400	1.658	0.7204	1.061
0.28	6.6300	2.649	2.3870	1.719	0.7690	1.100
0.29	7.0784	2.744	2.4406	1.781	0.8205	1.140
0.30	7.5422	2.839	2.5954	1.842	0.8722	1.179
0.31	8.0129	2.933	2.7563	1.903	0.9255	1.218
0.32	8.5009	3.028	2.9227	1.965	0.9812	1.258
0.33	9.0048	3.123	3.0927	2.026	1.0373	1.297
0.34	9.5194	3.217	3.2683	2.088	1.0952	1.336
0.35	10.0473	3.312	3.4476	2.149	1.1538	1.375
0.36	10.5907	3.406	3.6308	2.210	1.2158	1.415

WaterPex PN20 Pe-Xa Piping System

Pressure Loss Table



Hot Water at 60°C						
Class	PN20		PN20		PN20	
Peak Flow Rate Qs (l/s)	16 X 2.2		20 X 2.8		25 X 3.5	
	OD(mm)=16.00		OD(mm)=20.00		OD(mm)=25.00	
	ID(mm)=11.60		ID(mm)=14.40		ID(mm)=18.00	
	Head Loss	Velocity	Head Loss	Velocity	Head Loss	Velocity
	(Kpa/m)	(m/s)	(Kpa/m)	(m/s)	(Kpa/m)	(m/s)
0.37	11.1475	3.501	3.8195	2.272	1.2778	1.454
0.38	11.7217	3.596	4.0122	2.333	1.3411	1.493
0.39	12.3014	3.690	4.2124	2.395	1.4074	1.533
0.40	12.8997	3.785	4.4129	2.456	1.4738	1.572
0.41	13.5165	3.880	4.6173	2.517	1.5413	1.611
0.42	14.1385	3.974	4.8313	2.579	1.6108	1.650
0.43	14.7797	4.069	5.0457	2.640	1.6827	1.690
0.44			5.2677	2.702	1.7546	1.729
0.45			5.4897	2.763	1.8277	1.768
0.46			5.7222	2.825	1.9050	1.808
0.47			5.9546	2.886	1.9805	1.847
0.48			6.1909	2.947	2.0581	1.886
0.49			6.4353	3.009	2.1401	1.926
0.50			6.6792	3.070	2.2202	1.965
0.51			6.9347	3.132	2.3025	2.004
0.52			7.1862	3.193	2.3849	2.043
0.53			7.4450	3.254	2.4719	2.083
0.54			7.7123	3.316	2.5579	2.122
0.55			7.9829	3.377	2.6463	2.161
0.56			8.2581	3.439	2.7371	2.201
0.57			8.5324	3.500	2.8279	2.240
0.58			8.8148	3.561	2.9186	2.279
0.59			9.1062	3.623	3.0145	2.319
0.60			9.3919	3.684	3.1090	2.358
0.61			9.6912	3.746	3.2047	2.397
0.62			9.9892	3.807	3.3016	2.436
0.63			10.2911	3.868	3.4041	2.476
0.64			10.6076	3.930	3.5034	2.515
0.65			10.9173	3.991	3.6057	2.554
0.66			11.2364	4.053	3.7102	2.594
0.67					3.8149	2.633
0.68					3.9208	2.672
0.69					4.0309	2.712
0.70					4.1392	2.751
0.71					4.2488	2.790
0.72					4.3595	2.829

WaterPex PN20 Pe-Xa Piping System

Pressure Loss Table



Hot Water at 60°C						
Class	PN20		PN20		PN20	
Peak Flow Rate Qs (l/s)	16 X 2.2		20 X 2.8		25 X 3.5	
	OD(mm)=16.00		OD(mm)=20.00		OD(mm)=25.00	
	ID(mm)=11.60		ID(mm)=14.40		ID(mm)=18.00	
	Head Loss	Velocity	Head Loss	Velocity	Head Loss	Velocity
	(Kpa/m)	(m/s)	(Kpa/m)	(m/s)	(Kpa/m)	(m/s)
0.73					4.4768	2.869
0.74					4.5900	2.908
0.75					4.7042	2.947
0.76					4.8254	2.987
0.77					4.9420	3.026
0.78					5.0624	3.065
0.79					5.1874	3.105
0.80					5.3103	3.144
0.81					5.4316	3.183
0.82					5.5568	3.222
0.83					5.6868	3.262
0.84					5.8145	3.301
0.85					5.9434	3.340
0.86					6.0771	3.380
0.87					6.2117	3.419
0.88					6.3442	3.458
0.89					6.4779	3.497
0.90					6.6200	3.537
0.91					6.7562	3.576
0.92					6.8935	3.615
0.93					7.0394	3.655
0.94					7.1791	3.694
0.95					7.3237	3.733
0.96					7.4697	3.773
0.97					7.6168	3.812
0.98					7.7652	3.851
0.99					7.9107	3.890
1.00					8.0656	3.930